

Akademia Białska im. Jana Pawła II

**A HANDBOOK OF
THE PRACTICAL
STUDY OF ENGLISH
FOR STUDENTS OF
TECHNICAL
COURSES**

Dorota Kowalczyk

Biała Podlaska 2025



A handbook of the Practical Study of English for Students of Technical Courses

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Wydawca

Akademia Bialska im. Jana Pawła II

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INTRODUCTION

The text of the script is intended for technical courses students, such as Construction and Mechanics. It has practical applications, used in two key aspects of education in these fields. What I mean is a glossary of vocabulary and exercises using technical vocabulary and specialist knowledge. The exercises are my own. I developed them through experience while working with students.

WPROWADZENIE

Niniejszy skrypt jest przeznaczony dla studentów kierunków technicznych, takich jak Budownictwo i Mechanika i Budowa Maszyn. Ma on wymiar praktyczny, wykorzystany w dwóch najważniejszych aspektach kształcenia studentów tych kierunków. Mam na uwadze glosariusz słownictwa i ćwiczenia z użyciem słownictwa technicznego i wiedzy specjalistycznej. Ćwiczenia są mojego autorstwa. Opracowałam je wykorzystując doświadczenie podczas wieloletniej pracy ze studentami.

Dorota Kowalczyk

1. VOCABULARY

1.1. Mathematical symbols and signs

- Do you like learning Maths? Why (not)?
- What is the most effective way of leaning Maths?
- Is Maths useful/needed in everyday life? Why (not)?

Addition (+) – it denotes addition and reads as plus used to add numbers in Maths.

Subtraction (-) – it's used to subtract numbers and reads as minus.

Multiplication/times (×) – this symbol is called the multiplication symbol and is used to multiply numbers and obtain products from them.

Division (÷) – it is called a division symbol and is used to divide numbers from each other.

Plus-minus (±) – the plus-minus symbol is used to calculate either plus or minus operation.

Equals (=) – the equals sign indicates that the two numbers are equal or is used to show the mathematical equations answer.

Not equal sign (≠) – not equals sign indicates that the respective two numbers are not equal or different.

Less than (<) – the less than symbol shows that the first number is lesser than the second number.

Greater than (>) – the greater than symbol shows that the first number is greater than the second number.

Less than or equal to (≤) – this symbol is used to represent that the first number is either less than or equal to the second number.

Greater than or equal to (≥) – this symbol is used to represent that the first number is either greater than or equal to the second number.

Brackets () – they are used to highlight any number or character in any equation. Also, this bracket has to solve first if found in any equation.

Division/slash (/) – the slash symbol is used to differentiate or to divide numbers.

Power – two to the power three : 2^3 .

Fraction ($\frac{3}{4}$) – it represents the parts of a whole or collection of objects. A fraction has two parts. The number on the top of the line is called the **numerator**. It tells how many equal parts of the whole or collection are taken. The number below the line is called the **denominator**.

Decimal separator/point – the decimal separator separates a whole number from its fractional part to the right: 1.23.

Quotation mark (") – it is used either to mark the beginning and end of a title or quoted passage.

Colon (:) – punctuation mark: which you can use in several ways. For example, you can put it before a list of things.

Dash/hyphen (-) – punctuation mark that can be used within a sentence (instead of brackets or a colon) to show parenthesis.

Thousands separator (,) – in English, the thousands separator separates whole numbers into groups of three from the right. 10,987,654,321 In English, the thousands separator is usually a comma (,).

The notion/operation of positive – any number bigger than zero is a positive number and can be written with or without a plus sign in front of it.

The notion/operation of addition – $3 + 5 = 8$ three plus five equals eight.

The notion/operation of negative – any number smaller than zero is a negative number and is written with a minus sign in front of it. -3 minus three.

The notion/operation of subtraction – $8 - 5 = 3$ eight minus five equals three.

Even numbers – a whole number that is able to be divided by two into two equal whole numbers.

Odd numbers – a whole number is a number that is not divisible by 2.

Count – the act of determining the quantity or the total number of objects in a set or a group.

Add – to bring together or combine two objects.

Subtract – take away one number from another.

Multiple – a result, obtained when a whole number gets multiplied by another number.

Divide – the opposite of multiplication.

Round – making a number simpler but keeping its value close to what it was.

Double – a number or an amount that is twice as large as the given number or amount.

Triple – to multiply by three.

Shapes – define the outline or the boundary of an object.

Square – a square is a two-dimensional closed shape with 4 equal sides and 4 vertices.

Triangle – it is a closed, 2-dimensional shape with 3 sides, 3 angles, and 3 vertices.

Rectangle – it is a quadrilateral in which all 4 angles are right angles; opposite sides parallel and equal.

Sphere – an object shaped like a round ball.

Exercise 1.

Write in the vowels to the words given. Do you remember the meaning of the words?

1. _ d d _ t _ n
2. t r _ _ n g l _
3. _ q _ _ l
4. d _ n _ m _ n _ t _ r
5. _ p _ r _ t _ _ n _ f d _ v _ s _ _ n
6. d _ _ b l _
7. g r _ _ t _ r t h _ n
8. b r _ c k _ t s
9. m _ l t _ p l _ c _ t _ _ n
10. h _ p h _ n

Exercise 2.

Write names of the symbols below.

1. $()$ -
2. $"$ -
3. $<$ -
4. $=$ -
5. $\%$ -
6. 3 -
7. $\frac{1}{4}$ -
8. \div -
9. \geq -
10. \times -

Exercise 3.

Write the numbers for the examples below.

1. One thousand seventy eight:
2. Twenty four thousand and two hundred fifty two:
3. Three point seventy two:
4. Forty one point eleven:
5. Two thirds:
6. Seven eights:
7. Twenty four thousand and seventy two:.....
8. One fourth:
9. Twenty two millions and seventy eight hundreds thousands:
10. Twenty point forty eight:

Exercise 4.

Write the maths equations.

1. $5 + 75 - 10 =$
2. $10 - 11 = -1:$
3. $77 : 11 = 7:$
4. $7,432 > 6,764 =$
5. $74 : 22 - 7.23 =$:
6. $974 \times 4 - (401 - 2) =$
7. $21 \times 324 - 11 =$

8. $77 + 67 : (3 \times 71) = \dots\dots\dots$
9. $907 - 908 + 1 = \dots\dots\dots$
10. $480 : 6 - (3 \times 71) = \dots\dots\dots$

Exercise 5.

Work in pairs. Student A write three maths equations and say them two your partner. Student B write the equation said by the partner. Next change rules.

1.
2.
3.

Exercise 6.

Find eight words in the diagram. They are hidden horizontally and vertically.

S	Q	U	A	R	E	B	C	X	W
U	Y	X	C	O	L	O	N	I	I
M	H	K	C	U	D	C	G	Y	L
T	R	I	A	N	G	L	E	V	L
C	D	M	U	D	I	V	I	D	E
Q	E	O	N	Z	S	F	O	M	S
R	R	D	T	I	M	E	S	S	S
S	L	N	Z	G	Y	T	G	L	O
B	R	A	K	E	T	S	S	C	V

Exercise 7.

Write 5 questions using words found in Exercise 6.

- 1.....
- 2.....
- 3.....
- 4.....
5.
- 6.....

Exercise 8.

Complete the sentences with the words given: cube, odd, addition, triangle, trapezium, rectangle, square, sphere, double, even, quotation.

1. A solid which has six square sides equal size is called a
2. A flat shape with four right angles and four sides, in which opposite pairs of sides are of the same length is called
3. A solid shape like a ball is called
4. A flat shape with four right angles and four sides of equal length is called a
5. mark used either to mark the beginning and end of a title or quoted passage.
6. A flat shape with three angles and three straight sides is called a
7. A flat shape with four angles and four sides, two of which are parallel and two of which are not is called a
8. The opposite of subtraction is
9. If you multiply the number by two you it.
10. 2, 4, 6 are numbers, while 3,5,7 are numbers.

Source: Olejnik, 2005.

Exercise 9.

Work in pairs. Student A. writes 3 quotations with one mistake in each of them. Tell them to your partner. Student B. listens/ writes down quotations and finds mistakes in them. Next change rules.

1.
2.
3.

Exercise 10.

What are the career options for mathematics students?

- In your opinion, what are the options for mathematical students?
- How is it valued in the study of various other subjects?
- Would you like to study mathematics? Why(not)?

Read the article. In pairs, summarise each job opportunity. You need to answer the following questions:

- How is Math used in each profession?
- Is it useful?

Having discussed the importance of mathematics, and how it is valued in the study of various other subjects; here let's take a look at the career options for the students who study mathematics at the graduate and post-graduate levels.

Mathematician

A Mathematician is a professional who uses logic and numbers to solve problems that further lead to discoveries and transformations in different sectors. It requires mathematical ability to solve real-time issues using qualitative reasoning, and data analyses. It can be a very deep role, that could be of help to companies, governments and research agencies in data handling, maintaining statistics and more. In the age of computers, the mind is still a step ahead, because the operating systems are run on the commands structured by men, who can also be mathematicians.

Chartered Accountants

The play of numbers is not everyone's cup of tea. If you love numbers, then you might feel inclination towards a career in finance and accounts. Studying to become a Chartered Accountant can be another interesting opportunity for all the mathematic freaks. Any CA requires firm understanding of auditing, taxation policies and accounting methodology. This definitely comes with practice and education of other related subjects and mechanisms.

Teaching

This is one of the most popular opportunities for Math geeks. You could apply for being a college professor or teacher in school. In the last few years, there has been a rise in the number of tuition and coaching institutes as well.

Data Analysts

Data science is going to be the next big thing after the internet boom, some experts suggest. The age of digital has increased the requirement for professional data and business analysts, who can manage data and decode it for the success of any company, initiative or programme. Data plays an integral role in the decision-making process of managers and business owners. Today, the people who are aware of the importance of data are up to date with the latest trends in the markets.

Banking & Finance Sector

Banking and finance institutions look for bright young minds who can join them. There are requirements of professionals in banking operations management on a day-to-day basis. The urgent requirement for quality professionals can be seen by the number of financial institutions coming up in the current times. There are different departments

within these institutions that seek mathematic experts, namely, product marketing & sales department, property appraisal department, loan department, amongst others.

Software engineers

Internet revolution is still the booming market, and software engineers are going to be in demand till the foreseeable future. Software engineering is not just about knowing how to use computer tools and analyse simple patterns, but it is about going deep into testing, evaluating the software systems. Computing systems work with the help of mathematical prowess and ability to correlate sequences, complex patterns, and find solutions to make the systems work properly.

Government Operations Statistical Service

There are plenty of opportunities for mathematics graduates in the government itself. One can work with the government to contribute in National building, by using their prolific understanding of statistics and math. Check out for employment opportunities as a Statistician, Economic Research Analyst, Qualitative Risk Analyst, etc.

Source: <https://www.universityleap.com/mathematics-career-options-for-students/>

- Choose in the text 6 words that may be new or useful for you. In pairs make up a dialogue using these words. The dialogue ought to relate to career opportunities for mathematic students.

.....

.....

.....

.....

.....

.....

- Which job opportunity seems to be the most attractive to you and why? Where will you look for the job?

1.2. Numbers

- Do you like dealing with numbers?
- Give 2 reasons why we should count ourselves instead of using doing it electronically.
- Do you believe in (un)lucky numbers?

Metric system – the metric system is defined as the decimal system of units based on the meters, kilograms, and second as the units of length, mass, and time respectively. These are the SI units that stand for ‘System International’.

Imperial numbers – the British system of measurement.

Length/Distance

Inches (in) – 0.394 inch – 1 centimetre

Feet (ft) – 3,281 feet – 1 meter

Yard (yd) – 1,093 yard – 1 meter

Mile (mi) – 0,621 mile – 1 kilometre

Mass/Weight

Ounce (oz) – 0.035 ounce – 1 gram

Stone (st) – 14 pounds (6.35 kg)

Pound (lb) – 2,205 pounds – 1 kilogram

Ton (t) – 1 ton is equal to 2000 pounds

Volume

Fluid ounce (fl oz) – 0.034 fl oz – 1 millilitre

Pint (pt) – 568.261 ml (20 fluid ounces)

Gallon (gal) – 0.264 gallon – 1 litre

Cardinal numbers – the counting numbers that start from 1 and go on sequentially and are not fractions.

Ordinal numbers – they all use a suffix. The suffixes are: -nd, -rd, -st, or -th. Examples: ‘second’ (2nd), ‘third’ (3rd), ‘first’ (1st), and ‘tenth’ (10th). We use ordinal numbers for dates and the order of something (think ordinal = order).

Decimal number – a number that consists of a whole and a fractional part.

Nominal numbers – they can be defined as numbers that are used for identifications. Examples of nominal numbers: Passport number, Cell phone number, ZIP code number, etc.

Exercise 1.

Divide the numbers given into 3 groups in a way that seems appropriate for you: cardinal, yard, pound, inches, feet, ordinal, stone, nominal, imperial, ounce.

--	--	--

- Add two more new words to each group.

Exercise 2.

Find words in the snake and create 3 sentences with them.

Nominal numbers cardinal numbers metric system imperial system stones fluid ounce gallon

1.
2.
3.

Exercise 3.

Work in pairs. Describe to your partner one of the systems and numbers from the unit. Do not tell its name – let your partner guess it. Change rules.

.....

.....

Exercise 4.

Say the dates given in English. Follow the example:

1. 13.10.2023
2. 07.06.1980
3. 20.12.1947
4. 30.01.2018
5. 24.03.1976

Exercise 5.

Work in pairs. Ask each other questions. Follow the example: Where is Henry in line?
Henry is third in line.

'List of students: John, Mary, Henry, Ron, Sally, Jeff, and Robert.'

.....
.....

Exercise 6.

Answer the questions below:

1. Which is the smallest cardinal number?
2. Which of the following are even numbers? 25,12, 26 289, 20, 22, 86.
3. Give 3 examples of decimal number.

Exercise 7.

Answer the questions below:

1. When were you born?
2. How many brothers and sisters do you have?
3. What time is it now?
4. How many people do you follow on Social Media?
5. How many months is it until your favourite holiday?

Exercise 8.

How good is your memory? Look at these items one at a time do not spend more than 5 seconds looking at each one. Then repeat them.

1. GZRT
 2. 783925
 3. 638-5174
 4. RFD-1856
 5. 882256677
- What techniques did you use to remember them?

Exercise 9.

Read the text and answer the questions.

Numbers

Joyce was born on 30th April 1958 into a large family. She has 3 brothers and 5 sisters. When Joyce was 10 years old, her parents separated and her mother moved to a new apartment block in LA. They lived on the 5th floor. Joyce had many hobbies, she liked playing football, painting and swimming. Joyce's teacher suggested that she enter a local swimming competition. She won. By the time Joyce was 18, she had won 20 local swimming competitions and decided to train for the Olympics. In 1980 Joyce brought home 2 silver medals. Now, Joyce lives with her 2 children and her husband in Texas. She doesn't swim much anymore but loves gardening.

After graduating in 2012, Aubrey got his first job at a popular bank and has been working in different areas of banking and finance since then. Aubrey is also really interested in investing in Cryptocurrency and bought his 1st Bitcoin for his 21st birthday. He posts videos on YT to help others to invest too. Right now, Aubrey has around 120,000 subscribers on YT and 150,000 followers on Instagram. He is thinking about opening his own online school, but he is looking for money from investors to help him with the project. He has calculated that he needs about 500,000 pounds to start up first, so he's in the middle of writing a business plan. He also plans to get married to his long term partner, Jennifer. They have been together for about 8 years now and have known each other since they were 16.

- How old was Joyce when she moved?
- How many local competitions did Joyce win?
- How many subscribers does Aubrey have on YT?
- How much money does Aubrey think he needs for his business idea?
- How long have Aubrey and Jennifer been together?

Source: <https://www.geeksforgeeks.org/cardinal-numbers/#facts-on-cardinal-number>
<https://iLS.collective.com>

1.3. Graphs

- How often do you work with graphs?
- What can you describe using graphs?
- What are reports? Why are they useful means of communication?

Types of graphs

Line graphs – show you how numbers have changed over time. They are used when you have data that are connected, and to show trends, for example, produce sale.

Bar graphs – show numbers that are independent of each other. Example data might include things like the number of people who preferred certain subjects.

Histograms – are specific type of bar charts, where the categories are ranges of numbers. Histograms therefore show combined continuous data.

Pie charts – show you how a whole is divided into different parts. You might, for example, want to show how a budget had been spent on different items in a particular year.

Introduce the graph

The first step is to present the graph to your audience. This means covering high-level information like:

- its title,
- the topic,
- data source,
- time frame.

Here are some examples of how to do this:

- This graph shows the relationship between X and Y.
- This diagram is a visual representation of the process for...
- This chart uses data from the Z Database.
- The data in this graph is from 2020.

Identify key features

From there, you can describe the key variables that make up the graph. Graphs and charts typically have an x- and y-axis, which represent different variables. Describing these axes will help the audience understand how the graph displays data.

Here are some helpful phrases for identifying these variables:

- The vertical axis shows...
- The horizontal axis represents...
- This curve illustrates...
- The solid line shows...
- The shaded area describes...
- This colored segment is for...
- The red bar...

Exercise 1.

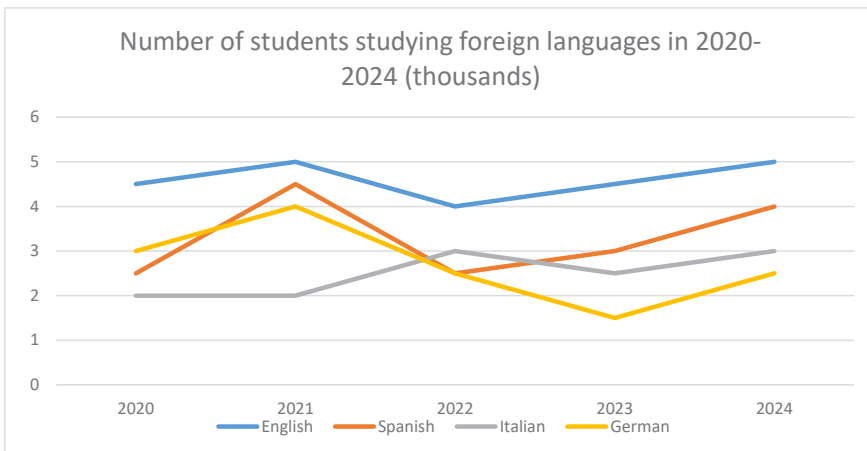
Look at the graph. Introduce them and identify key features.

.....

.....

.....

.....



Point out important information

When describing graphs, start by recognizing the main patterns, trends, or relationships they show. For example, if the chart clearly shows an increase in revenue over the past year, you should highlight that first.

To describe the movement of the line, you should use appropriate verbs, adjectives, and adverbs depending on the kind of action you need to show. For this, you should use the following vocabulary:

- **Verbs:** rise, increase, grow, go up to, climb, boom, peak, fall, decline, decrease, drop, go down, reduce, level up, remain stable, no change, remain steady, stay constant, stay, maintain the same level, crash, collapse, plunge.
- **Adjectives:** sharp, rapid, huge, dramatic, substantial, considerable, significant, slight, small, minimal, massive.
- **Adverbs:** dramatically, rapidly, hugely, massive, sharply, steeply, considerably, substantially, significantly, slightly, minimally, quickly suddenly, steadily, gradually, slowly.

You can also identify other notable information, like outliers. This shows you understand the data beyond the surface level.

Exercise 2.

Look at the graph in Exercise 1. Point out important information.

.....

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.....

Share your conclusions

Once you’ve described what you see in the graph, you need to explain what the data means. To come up with ideas, you can ask yourself questions like:

- How does this data affect the future?
- What can we learn from this data?
- What can we do differently to improve?
- What decisions should we make based on this data?

Some ways to explain your conclusions include:

- Based on the graph, we can conclude that...
- This chart indicates that...
- As you can see, user growth has increased in the past year. This means we expect to see more users in the next six months.

Exercise 3.

Look at the graph in Exercise 1 and share your conclusions.

.....

.....

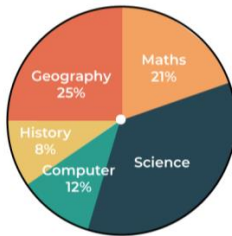
.....

.....

Exercise 4.

Using the pattern given below. Describe the pie chart that describes the most popular subjects chosen by students in 2022-2024.

Number of Students



1) Introduction – 2 sentences:

The given ___(state the type of chart)___ provides information about ___(use the title)___ (Number of elements compared). This data is collected from the time period between ___(state the First year)___ and ___(state the last year)___, measured in terms of (unit of measurement).

2) Overview – pick 3-4 feature and write about them generally, without referencing to any data.

Overall, the (what is measured in the graph) differs in (how many) aspects. However, the greatest (number/percentage) of

3) Details – write data referring to the features.

.....

.....

.....

.....

.....

.....

Exercise 5.

Choose any graph you have been working with recently (e.g. in Physics). Describe it based on the pattern given:

- Introduction.
- Identifying key features.
- Pointing out important information.
- Conclusion.

.....

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.....

.....

Source: <https://preply.com/en/blog/how-to-describe-graphs-in-english/>
<https://www.skillsyouneed.com/num/graphs-charts.html>

1.4. Properties of the materials

- What are 3 main properties of materials that you work with?
- What material is the most/ least difficult to work with? Why?
- What properties does a good quality material need to have?

Hardness – it shows that a material resists localised pressures.

Thermal conductivity – it measures how fast heat moves through a material.

Electrical conductivity – it is like thermal conductivity, measuring the quantity of electricity that is transferred through a material of known cross-section.

Toughness – it is a combination of strength and plasticity. A tough material can take hard blows without rupturing.

Density – it is a fundamental property defined as mass per unit volume, important for identifying material suitability in different applications.

Ductility – it is the ability of a material to undergo plastic deformation before rupturing.

Plasticity – the ability of a solid material to undergo permanent deformation, a non-reversible change of shape in response to applied forces.

Elasticity – it is the ability of a body to resist a distorting influence and to return to its original size and shape when that influence or force is removed.

Thermal expansion – it is the degree to which a material increases its dimensions when heated.

Malleability – it refers to its ability to be hammered or rolled into sheets of various sizes and forms.

Melting temperature – it is temperature at which a material undergoes a state change.

Strength – the ability of a metal to resist deformation load.

Wear resistance – a proportion of a material's capacity to endure the impact of two materials scouring against one another.

Lightweight – weighing only a little or less than average.

Responsive – reacting quickly and positively.

Flammable – easily set on fire.

Durable – able to withstand wear, pressure, or damage; hard-wearing.

Fatigue – weaken (a metal or other material) by repeated variations of stress.

Yield strength – the stress at which a specific amount of plastic deformation is produced, usually taken as 0.2 per cent of the unstressed length.

Rigid – unable to bend or be forced out of shape; not flexible.

Heat tolerance – the ability of a person to physiologically adjust to a heat stress exposure.

Absorbance – a measure of the capacity of a substance to absorb light of a specified wavelength.

Brittleness – a material's tendency to easily break, crack, or snap.

Porosity – the quality or degree of having minute spaces or holes through which liquid or air may pass.

Coarseness – the quality of being rough or harsh.

Solid-state – the state of matter in which materials are not fluid but retain their boundaries without support.

Worn-out – used so much to the point of no longer being usable.

Power-driven – worked by electricity or other mechanical means, not by hand.

Sustainability – ability to continue over a period of time.

Versatility – ability to adapt or be adapted to many different functions or activities.

Efficiency – the ratio of the useful work performed by a machine or in a process to the total energy expended or heat taken in.

Spatial – having the character of space.

Well-planned – suitably devised or drafted in advance to ensure success.

Exercise 1.

Find words in the snake and make 3 sentences with them. Each sentence must contain at least 2 words from the snake.

Wellplannedversatilecoarsenessporositystrongmeltingtemperaturethermalconductivityductilitydurablemalleability

1.
2.
3.

Exercise 2.

Match words with their definitions.

1. Malleable	1.	A. able to take in liquids, able to reduce the effect of impact.
2. Lightweight	2.	B. able to be pulled into a longer, thinner shape without breaking.
3. Heat tolerant	3.	C. able to easily set on fire.
4. Waterproof	4.	D. able to withstand heat without being affected
5. Responsive	5.	E. thin material or build and weighing less than average.
6. Shock-resistant	6.	F. able to withstand wear, pressure, or damage; hard-wearing.
7. Ductile	7.	G. able to react quickly and positively.
8. Absorbent	8.	H. able to sustain minor impacts without damage to the internal mechanism.
9. Flammable	9.	I. able to be hammered and rolled into a new shape.
10. Durable	10.	J. impervious to water

Exercise 3.

Think of the adjective with the opposite meanings to the indicated ones.

- 1. That tool is really *purposeful*. It has numerous functions.
.....
- 2. That plank is really *brittle*, it can be very easily destroyed.
.....
- 3. Be careful! *Heat tolerance* of that sheet is really low.
.....
- 4. Fiberglass is *lightweight* but *durable* and *strong*.
.....
- 5. A wooden base is inappropriate as it's too *porous* and *malleable*.
.....
- 6. Tools manufactured by this company are *high-quality*, *power-driven* and *functional*.
.....
- 7. All specifications need to be *detailed* and *reliable*.
.....
- 8. Every item is supposed not only look *attractive* but be *durable* and *efficient*.
.....
- 9. We are recruiting now *knowledgeable* and *industrious* individuals ready to work in our *hectic* environment.
.....
- 10. Look at that scaffolding. It looks *well-planned* and *spatial*.
.....

Exercise 4.

Complete the table.

NOUN	ADJECTIVE
	coarse
durability	
	spatial
versatility	
hardness	
	dense
conductivity	
	efficient
	functional
porosity	

Exercise 5.

Use appropriate words form the table above in the sentences.

1. of that device is rather limited. You'd rather not buy it.
2. When choosing wires remember to check its
3. Test provides an estimate of plastic products'
4. This type of liquid needs to be really if you want to apply it.
5. Isn't the surface too..... for the cranes to start excavation?
6. The funnel is too worn-out and so the layer of the substance stays on its walls.
7. Try to find the most kind of insulation that meets all the requirements.
8. Material used for the drive need to be to avoid slippery.
9. Who is the most manufacturer when it comes to drills?
10. I need more office! I even cannot turn round in this one!

Exercise 6.

Work in pairs. Choose 3 new words from the unit and create a vocabulary map around them. The first example is done for you.

ABSORBANCE
 •
 •
 •

Exercise 7.

Work in pairs. Think of the materials used in your industry that can:

- break down easily
.....
- not be water resistant
.....
- be versatile
.....
- be functional
.....

What do you use them for?
What other properties do they have?

Exercise 8.

Work in pairs. Analyse the following cases:
What 3 main properties do the materials need in the following cases? Why do you think so?

1. Oak timber used to build a shed in Dubai that is exposed to the sun.
a)
b)
c)
2. Tires used in an off-highway truck?
a)
b)
c)

Exercise 9.

Choose 7 new words from the unit and create sentences with them. The sentences should be related to your future profession.

1.
2.
3.
4.
5.
6.
7.

Exercise 10.

- Have you heard of any successful start-up(s) in engineering? What is/are they?
- What makes a start-up successful? Why?
- What kind of start-ups may be successful? Why do you think so?

Read the text and match the headings with the paragraphs.

- Safety first with automated anomaly detection
- Dynamic cutting recommendations
- Enhanced industrial process insights
- It gives insights that allow users to optimize the efficiency of rock processing.
- Our software can compensate for years of hands-on learning.

Start-ups rewarded

Talented digital innovators from around the world took up the challenge to develop concepts that make mining and manufacturing safer, smarter and more sustainable.

The Startup Challenge is a worldwide call for innovative startups to interact and collaborate with Sandvik experts. The challenge is run by Sandvik together with its partners SynerLeap and Microsoft. The nine finalists in this year’s Challenge took to the stage in Stockholm on November 9 to present their solutions, after which the jury convened to pick the winning teams.

Pasi Kangas, Head of Technology at Sandvik Additive Manufacturing and Jury Chairman explains the reason behind it: “The ongoing digitalization of mining and manufacturing requires advanced, connected systems. We are looking for the brightest minds and best ideas for software and equipment that let Sandvik and its customers work faster, more sustainably and more efficiently,” he said. “I am very happy about the great response and quality of the applications, and the enthusiasm and energy surrounding this call, both from the Sandvik teams and all startups that we have collaborated with.”

Each of the three Sandvik business areas offered a unique challenge. The winning startups, from Finland, Luxemburg and the US, received Swedish crystal artwork and funding up to USD 30,000 to collaborate with Sandvik on the development of a Minimum Viable Product (MVP) that can be productized and offered to Sandvik customers.

1.

The challenge offered by Sandvik Coromant was to develop software that enables dynamic recommendations within industrial metal-cutting applications. Finland-based startup Dreiija, with Oleg Shadrinov, Ilmari Junttila and Dmitrii Shustrov, won the challenge.

The team from Dreiija had developed an app using dynamic cutting data and machine learning that recommends machine settings that fit the specific task and component to be manufactured. “Thanks to AI, our software learns faster than a person and is able to analyze dependencies between thousands of different parameters, from speed and temperature to raw material characteristics, to arrive at an optimized setting for indexable tools,” explained Shadrinov. “This results in increased sustainability from less waste and lower energy consumption, less machine wear and faster setup times.”

2.

Shustrov pointed out that the solution is particularly useful for new employees who lack experience from the machining sector. “Our software can compensate for years of hands-on learning.”

The next six months will be spent developing a prototype with Sandvik and testing it with select customers.

3.

Sandvik Rock Processing Solutions invited solutions to evolve individual equipment insights to drive plant efficiency and sustainability improvements. Inspection of the crushing and screening of excavated rock along conveyor belts is crucial to the stability of operations and quality of final output.

Luxemburg-based startup Warden Machinery, with Mikhail Kiriukhin and Vladimir Bashkov, won the challenge with a solution based on cameras, sensors and AI-enabled software for continuous inspection of crushed rock material. “It gives insights that allow users to optimize the efficiency of rock processing,” says Kiriukhin. “Manual inspection of crushed material, particularly in remote locations, is a tedious task and it’s easy to lose focus. Our solution enables a stabilized feed of rock that reduces the downtime of rock processing operations.”

4.

To put it simply, the software may be compared to facial recognition software, applied to crushed rock instead of human faces. Following a joint development of an MVP with Sandvik, the solution promises to significantly reduce the sustainability footprint of operators and improve the guidance provided to them. As Kirukhin puts it: “It’s time to rock!”

5.

The drill and blast method is commonly used in underground mines. Due to the dangerous nature of blasting, it is forbidden for people to re-enter the tunnels right after the blast because of fumes, dust, the risk of misfire and the possibility of changes to the ground conditions that could make the area unstable. Sandvik Mining and Rock Solutions was looking to develop an automated solution for detecting possible anomalies after blasting in a tunnel.

The winning startup, Loopr AI from Seattle, US, had developed a solution for real-time detection of anomalies in the mine, based on cameras and sensors plus AI-enhanced software that is better equipped to analyze signs of anomalies than even the trained eye of a pro. Since digital equipment doesn’t mind hazardous conditions such as fumes, there is less downtime following each blast.

The safety aspect is the unique selling point of our solution, but it also reduces the downtime required after a blast.

“AI can aid humans by analysing multiple video streams in real time and it never gets tired, whereas a person may find it hard to spend an entire shift staring at a video and reading sensor data without losing attention,” explained Loopr AI’s Eric Johnston. “The safety aspect is the unique selling point of our solution, but it also reduces the downtime required after a blast by enabling a quicker all-is-clear signal.”

During the jury meeting, it became clear that the Sandvik team in charge of the mining challenge was interested in engaging with yet another solution as well. Kangas explains why. “The company Sensorise was selected for further collaboration with Sandvik on

their solution, which includes intelligent anchors continuously monitoring rock face and bolted equipment combined with a system that stores, displays, analyzes and distributes information from the intelligent anchors.”

Source: <https://www.home.sandvik/en/stories/articles/2023/11/startups-rewarded/>

- Write a short summary of the text (max. 150 words). Use the following words and phrases from the article: develop concepts/ prototype, collaborate with, (final) output, detect possible anomalies.

.....

.....

.....

.....

.....

.....

A case study

Work in groups. Think of the start-up in engineering you may develop.

- What is it?
- How would you develop it?
- What requirements/obstacles may you come up against?

.....

.....

.....

.....

.....

.....

1.5. Science

- Think of the words that you associate with science?
- In your opinion, is exact science meaningful domain? Why(not)?
- Think of some popular applications of science in everyday life.

Science – the systematic study of the structure and behaviour of the physical and natural world through observation, experimentation, and the testing of theories against the evidence obtained.

Scientific – based on or characterized by the methods and principles of science.

Scientist – a person that has scientific knowledge and applies it on large scale.

Breakthrough – a sudden, dramatic, and important discovery or development.

Research (do/carry out/conduct) – the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions.

Experiment – a scientific procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact.

Discover/discovery – find(ing) unexpectedly or during a search.

Invent/invention – create(ing) or design (something that has not existed before); be the originator of.

Patent – a government authority or licence conferring a right or title for a set period, especially the sole right to exclude others from making, using, or selling an invention.

Analysis – detailed examination of the elements or structure of something.

Sample – a small part or quantity intended to show what the whole is like.

Test tube – a thin tube made up of glass.

Electricity – flow of electron.

Mixture – a combination of different things.

Dissolve – solid form in any liquid.

Fossil – the remains of plant or animal.

Element – species of atom.

Hypothesis – a proposed explanation.

Particle – a minute entity of matter.

Temperature – the degree of heat measurement.

Variable – liable to change with conditions.

Weigh – expression of heaviness.

Volume – the amount of space occupied by any object.

Pressure – force per unit area.

Increase – greater in amount or size.

Decrease – smaller or fewer in amount or size.

Results – findings after an investigation.

Graph – a representation of data.

Equipment – apparatus for a particular purpose.

Verbs related to science

Expand – making larger.

Analyse – detail examination.

Magnify – making objects larger in appearance by optical devices.

Classify – categorization on a common base.

Examine – inspect (someone or something) thoroughly in order to determine their nature or condition.

Do/conduct/carry out/

Assume – supposed to be the case, without proof.

Prove – demonstrate the truth or existence of (something) by evidence or argument.

Test – take measures to check the quality, performance, or reliability of (something), especially before putting it into widespread use or practice.

Exercise 1.

Separate words in the snake and create 3 questions with them. In each question use 2 words from the snake.

Expand analysed decrease test magnify hypothesis dissolve volume breakthrough electricity scientist prover results graph

1.?
2.?
3.?

Exercise 2.

Work in pairs. Cover the glossary. Write your own definitions for the words below.

1. Science –
2. Electricity –
3. Magnify –
4. Patent –
5. Particle –

- Choose one of the definitions above and tell it to the group, let them guess what it means.

Exercise 3.

Decide if the statements are true or false. Correct the false ones.

1. A hypothesis is an idea which has already been proved.
2. Samples are small bits of something taken to be examined.
3. Patents give the inventors the right to make and sell their invention.
.....
4. Exact sciences include mathematics, physics and chemistry.
5. There is a saying in English: Need is the mother of invention.
6. If something is at the experimental stage it means that all the tests and experiments
have been completed.
7. An invention and a discovery are basically the same thing.
8. The discovery of penicillin is considered a breakthrough of the XXI century.
.....
9. Christopher Columbus was the inventor of America.
10. Applied science is the art of using scientific knowledge to solve practical problems.
.....

Source: Olejnik, 2005.

Exercise 4.

Work in pairs. Create as many collocations as possible from the words given.

Verb	Noun	Adjective
do	research	
assume	science	scientific
prove	study	magnifying
analyse	patent	hypothetical
expand	paper	increasing
know	approach	
	case	

.....

.....

.....

.....

Exercise 5.

Make/add verbs to the nouns given.

- 1. Analysis -
- 2. Test -
- 3. Mixture -
- 4. Equipment -
- 5. Weigh -
- 6. Classification -
- 7. Research -
- 8. Temperature -
- 9. Variable -
- 10. Pressure -

Exercise 6.

Complete the sentences with some of the words given above.

- 1. The of potassium content of foodstuffs is not stable.
- 2. research in this condition is pointless as there are too many unproved data.
- 3. Deeper has confirmed the hypothesis of many scientists .
- 4. Have you ever these figures according to their future usability?
- 5. What is the proportion of ingredients used in this ?
- 6. Take the tubes that are placed above the microscope.
- 7. We need to that particles because we need to include it in our project.
- 8. Every item of the is supposed to be sterilised after usage.
- 9. Every dissertation written is followed by the in-depth and review of the available sources.
- 10. Please all the elements in terms of their physical characters.

Exercise 7.

What is the difference between:

- 1. discovery - invention

.....

.....

2. research – experiment

.....
.....

3. sample – test tube

.....
.....

4. increase – decrease

.....
.....

5. magnify – expand

.....
.....

Exercise 8.

Work in pairs. Make dialogue with the words given (6/7 questions and answers): carry out, research, science, analysis, test tube, decrease, equipment, magnify, experiment, element, volume.

A.....

B.....

A.....

B.....

A.....

B.....

A.....

B.....

Exercise 9.

Who, in your opinion, is the greatest scientist of XX century?

- Who is the one
- What are his/her greatest achievement
- How/where is the invention/discovery used

.....
.....
.....
.....

- Think of 3 questions you would like to ask the scientist.

1.....
 2.....
 3.....

- In groups, work out possible answers to the questions.

1.....
 2.....
 3.....

Exercise 10.

Reading

1. What do you know about Elon Musk?
2. What questions would you like to ask him?
3. In 5 minutes find as much information about EM as you can. Share it with the group.
4. Below are the answers given by EM to the presenter of “Times Insider”. Think of the questions to them.

Interviewing Elon Musk

1.
 “This past year has been the most difficult and painful year of my career.” He said early in the conversation. “It was excruciating.”
 “It’s not been great, actually,” Mr. Musk said. “I’ve had friends come by who are really concerned.”

2.
 “There were times when I didn’t leave the factory for three or four days — days when I didn’t go outside,” he said. “This has really come at the expense of seeing my kids. And seeing friends.”

3.
 “The worst is over from a Tesla operational standpoint,” he said. It was the kind of bland answer I’ve come to expect from the C.E.O. of a public company, and I assumed he had completed his thought.

4.
 Then, after a moment of silence, Mr. Musk continued: “But from a personal pain standpoint, the worst is yet to come.”

1.6. Technology

- Which area of technology do you find the most challenging?
- Which area of technology do you find the most prospective?
- Think of 3 technological solutions that are used in your future profession.

Vocabulary for engineers

Acceleration – the rate at which an object changes its velocity over time.

Actuator – a component of a control system that converts an electrical signal into mechanical motion.

Robotics – the study of robots and their behaviour.

Algorithm – a set of instructions or rules that a computer program follows to complete a task.

Manufacturing – the process of producing goods using machines, tools, and labour.

Material properties – the characteristics of a material that determine its behaviour under different conditions.

Amplifier – a device that increases the power of an electrical signal.

Antenna – a device that is used to send or receive radio signals.

CAD (Computer-Aided Design) – a software system used by engineers to create 3D models of parts and assemblies.

Hydraulics – the study of the behaviour of fluids under pressure.

Insulation – a material used to reduce the flow of heat or electricity.

Kinematics – the study of the motion of objects without considering the forces that cause the motion.

Calibration – the process of adjusting and checking the accuracy of a measuring device.

Circuit – a closed loop of conductive material that allows electrical current to flow.

Thermal conductivity – the ability of a material to conduct heat.

Transducer – a device that converts one form of energy into another.

Vector – a quantity that has both magnitude and direction.

Compression – the process of reducing the volume of a gas or fluid.

Controller – a device that manages and regulates the operation of a system.

Convection – the transfer of heat through the movement of a fluid or gas.

Simulation – the process of using a computer model to simulate the behaviour of a system.

Solenoid – a device that converts electrical energy into mechanical motion.

Strain – the deformation of a material under stress.

Coupling – a device used to connect two parts or components of a system.

Diode – a semiconductor device that allows current to flow in only one direction.

Electromagnetism – the study of the interaction between electric and magnetic fields..

Fluid mechanics – the study of the behaviour of fluids in motion.

Gearbox – a mechanical device used to change the speed and torque of a rotating shaft.

Heat exchanger – a device used to transfer heat between two fluids.

Hertz (Hz) – a unit of measurement for frequency.

Laser – a device that emits a narrow beam of light that can be used for cutting, welding, or measuring.

Load cell – a device used to measure force or weight.

Lubrication – the process of applying a substance to reduce friction between moving parts.

Machine learning – a type of artificial intelligence that allows computers to learn from data and improve performance on a specific task.

Mechatronics – a multidisciplinary field that combines mechanical, electrical, and computer engineering.

Microcontroller – a small computer chip that can be programmed to control the behaviour of a system.

Nanotechnology – the study of materials and devices on a microscopic scale.

Optics – the study of light and its behaviour.

Power electronics – the study of the behaviour of electrical power under different conditions.

Pressure sensor – a device used to measure the pressure of a gas or fluid.

Quality control – the process of ensuring that products meet the desired quality standards.

Resonance – the tendency of a system to oscillate at a particular frequency.

Signal processing – the study of how to extract useful information from signals.

System design – the process of designing a complex system that meets specific requirements.

Voltage regulator – a device that maintains a constant voltage in a circuit.

Welding – the process of joining two materials by heating them to a high temperature and causing them to fuse together.

Yaw – the rotation of an object around a vertical axis.

Source: <https://englishclassviaskype.com/blog/how-to-learn-english/english-vocabulary-for-engineers/>

Exercise 1.

Write in the vowels to the words given.

1. T H _ R M _ L C _ N D _ C T I V _ T _

2. V _ L T _ G _ R _ G _ L _ T _ R

3. S _ G N _ L P R _ C C _ S _ N G

4. M _ T _ R _ _ L P R _ P _ R T _ _ S

5. N _ N _ T _ C H N _ L _ G _

6. M _ C H _ N _ L _ _ R N _ N G

- 7. _ L _ C T R _ M _ G N _ T _ S M
- 8. S _ S T _ M D _ S _ G N
- 9. F L _ _ D M _ C H _ N _ C S
- 10. C _ M P _ T _ R _ _ D _ D D _ S _ G N

- Do you remember the meaning all the phrases?

Exercise 2.

Find words in the snake. Check if you understand their meanings. Create 3 sentences with them. Each sentence need to have at least 2 words from the snake.

Weldingtransducerinsulationsolenoidpressuresensorqualitycontrollubricationkine-
maticselectromagnetismaccelerationactuator

- 1.
- 2.
- 3.

Exercise 3.

Put the words in a correct order to make sentences.

- 1. The inspected they quality products team shipped the before were to control customers.
.....
- 2. The greenhouse used microcontroller was to the temperature control of the.
.....
- 3. The system boost amplifier was used to speaker the sound signal in a.
.....
- 4. The thousands every manufacturing plant produced of car engines day.
.....
- 5. The design kinematics engineer robot’s used to the of the motion arm.
.....
- 6. The consistent temperature was for a controller temperature in the responsible maintaining room.
.....
- 7. The improve signal antenna was roof on the to the quality of the mounted radio.
.....

- 8. The pneumatic compress compressor was to air for a system used.
.....
- 9. The was hour car's measured acceleration 0 to 60 miles from per at 7 seconds.
.....
- 10. The circuit diode reverse was protect used current to the spikes from voltage and.
.....

Exercise 4.

Are the statements below true or false? Correct the false ones.

- 1. Resonance is the tendency of a system to oscillate at a particular distance.
.....
- 2. System design is the transfer of heat through the movement of a fluid or gas.
.....
- 3. Circuit is a closed loop of conductive material that allows electrical current to flow.
.....
- 4. A controller is a set of instructions or rules that a computer program follows to complete a task.
.....
- 5. Algorithm is a process or set of rules to be followed in calculations. or other problem-solving operations, especially by a computer.
.....
- 6. Lubrication is the process of applying a substance to tighten friction between moving parts.
.....
- 7. The rotation of an object around a vertical axis is called yaw.
.....
- 8. Strain is the flexible deformation of an elastic material.
.....
- 9. Simulation and reconstruction mean the same.
.....
- 10. Voltage regulator is a device that changes a constant voltage in a circuit.
.....

Exercise 5.

Match the sentences halves.

1. Robots perform basic and repetitive tasks with.....
2. Many metals have very high thermal conductivity
3. The gearbox also operates in an automatic.....
4. The new handle will have to be welded.....
5. The basic working principle of a pressure sensor requires any proportional change.....
6. To understand how insulation works you need to understand the heat
7. Amplifiers in audio equipment take tiny electrical signals that contain
8. Fluid mechanics is crucial in manufacturing for optimising the design and operation of production process.....
9. A solenoid is a long, thin loop of wire, often wrapped around a metallic.....
10. The applications of nanotechnology in the food industry are immense.....
 - A. and include food manufacturing, packaging, safety measures and drug delivery.
 - B. musical frequencies and amplitudes and increase their strength.
 - C. greater efficiency and accuracy than humans, making them ideal for industries like manufacturing.
 - D. mode, making it a true automatic- manual transmission.
 - E. core, which produces a magnetic field when an electric current is passed through it.
 - F. which compares well to what is known about metal.
 - G. flow, which involves three basic mechanisms- conduction, convection and radiation.
 - H. such as injection moulding or casting.
 - I. in applied pressure to cause a physical reaction in the sensing element of the device.
 - J. again as it is not safe to be used on regular basis.

Exercise 6.

Multiple Choice Quiz on English Vocabulary for Engineers

1. What is the process of joining two materials by heating them to a high temperature and causing them to fuse together?
a) Soldering b) Welding c) Brazing d) Adhesive bonding
2. What is the ability of a material to conduct heat?
a) Thermal conductivity b) Thermal resistance c) Thermal expansion
d) Thermal capacity
3. What is the force that opposes motion between two surfaces that are in contact?
a) Friction b) Tension c) Compression d) Shear
4. What is a device that converts one form of energy into another?
a) Transducer b) Actuator c) Sensor d) Amplifier

5. What is the rotation of an object around a vertical axis?
 a) Pitch b) Roll c) Yaw d) Thrust
6. What is the ability of a material to resist deformation under stress?
 a) Ductility b) Elasticity c) Hardness d) Toughness
7. What is the study of the properties and behaviour of fluids?
 a) Dynamics b) Aerodynamics c) Fluid mechanics d) Kinematics
8. What is the process of designing a complex system that meets specific requirements?
 a) System analysis b) System engineering c) System integration d) System optimization
9. What is a quantity that has both magnitude and direction?
 a) Scalar b) Vector c) Matrix d) Tensor
10. What is the use of electricity to control mechanical systems?
 a) Mechatronics b) Thermodynamics c) Nanotechnology d) Metallurgy

Source: <https://englishclassviaskype.com/blog/how-to-learn-english/english-vocabulary-for-engineers/>

Exercise 7.

In the glossary find 3 words that may be connected with branches of engineering. Explain how they are connected with the following:

construction engineering:

-
-
-

civil engineering:

-
-
-

automotive engineering:

-
-
-

mechanical engineering:

-
-
-

electrical:

-
-
-

Exercise 8.

Which of the branch of engineering would you like to work in? Why? Use 3-5 words from the glossary to justify your choice.

.....
.....
.....

Exercise 9.

The evolution of technology.

Look at the photo. Discuss the following questions with your partner.

- What is the place? Why do you think so?
- What are the people doing?
- Is there any problem to be solved?
- What questions would you like to ask them?

.....

Students of Mechanics:



Source: Pexels

Students of Construction:



Source: Pexels

Exercise 10.

- In pairs brainstorm the main stages of evolution of the industry you would like to work in the future.

.....

.....

.....

.....

- Summarise the text. Use 5-6 words from the glossary to the summary.

.....

.....

.....

.....

How has the Industrial Revolution changed the world changed and what can we expect in the future?

Industry 1.0 – The Industry of Steam

The first industrial revolution began in England in the 1760s with the introduction of water and steam used to help transport goods from place to place. Steam was already known, however, it wasn't until this time that it was used in the industrial processes, making it the biggest breakthrough of its kind during the era. Industries such as glass, mining, agriculture, and textiles greatly benefitted from this as they were now able to produce larger quantities of items due to the introduction of mechanization.

Industry 2.0 – The Technological Revolution

The rise of the second industrial revolution began mostly in Britain, America, and Germany in the 1870s and was known as the “Technological Revolution.” During this time, electrical technology was introduced and powered machines unlike nothing else. This made machines much more user-friendly and was much more cost-efficient. It was also when mass production became a reality due to the creation of the assembly line. This allowed the invention and success of automobiles and planes.

Industry 3.0 – The Digital Revolution

The third industrial revolution in the 1970s sparked the beginning of IT and computer technology, known as the “Digital Revolution.” While the computers were much larger than what we currently use, they laid the foundational groundwork for current computers. While these computers were mostly automated, they did still need a human controller. Manufacturing and automation also advanced because of internet access, connectivity, and renewable energy. Industry 3.0 is still widely used in the workforce and has been a tremendous help in guiding Industry 4.0.

Industry 4.0 – Humans, Technology, and Sustainability

It’s been debated on when Industry 4.0 began, but the term was coined in 2011 with the industry seeing great growth in smart machines, storage systems, and production facilities not needing any human interaction. The start of Internet of Things (IoT) was created which is an interconnected network of machine devices and vehicles embedded with computerized sensing, scanning, and monitoring capabilities. Sustainability has also been a big factor in Industry 4.0 as the world continue to improve the environment. The hope is that by developing more green technology using Industry 4.0, the three pillars of sustainability (environmental, economic, and social) will be see a big improvement.

Industry 5.0 - The Industry to Come

It may seem almost like science-fiction, but the future of Industry 5.0 could be on the rise. This will be a time when humans and A.I. work side-by-side to improve the efficiency of production. The goal for Industry 5.0 is to produce better automation of the manufacturing process by having humans and robots work together and provide customers better customizations.

Source: <https://tech-labs.com/blog/evolution-industry-10-40-and-beyond>

- Think of the questions you would like to ask the author of the text.
.....
.....
.....
.....

1.7. Professions in engineering

- Brainstorm as many professions/trades related to Construction/Mechanics as you can.
- Which profession/ trade is the most risky/ungrateful/ well-paid/ challenging/ perspective?
- Which profession do you see yourself in? Why the one?

Professions/trades in construction

Architect – s a person who plans, designs, and oversees the construction of buildings.

Glazier – is a tradesperson responsible for cutting, installing, and removing glass.

Inspector – is a person who ensures structures meet not only the client’s expectations but also any relevant building codes and regulations.

Boilermaker – is a tradesperson who fabricates steels, iron, or copper into boilers and other large containers intended to hold hot gas or liquid, as well as maintains and repairs boilers and boiler systems.

Pipefitter/steamfitter – is a tradesman who installs, assembles, fabricates, maintains, and repairs mechanical piping systems.

Roofer – a person who constructs or repairs roofs.

Welder – a person who welds metal.

Plumber – is a tradesperson who specializes in installing and maintaining systems used for potable water, hot-water production, sewage and drainage in plumbing systems.

Civil engineer – a person who practices civil engineering – the application of planning, designing, constructing, maintaining, and operating infrastructure while protecting the public and environmental health.

Carpenter – a career in construction that requires much work with wood, fiberglass and drywall.

Project manager – has the responsibility of the planning, procurement and execution of a project, in any undertaking that has a defined scope, defined start and a defined finish; regardless of industry

Safety manager – is responsible for overseeing the safety of the work site.

Construction manager – a person who covers a number of roles including; site manager, contracts manager, construction estimator, building project

Construction worker/labourer – is a worker employed in the physical construction of the built environment and its infrastructure.

Electrician – a tradesperson specializing in electrical wiring of buildings, transmission lines, stationary machines, and related equipment.

Estimator – is the professional responsible for forecasting the cost of a construction project.

Ironworker – is a tradesman who works in the iron-working industry. Ironworkers assemble the structural framework in accordance with engineered drawings and install the metal support pieces for new buildings.

Surveyor – inspects the landscape of a particular project site, determining the ideal location for roads, Roofer- is a tradesperson who specializes in roof construction.

Roofers – replace, repair, and install the roofs of buildings, using a variety of materials, including shingles, bitumen, and metal.

House painter and decorator – is a tradesperson responsible for the painting and decorating of buildings, and is also known as a decorator, or house painter.

Professions/trades in mechanics

Automotive mechanic – his function is to inspect, maintain, do diagnostic testing, and mechanical repair of cars and small trucks.

Automotive technician – an assistant who supports experienced mechanics in various tasks.

Brake technician – deal with duties such as detecting and diagnosing issues with brakes, as well as fixing, adjusting and replacing brake parts.

Diesel mechanics – can work on a large variety of vehicles with diesel engines, including cars, trucks and generators.

Driving instructor – is a person who is hired by a new driver who is learning how to improve their skills - often for an upcoming practical test.

Heavy equipment mechanic – maintain, diagnose, repair, and adjust industrial machinery. This machinery includes mobile mechanical

Auto body technician/repairer – is a professional who repairs and refinishes automotive vehicle bodies and straightens vehicle chassis after a vehicle has been in a collision or accident.

Maintenance supervisor – mechanics can specialize in maintenance services such as oil changes or repairers technician provides tire repair service in an automotive repair facility.

Tire technician – a tire technician provides tire repair service in an automotive repair facility.

Vehicle inspector – is responsible for ensuring vehicles meet safety standards for the industry or sector they're used.

Shop owner – some automotive techs follow an entrepreneurial path and decide to work for themselves.

Race car mechanic – performs some of the same job duties as general automotive mechanics, they work with high-performance cars and under intense time.

Radio mechanics – installs and services equipment for radio transmission and reception.

Transmission specialist – it is a complex component that moves power from the car's engine to the wheels.

Exercise 1.

In the diagram find ten words related to the topic. They may be placed down, up, across or backwards.

T	I	R	E	S	S	T	F	G	B
X	E	Z	E	R	G	H	M	Z	R
R	A	C	E	C	A	R	B	X	A
M	E	C	H	A	N	I	C	F	K
Y	T	R	E	N	M	L	L	C	E
L	R	E	P	A	I	R	E	R	S
I	W	Z	X	O	O	C	R	R	S
R	Q	H	L	E	S	E	I	D	W
I	U	V	L	U	O	P	Q	A	N
V	E	H	I	C	L	E	R	D	N
S	H	O	P	O	W	N	E	R	E
P	I	P	E	F	I	T	T	E	R

- Do you remember what they mean?

Exercise 2.

Match words with their definitions.

1. Tire technician		A. works with wood, fiberglass and drywall.
2. Race car mechanic		B. forecasts the cost of a construction project.
3. Driving instructor		C. teaches how to improve their skills - often for an upcoming practical test
4. Safety manager		D. inspects, maintains, does diagnostic testing, and mechanical repair of cars and small tracks.
5. Carpenter		E. provides tire repair service in an automotive repair facility.
6. Estimator		F. plans, designs, constructs, maintains, and operates infrastructure while protecting the public and environmental health.
7. Architect		G. plans, designs, and oversees the construction
8. Automotive mechanic		H. oversees the safety of the work site.
9. Civil engineer		I. works with high-performance cars and under intense time.
10. Steamfitter		J. installs, assembles, fabricates, maintains, and repairs mechanical piping systems.

Exercise 3.

Complete the sentences with the words given: automotive technician, surveyor, plumber, maintenance supervisor, ironworker, architect, race car mechanic, driving inspector, shop owner, transmission specialist.

1. As awhat I need to do is quickly change the tires and refuel the car, ensuring it was ready to get back on the track in time.
2. The carefully evaluated the driver’s performance in order to assess its suitability to off road surfaces.
3. The diagnosed the complex engine issues to ensure the vehicle’s optimal performance and safety compliance.
4. A(n)..... takes into consideration all of the constraints involved in building a house.
5. Malfunctioning of a car, can paralyze your vehicle but our experienced team of expels in diagnosing and resolving issues properly.
6. In the job ofyou need to oversee the upkeep and repair of facility systems and conditions like heating, ventilation and air conditioning.
7. Being a by trade, he is able to install the new washing machine and mend the burst pipe.
8. The career of attracts me a lot as I am able to build the framework of steel bridges and skyscrapers.
9. In the entrepreneurial position of you have lots of freedom abut some business skills are essential.
10. Before commencing all the construction works we need to employ to do all necessary measurements of the land.

Exercise 4.

Divide the words given into 3 groups in a way that seems appropriate to you: architect, brake technician, safety manager, civil engineer, repairer, diesel mechanic, surveyor, project manager, transmission mechanic, tire technician, race car mechanic.

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- Add two extra word to each group above.

Exercise 5.

Think of any other professions that are not mentioned in the glossary. Present their definitions.

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Exercise 6.

Which of these profession would you like to specialise in?

- Why?
- What qualifications do you need to become the one?
- What problems may you need to overcome?

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Exercise 7.

Visit the website: Look at the list of construction and engineering courses there.

- Find the one you would like to complete. Why?
- How may it be useful in your future career?

<https://alison.com/courses/engineering>

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Exercise 8.

Work in pairs. Brainstorm strenghts and weaknesses of the course chosen in Exercise 7. Present them to your partner.

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Exercise 9.

Work in groups. Think of pros and cons of being an engineer?

PROS	CONS

Exercise 10.

Read the article.

- How far your ideas agree with the ones presented?
- Which point do you agree/ disagree the most?

5 Pros of Being an Engineer

There are several advantages of being an engineer, and most people in this field enjoy many aspects of the job, leading to a lasting and fulfilling career. The pros of being an engineer can include any of the following:

1. Decent Salary

Most engineers make a decent salary that will only grow the longer they remain in this career field. According to the U.S. Bureau of Labour Statistics, the average median salary for an engineer was \$79,840 as of May 2021. However, this number can fluctuate depending on the engineering industry or specialty in which you work.

Compared to other career fields, the income level of an engineer is relatively high, making this a huge advantage for this line of work. And, as you gain more education and experience, your salary will likely increase over time.

Other factors can affect your salary as an engineer, as well. For example, engineers working in hazardous or dangerous environments may make more money. Additionally, your salary may change depending on the company you work for.

Because this field of work can offer a wide salary range, it's best to be educated on the median salary for the engineering industry or specialty in which you would like to work. While a company may not directly tell you your projected salary range during a job interview, you will have a better idea of where your income level may be if you land the position.

2. Good Job Prospects

Finding the right engineering position for you can be challenging. Working with an engineering recruiting agency is a great way to explore the career options and job prospects available to you, since it allows you to work one-on-one with a recruiter. The recruiter will help you find the right position that fits your expectations, skill level, and personal needs.

Additionally, the engineering field is constantly changing and evolving. New specialties rise up all the time, and the need for experienced engineering candidates continues to grow. For college graduates trying to land an entry-level engineering position, there are likely many job prospects to consider.

3. Many Specialties to Choose From

The list of engineering industries is endless, but there are typically fast-growing industries that remain relatively popular among engineering job candidates. These may include:

- Civil
- Mechanical
- Biomedical
- Aerospace
- Electrical
- Environmental
- Chemical

With the possibility of so many industry options to choose from, you have more flexibility as an engineer to choose a job you are passionate about and have the knowledge and experience to succeed.

4. Work Environments Can Vary

Many people may be under the assumption that an engineering position requires you to sit in an office all day. While there are jobs in this field that require you to be on a computer for long periods of time, there are also many specialties that have varying work environments depending on the project.

Engineers work closely with people in other industries, like manufacturing or architecture. Because of this, you may end up working in other locations, such as on an outdoor job site. Changing your environment keeps the job interesting and prevents you from being stuck inside all day doing monotonous tasks.

5. Transferrable Skills and Experience

Working as an engineer can give you life skills you can take with you going forward in your career. Not only will you learn the technical side of your job, but you may also gain skills and experience in leadership, problem-solving, creativity, teamwork, and more.

These skills may not only apply to your job; they can also be transferred to real-life tasks, like remodeling a home or becoming the leader of a group of people.

4 Cons of Being an Engineer

There are many disadvantages of being an engineer, as well. While these negatives aren't meant to make or break your decision to become an engineer, they should be considered as you enter into this career field.

1. Long Hours

Between large workloads and quick deadlines, engineers tend to work long hours. To effectively meet the expectations of the company, you may have to work late nights or even weekends.

The number of hours you work will depend on your position, assigned projects, the company you work for, and many other factors. Overall, you will likely have to work outside normal hours at some point or another to meet project deadlines—especially if projects require a team effort or become extremely complex.

If you're feeling discouraged by the possibility of working long hours as an engineer, consider the additional industry knowledge and experience you will gain from more hours on the job. Working long hours can also foster effective time management skills as you create a work schedule to meet each deadline.

2. Degrees Are Expensive and Challenging

It takes hard work to land a position in engineering. If you're expecting to receive a larger salary and perform well in your position, you have to take initiative in doing the prep work first.

Engineering degrees tend to have harsh curriculum and can be incredibly challenging for college students. They can also be expensive, especially if your engineering specialty requires a longer amount of time spent in school.

The industry norm is to have at least a bachelor's degree, but many engineers also achieve a master's or doctorate before entering the engineering job market. Obtaining these degrees can take a lot of time and money, but it will also ensure that you're entering the career field with the knowledge you need to succeed.

And, with a higher skill set, you can work in a position that receives a higher income amount, allowing you to cover the costs of going to school.

3. Competitive Career Field

The engineering field is incredibly competitive. In fact, many engineering recruiters struggle to find top engineering candidates because the competition between qualified job seekers is so high.

If you're looking to pursue a job in engineering, you'll have to showcase your experience and talents in a unique way to impress recruiters and hiring managers. One way to do this is by acquiring additional education and certifications to advance your skills and deepen your knowledge, thereby making your resume more unique and allowing you to stand out from the competition.

Engineering is a competitive career field, but it's still possible to land a great position if you know how to stick out from the crowd.

4. Continuous Education and Certification

The world of engineering is always changing and developing, causing many engineers to continually develop their knowledge. This may require additional education, such as pursuing a higher degree level through university courses or obtaining certain certifications on the latest technology in the industry.

Having to pursue continuous education can be both time- and money-consuming. However, succeeding in an engineering role will require you to continuously learn about new trends—no matter what level you are in your career.

Source: <https://www.austintec.com/pros-cons-being-engineer/>

- In the text find the words that are new to you. Check their meanings.

1.8. Health and safety in a workplace

- What are the most important H&S rules in any workplace?
- Which H&S rules are the most often broken in a workplace?
- What does protective equipment consist of?

Accidents and injuries

Slip – to slide on or down a slippery surface, on the stairs.

Hit – to move your hand or an object onto the surface of something so that it touches it.

Burn – an injury to the skin or other organic tissue primarily caused by heat or due to radiation, radioactivity, electricity, friction or contact with chemicals.

Falls – to move from a higher to a lower level, typically rapidly and without control.

Cut – to make an opening, incision, or wound in (something) with a sharp-edged tool or object.

Poisoning – the fact of being affected by or contaminated with poison.

Sprain – twist the ligaments of (an ankle, wrist, or other joint) violently so as to cause pain and swelling but not dislocation.

Broken bone/a fracture – a crack or a break of a bone.

Backaches – prolonged pain in one's back.

Effects of hazardous materials

Headache – a continuous pain in the head.

Vomiting – eject matter from the stomach through the mouth.

Rash – an area of redness and spots on a person's skin, appearing especially as a result of allergy or illness.

Dizziness – a feeling that you might faint.

Cough – expel air from the lungs with a sudden sharp sound.

Sore eyes – the inflammation of the thin layer of tissue covering the front of the eye.

Personal protective equipment

Safety glasses/goggles – close-fitting glasses with side shields, for protecting the eyes from glare, dust, water, etc.

Safety shoes/boots – a type of footwear that is designed to protect your feet from potential hazards.

Dust mask – a flexible paper pad held over the nose and mouth by elastic or rubber straps for personal comfort against non-toxic nuisance dusts.

Ear plugs/ear muffs – ear coverings connected by a flexible band and worn as protection against cold or noises.

Face shield – a protective covering for all or part of the face that is commonly made of clear plastic and is worn especially to prevent injury (as from impact, extreme temperature, or a dangerous substance).

Helmet – a hard or padded protective hat.

Harness – a set of straps and fittings by which a person is fastened to be kept safe.

Respirator – an apparatus worn over the mouth and nose or the entire face to prevent the inhalation of dust, smoke, or other noxious substances.

Apron – a protective garment worn over the front of one’s clothes and tied at the back.

Coverall – a one-piece protective garment worn for heavy manual work; a boiler suit.

Exercise 1.

Cover the glossary. Match words with their definitions given.

1. Apron		A. the fact of being affected by or contaminated with poison.
2. Goggles		B. a set of straps and fittings by which a person is fastened to be kept safe.
3. Burns		C. an early signal that something bad or dangerous might happen.
4. Poisoning		D. a protective garment worn over the front of one’s clothes and tied at the back.
5. Slips		E. to move a short distance away from something so that you are safe.
6. Caution		F. an injury to the skin or other organic tissue primarily caused by heat or due to radiation, radioactivity, electricity, friction or contact with chemicals.
7. Harness		G. used to instruct staff and visitors when certain behaviours or actions are not allowed.
8. Warning		H. slide on or down a slippery surface, on the stairs.
9. Stand clear		I. close-fitting glasses with side shields, for protecting the eyes from glare, dust, water, etc.
10. Prohibition		J. an indication that a bad or dangerous situation is likely to develop.

Exercise 2.

Divide words into 3 groups in any way that seems appropriate to you: earmuffs, dizziness, coveralls, headache, sprain, fracture, helmet, skin rash, falls, eyesores, hits, dust mask.

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- Add two more words in each group.

Exercise 3.

Look at the warnings. What danger may be connected with them.

1. There are men working on the roof today.....
2. The new security company uses dogs.....
3. There are power cables near the fence.....
4. There is a lot of debris on the ground.....
5. We are erecting the scaffolding this afternoon.....
6. We are using the crane today.....
7. We are moving the timber today.....
8. There is oil on the ground.

Exercise 4.

Match the sentences halves.

1. You are responsible for health and safety
2. Personal protective equipment at work
3. Persons entering these premises must
4. Employees must take care of their own health and safety not
5. All aspects of health and safety
6. Spillages of components or liquids
7. Smoking is prohibited, except for/at
8. Electrical work can only be performed
9. Works involving height of 2 m or above

10. Keep area tidy and place
- A. of everyone affected by your business.
- B. endangering others and not misusing premises of equipment.
- C. by qualified and authorised professionals.
- D. all trash in appropriate waste bins.
- E. require work permit and fall arrest equipment.
- F. is a must.
- G. of employees must be covered.
- H. should be cleaned up immediately.
- I. the designed smoking areas off the company property.
- J. comply with all safety regulations.

Exercise 5.

In the glossary find words that are new or may seem useful to you. Make your own sentences with them. The sentences must relate to H&S.

1.
2.
3.
4.
5.

Exercise 6.

Work in pairs. Look at the picture. Try to predict as many H&S problems as possible.



Source: Pexels

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Exercise 7.

Think of H&S rules that need to be applied in order to avoid the problems presented in Exercise 6.

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Exercise 8.

What kind of problems related to H&S do you think are the most common in your future work environment? List 4/5 of them.

- 1.
- 2.
- 3.
- 4.
- 5.

Exercise 9.

What H&S rules need to be complied in order to avoid the problems listed above?

- 1.
- 2.
- 3.
- 4.
- 5.

Exercise 10.

Work in pairs. Act out a dialogue between a supervisor and an apprentice.

- Supervisor – instruct the apprentice on H&S rules in the workplace.
- Apprentice – ask your supervisor about details concerning the rules.
- Talk about 4 rules.

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Reading

- How important do you think health and safety is for companies?
- How can HR departments encourage a healthy and safe work environment?

Exercise 11.

Read the text. Do these statements match the information in the text? Mark each statement as true (T) or false (F).

1. Having a good health and safety record can definitely help companies attract candidates.
2. Employers can keep a workplace healthy and safe by choosing employees who have a proven record of preventing and avoiding accidents.
3. Managers' performance should be assessed mainly on the basis of the safety record of the teams they manage.
4. All managers should be responsible for recording the number of accidents that take place in the departments or teams that they manage.
5. Bonus payments for groups or teams of workers should depend on those teams having a good safety record.
6. Safety training is only essential during the early months of a new job, because that is when most accidents tend to happen.
7. Estimates of the total cost of work-related ill-health and accidents are incomplete, probably because the authorities do not see them as being sufficiently important.
8. The figure of US\$3 billion for compensation of accident victims in Canada does not represent the true cost for the Canadian government.

How important do you think health and safety is for companies? How can HR departments encourage a healthy and safe work environment? Discuss, then compare your ideas with those in the reading text.

Health and wellness and human resource management

The employer has a legal duty to maintain a healthy and safe workplace. Health and safety considerations can have an impact on key Human Resource Management (HRM) activities such as selection, appraisal, rewards and learning, and development. Health and safety considerations and policy can affect the selection process in two ways. First, it is safe to assume that during the recruitment process, potential applicants will be more attracted to an organization that has a reputation for offering a healthy and safe work environment for employees. Second, the maintenance of a healthy and safe workplace can be facilitated in the selection process by choosing applicants with personality traits that decrease the likelihood of an accident. The appraisal of a manager's performance that incorporates the safety record of a department or section can also facilitate health and safety. Research suggests that safety management programmes are more effective when the accident rates of their sections are an important criterion of managerial performance.

Safe work behaviour can be encouraged by a reward system that ties bonus payments to the safety record of a work group or section. Some organizations also provide prizes to their employees for safe work behaviour, a good safety record or suggestions for improving health and safety. Training and human resources (HR) development play a critical role in promoting health and safety awareness among employees, and indeed the Health and Safety at Work Act (HASAWA) 1974 requires employers to provide instruction and training to ensure the health and

safety of their employees. Studies indicate that safety training for new employees is particularly beneficial because accidents are highest during the early months of a new job.

On the question of the importance of occupational health and safety, although economic cost and HR considerations will always be predominant for the organization, the costs of ill-health and work-related accidents are not only borne by the victims, the families and their employers; the costs of occupational ill-health and accidents are also clearly borne by the taxpayer and public sector services. The health care sector, for example, bears the costs of workplace ill-health and accidents. Reliable estimates of the total cost of occupational ill-health and accidents are incomplete, which is perhaps symptomatic of the low priority given to this area of work. The Health and Safety Executive (HSE) has admitted that although occupational diseases kill more people in the UK each year than industrial accidents, there is only limited information on the former. An official survey in 1993 put the cost to society for deaths and accidents (excluding occupational disease) in British workplaces at £10-15 billion, or 1.75-2.75 per cent of the gross domestic product. In Canada, compensation for victims of workplace accidents exceeds US\$3 billion, this figure excluding the cost to the public health care system resulting from long-term work-related illnesses.

Adapted from *Human Resources Management*, Bratton & Gold, ©John Bratton and Jeff Gold, 1994-2007, pp. 481-2.

Discuss one or more of these questions.

1. *It is safe to assume that during the recruitment process, potential applicants will be more attracted to an organization that has a reputation for offering a healthy and safe work environment for employees. Is this true?*
2. *The maintenance of a healthy and safe workplace can be facilitated in the selection process by choosing applicants with personality traits that decrease the likelihood of an accident. How could a company do this? Do you think it would work?*
3. *How should the responsibility for maintaining health and safety in the workplace be divided between individuals, companies and the government?*

Source: <https://www.onestopenglish.com/esp-lesson-plans/health-and-safety/552771.article>

1.9. First aid

- Think of the vocabulary related to first aid.
- Think of simple instructions that need to be given emergency situations.
- What are the most common emergency situations in a work place?

Parts of human body

The head

Hair – the mass of thin thread-like structures on the head of a person, or any of these structures that grow out of the skin of a person.

Forehead – the flat part of the face, above the eyes and below the hair.

Eye – one of the two organs in your face that are used for seeing.

Eyebrow – the line of short hairs above each eye in humans.

Eyelid – either of the two pieces of skin that can close over each eye.

Eyelash – any of the short hairs that grow along the edges of the eye.

Ear – the organ that enables hearing.

Nose – the part of the face that sticks out above the mouth, through which you breathe and smell.

Cheek – the soft part of your face that is below your eye and between your mouth and ear.

Mouth – the opening in the face of a person or animal, consisting of the lips and the space between them, or the space behind containing the teeth and the tongue.

Lip – one of the two soft parts that form the upper and lower edges of the mouth.

Chin – the part of a person's face below their mouth.

Neck – the part of the body that joins the head to the shoulders.

Trunk

Trunk – the main part of a person's body, not including the head, legs, or arms.

Thorax/chest – the part of the vertebrate body between the neck and the abdomen.

Abdomen – the lower part of a person's, containing the stomach, bowels, and other organs.

Backbone – the row of connected bones that go down the middle of the back and protect the spinal cord.

Buttock – one of two round, fleshy mounds of tissue behind the pelvis.

Upper extremity/upper limb

Upper extremity – the part of the body that includes the arm, wrist, and hand.

Shoulder girdle – the bony ring, incomplete behind, which serves for the attachment and support of the upper limbs.

Shoulder – one of the two parts of the body at each side of the neck that join the arms to the rest of the body.

Arm – either of the two long parts of the upper body that are attached to the shoulders and have the hands at the end.

Forearm – the lower part of the arm, between the wrist and the elbow (= the middle of the arm where it bends).

Elbow – the part in the middle of the arm where it bends.

Hand – the part of the body at the end of the arm that is used for holding, moving, touching, and feeling things.

Wrist – the part of the body between the hand and the arm.

Palm – the inside part of your hand from your wrist to the base of your fingers.

Finger – any of the long, thin, separate parts of the hand, especially those that are not thumbs.

Finger nail – the hard, slightly curved part that covers and protects the top of the end of a finger.

Thumb – the short, thick finger on the side of your hand that makes it possible to hold and pick things up easily.

Lower extremity/lower limb

Hip – the area below the waist and above the legs at either side of the body, or the joint that connects the leg to the upper part of the body.

Thigh – the part of a person's leg above the knee.

Knee – the middle joint of the leg that allows the leg to bend.

Calf – the thick curved part at the back of the human leg between the knee and the foot.

Leg – one of the parts of the body of a human or animal that is used for standing or walking.

Ankle – the joint between the foot and the leg, or the thin part of the leg just above the foot.

Foot – the part of the body at the bottom of the leg on which a person or animal stands.

Heel – the rounded back part of the foot.

Toe – any of the five separate parts at the end of the foot.

Toe nail – the hard, slightly curved part that covers and protects the end of a toe.

Instep – the curved upper part of the foot between the toes and the heel, or the part of a shoe or sock that fits around this.

Medical equipment

Scissors – a tool used for cutting paper, cloth, etc.

Syringe – a cylinder-shaped piece that attaches to a needle and can be filled with liquid.

Cotton wool – cotton in the form of a soft mass, usually used for cleaning your skin: cotton wool balls/pads.

Disposable gloves – the gloves that are thrown away after they have been used.

Adhesive type – long piece of materials capable of joining permanently to surfaces by an adhesive process.

Dressing pack – a set of coverings that is put on a wound to protect it while it heals.

Bandage – a long piece of cloth which is wrapped around an injured body part.

Gauze – is a type of light, soft cloth with tiny holes in it.

Tweezers – a small instrument like a pair of pincers for plucking out hairs and picking up small objects.

Blood pressure monitor – a tool that measures the force of blood flow through a person's body.

Dressing – protective covering that is placed over a wound.

First aid kit – a small box containing items such as bandages, plasters, and antiseptic wipes for use in giving help to a sick or injured person until full medical treatment is available.

Surgical mask – face cover used during medical procedures.

Plasters – an adhesive strip of material for covering cuts and wounds.

Describing pain

A throbbing pain – comes and goes rhythmically.

A sharp pain – strong and sudden.

A burning pain – feels like fire.

A stabbing pain – feels like something sharp is stuck to you.

A shooting pain – travels fast along part of your body.

A dull ache – is steady and not too painful.

A gnawing pain – feels like it is eating you.

A cramping pain – feels like a muscle is being squeezed.

Pain intensity

Mild pain – barely noticeable. Nagging, annoying, but doesn't really interfere with daily living activities.

Slight pain – small in quantity or degree; not much or almost none.

Moderate pain – Interferes significantly with daily living activities.

Unbearable pain – giving extreme discomfort that is overwhelming and unendurable.

Agonizing pain – extremely painful.

Pain durability

Constant – not changing or varying; uniform; regular; invariable.

Frequent – happening at short intervals: often repeated or occurring.

Occasional pain – happening sometimes, but not regularly or often.

Chronic – persisting for a long time or constantly recurring.

Persistent – caring on for longer than 12 weeks despite medication or treatment.

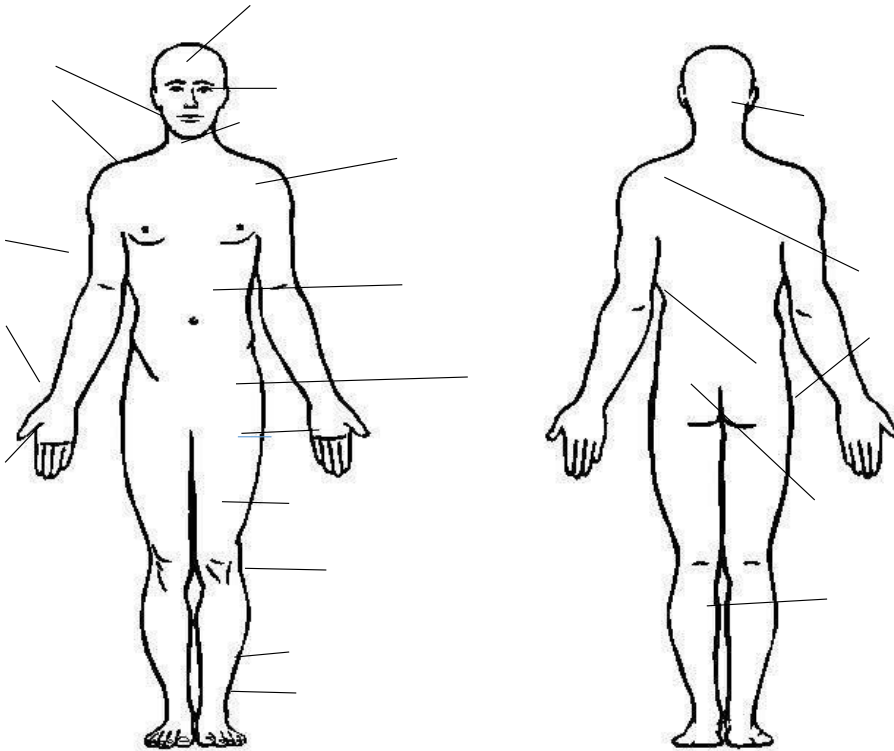
Getting better – improving.

Getting worse – becoming more serious.

Staying the same – being at the same level/intensity.

Exercise 1.

Name the parts of the body.



Exercise 2.

Write in the vowels to the words given.

1. F _ r _ h _ _ d
2. E _ _ l _ s h
3. _ n k l _
4. W r _ s t
5. F _ n g _ r
6. _ l b _ w
7. _ n s t _ p
8. F _ r _ _ r m
9. H _ _ l
10. T h _ m b

Exercise 3.

Match words with their definitions.

A. Forceps		1. travels fast along part of your body.
B. Gauze		2. a small bottle or container used for storing liquids.
C. shooting pain		3. an adhesive strip of material for covering cuts and wounds.
D. Syringe		4. persisting for a long time or constantly recurring.
E. Vial		5. feels like a muscle is being squeezed.
F. Medicine pot		6. the gloves that are thrown away after they have been used.
G. Plasters		7. is a type of light, soft cloth with tiny holes in it.
H. Chronic		8. a small container used for distributing medications to patients.
I. Disposable gloves		9. a cylinder-shaped piece that attaches to a needle and can be filled with liquid.
J. cramping pain		10. instrument used during operations and medical procedures

Exercise 4.

Put the sentences for the treatment of a cut finger in the correct order.

- clean the cut under running water.
- cover the cut with the dressing or plaster.
- put on disposable gloves.
- wash your hands.
- dry the cut using a dressing or cotton wool.

Exercise 5.

Complete the sentences with the words given: burning, dull, sharp, shooting, stabbing, tingling, throbbing.

1. I still have a headache. It's like a drum, a real pain.
2. There is a ache in my lower back. It's quite a mild pain but sometimes I can feel a pain, like an electric shock.
3. I get this feeling two or three hours after food and sometimes it's very sore.
4. It's a kind of feeling, like pins and needles. I get it in my feet as well, but it's better than last week.
5. Yes, it's a pain, like a knife. It's a severe pain. It really hurts a lot.

Exercise 6.

Below is the "List of Priorities in an Emergency Situation". Read it.

1. Evaluate the situation.
 - a. Is it safe for you?

- b. Is it safe for the victim?
- c. Do not move the victim unless there is immediate danger.
- 2. Call for help.
- 3. Determine if the victim is conscious. Tap and shout “are you alright, are you okay?”
- 4. If no help arrives, send someone for help or call for help again.
- 5. Begin the ABC’S.
 - a. Open the Airway by using the HEAD TILT/CHIN LIFT method.
 - b. Check for Breathing by LOOKING, LISTENING and feeling for breathing for 5 seconds.
 - c. Check for Circulation or pulse by placing 2 fingers on the carotid artery (located on the side of the neck) for 10seconds. Only do CPR if you are trained.
- 6. Check for bleeding.
- 7. Check for poisoning.
- 8. Treat and prevent shock.

Exercise 7.

Cover the text and with your partner ask each other the questions about the text.

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Exercise 8.

Work in pairs. Think of an emergency situation that may happen in your future place of work.

- Describe the situation.

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.....

.....

- What emergency procedures may you apply?
- What medical equipment may you use?

.....

.....

.....

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1.10. Tools and equipment – mechanics

- What is the difference between tools and equipment?
- Which tool and piece of equipment is the most essential one for you?
- Do you think the quality of equipment is generally getting better or getting worse? Why?

Screwdrivers – are a crucial tool for professional mechanics, used for driving screws and bolts in and out of components.

Socket set/ratchet set – serves various purposes in a mechanics' line of work. A ratchet and socket set are useful tools to remove lug nuts, bolts and the like.

Wrenches – are used to turn nuts and bolts, either tightening them to secure a part or loosening these connectors to remove a part.

Adjustable wrench – an open-end wrench with the ability to adjust the wrench's jaws to accommodate different-sized fasteners.

Allen wrench set – is used on bolts and screws that have a hex-head indentation for the tool.

Lug wrench – the long handle on the breaker bars allows more leverage to be brought to bear to loosen the extremely tight bolt.

Spark plug wrench – it is a single-purpose socket wrench. The tool is designed exclusively to remove and fit spark plugs in an engine.

Pliers – are a versatile tool for professional mechanics, used for gripping, cutting and bending wires, hoses and other components.

Hammer – is perfect for beating dents out of metalwork, separating components, and re-shaping parts.

Impact wrench – offers strong and productive success in fastening and removing bolts and nuts.

Oil filter wrench – is a tool designed specifically to help vehicle mechanics with oil changes.

Torque wrench – is a tightening tool to adjust a vehicle's nuts, bolts, and screws.

Multi meter – is an essential diagnostic tool for mechanics as it can measure voltage, current and resistance in electrical systems.

Diagnostic tools – are essential for professional mechanics, allowing them to quickly identify and fix problems with a vehicle's engine and other systems.

Funnels – it helps mechanics top off fluids during vehicle maintenance.

Flashlight – it is a good light source to diagnose problems and make repairs correctly.

Tire gauge – it checks the air pressure in tires.

Jack – is an essential tool to work on the underside of cars and engines, to remove wheels to access hard-to-reach spots, or to fix a puncture.

Balancer – a tool that is used to balance an item.

Magnetic dish – it provides a convenient place to store nuts and bolts as you remove them on a job.

Pry bar – it is necessary to help apply leverage to tighten belts or check for play in suspension joints.

Vice grips – they provide a firm and versatile grip for mechanics.

Air compressors – are a versatile power tool for professional mechanics, providing a source of compressed air for use with impact wrenches.

Welder – an item that is used to join together (metal parts) by heating the surfaces to the point of melting.

Battery analyser – is an electronic tester used to assess the battery’s state.

Callipers – is used to measure the distance between two opposite sides of an object accurately.

Electric drills – are an essential power tool for professional mechanics, used for drilling holes, tapping threads and driving screws.

Floor jack – it is used if you do your own repair work on a newer vehicle, a heavy-duty floor jack with lift pump is one of the must-have automotive tools.

Oil pan – an oil pan is used as a drainage pan to collect a range of fluids from a car’s systems that require maintenance.

Exercise 1.

Divide the words given in the way that seems appropriate to you. Justify your choice: electric drill, screwdriver, wrenches, a battery analyser, funnels, flashlight, a socket set, oil pan, jack, magnetic dish, tire gauge, callipers.

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- Think of one/two extra words to add to each group.

Exercise 2.

Find words in the snake and create 3 sentences with them.

Batteryanalyseroilpanmagneticdishvicegripssparkplugwrenchadjustablewrench-torquewrenchsocketset

1.
2.
3.

Exercise 3.

Match words from the first column with the words from the second one to make phrases related to the unit. Make sure you understand all the phrases.

Socket	jack	
Vice	wrench	
Magnetic	bar	
Battery	wrench	
Adjustable	set	
Floor	analyser	
Pry	grips	
Impact	dish	

Exercise 4.

Match words with their definitions.

1. Floor jack		A. It is an essential tool to work on the underside of cars and engines, to remove wheels to access hard-to-reach spots, or to fix a puncture.
2. Battery analyser		B. It is perfect for beating dents out of metalwork, separating components, and re-shaping parts.
3. Oil pan		C. The long handle on the breaker bars allows more leverage to be brought to bear to loosen the extremely tight bolt.
4. Jack		D. It is an electronic tester used to assess the battery's state.
5. Electric drills		E. it helps mechanics top off fluids during vehicle maintenance.
6. Hammer		F. It serves various purposes in a mechanics' line of work. A ratchet and socket set are useful tools to remove lug nuts, bolts and the like.
7. Lug wrench		G. It is used if you do your own repair work on a newer vehicle, a heavy-duty floor jack with lift pump is one of the must-have automotive tools.
8. Tire gauge		H. They are an essential power tool for professional mechanics, used for drilling holes, tapping threads and driving screws.
9. Funnel		I. It checks the air pressure in tires.
10. Ratchet set		J. It is used as a drainage pan to collect a range of fluids from a car's systems.

- Which of the pieces of equipment/ tools are the most needed to perform your future job well? Why?

Exercise 5.

Work in pairs.

- Student A. describe one of the tools or pieces of equipment given above. DO NOT tell its name.
- Student B. Guess the name of described item.
- Next, change rules.

.....

.....

.....

Exercise 6.

Think of 3 more examples of pieces of equipment/ tools needed in your future profession that are not mentioned above. Say what they are and what they are used for.

1.
2.
3.

Exercise 7.

Find one extra word in sentences. Some sentences are correct.

1. In repairing cars the main task is to diagnose the problem accurately and extremely quickly.
2. Mechanics job may involve the repair of the specific part of a vehicle or the replacement of the one or more unnecessary parts.
3. Preventive maintenance is also a fundamental part of a mechanics job, but this is not possible in vehicles that are not regularly maintained.
4. We often have to quote higher prices for the customers before commencing the job or after partial disassembly for inspection.
5. With the rapid advancement in technology, the mechanics job has evolved from purely mechanical , to include electronic technology.
6. A mechanic services and repairs automobiles, never specializes in one or more automobile brands or sometimes works with any brand.
7. Apprentice certified mechanics work under master mechanics for a specified number of years before they work on their own.
8. Automotive Service Excellence (ASE) is a non-profit household organization that tests and certifies automotive professionals so that the shop owners and service customers can better gauge a professional's level of expertise before contracting the professional's services.
9. A vehicle's Original Equipment Manufacturer (OEM) often provides and requires additional training as part of the dealership franchise agreement.

10. The United States Environmental Protection Agency (EPA) requires any person who repairs or services a motor bicycle vehicle air conditioning system for payment or bartering to be properly trained and certified under section 609 of the Clean Air Act.

Source: https://en.wikipedia.org/wiki/Auto_mechanic

- Are there in your country any organization similar to EPA, ASE or OEM?

Exercise 8.

Work in pairs. Analyse the offers for impact wrenches on the website:

<https://www.screwfix.com/c/tools/impact-drivers-wrenches/cat830838>

- Find the difference between them.
- Choose the one that suits you best. Say why.

.....
.....
.....

Exercise 9.

Work in pairs. Imagine you want to set up a workshop. Make the list of 7-10 the most important tools and equipment that are needed for the start. Use the Automotive Mechanic Tool Checklist attached below. Justify your choice.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Exercise 10.

- How to choose machinery and equipment for an auto repair shop?
- How to find reliable automotive tool manufacturers?
- What tools and equipment are essential for auto repair shops?
- Will your shop provide car hand tools for mechanics?
- Buy or lease equipment needed for an auto repair shop?
- How to keep your auto repair shop equipment in good condition?

Read the text and complete it with the sentences given.

- A. Pay attention, especially to equipping your shop with specialty tools, as it is a massive part of the costs involved in getting started.
- B. Are you going to service luxury or high-tech cars?
- C. For instance, if you decide to go after auto body repairs, your equipment will include paint tools, an air compressor, a slide hammer, a dual-action sander, etc.
- D. A limited automotive tool kit you'll slowly extend with time would be enough for a one-man shop.
- E. However, buying much of everything initially is not recommended because it may not meet market demand.

Automotive Tools And Equipment: What To Consider When Opening A Car Repair Shop
In this blog post, you'll find five topics you should carefully think through before acquiring specialty car service tools and equipment for your new-found shop.

Table of Contents

Congratulations! You've decided to go after your mechanic's dream and become your own boss. Going down this road is exciting, but before you do it at full throttle, look at your budget plan from multiple angles. 1..... As an entrepreneur, you want to maximize your investment, so consider what is essential before buying fantastic new automotive tools & equipment.

How to Choose Machinery and Equipment For an Auto Repair Shop?

Adequately selected equipment will allow you to provide quality services for diagnosing, repairing, and maintaining vehicles. 2 You have to remain reasonable and purchase just enough to handle the workload. Therefore, consider the following aspects thoroughly when working on your auto repair shop plan:

Specialization. What auto shop will you run—a general mechanic or specialty enterprise? 3 If you plan to do different things, this collection won't be among your essential automotive repair tools unless you offer a wide range of services from the beginning.

Future goals. Are you dreaming of building a network, or just want to keep it as a small family business? 4 If you plan to become a niche leader in your area and beyond,

schedule regular purchasing and reinvest the money you'll earn with the first shop in assorted tools for your future locations.

Target audience. What car brands are popular on the market? 5..... To meet the needs of each type of potential customer, you will need different equipment.

Budget. The cost of garage tools depends on many criteria, mainly the manufacturer, technical characteristics, and service life. For instance, if you'd like to support local businesses, you will probably have to plan another budget size compared to purchasing from international companies.

Must-have digital tools. To run a successful car repair business nowadays, you'll need software to keep accurate records of everything in your automotive shop, including equipment.

How to Find Reliable Automotive Tool Manufacturers?

1.11. Tools and equipment – construction

- Which tool should every student of Construction have? Why?
- Are there any universal tools used in the profession? What are they?
- Which brand tools and equipment do you find the best quality ones? What makes them better?

Bolster – is like chisel but it is used to cut bricks. Its cutting edge is wider than the width of brick. It is useful for accurate cutting of bricks.

Circular saw – is used to cut the wood boards, frames etc. It is used when accurate cutting is required in less time. It is safer than hand saw.

Straight edge brushes – are used to provide finishing to the plastered surface especially at corners and edges of walls.

Digging bar – is solid metal rod with pin shape at the bottom. It is also used to dig the hard surfaces of ground.

Trowel – is used to lift and apply the cement mortar in small quantities. It is made of steel and wooden handle is provided for holding.

Tile cutter – it is used to cut the tiles.

Wedge – it is a small hard metal blade which is used to cut the rock surfaces with the help of sledge hammer.

Jack plane – is used in the wood work to smoothen the surface of doors and windows etc.

Float – is made of wood which is used to smoothen the plastered concrete surface. It contains handle on its top and smooth wooden surface on its bottom.

Boning rods – are made of wood and they are T shape. They are used to level the excavated trench throughout its length.

Spade – is used to dig the soil for foundation trenches etc. It contains metal plate at the end of long wooden handle.

Mason's square – is used to achieve perfect right angle at the corner of masonry wall.

Chisel – is generally used in wood work and this must be useful to remove the concrete bumps or excess concrete in hardened surface.

Hammer – a tool with a heavy metal head mounted at right angles at the end of a handle, used for jobs such as breaking things and driving in nails.

Spirit level – it is used in brick masonry to check the level of the surface.

Brick hammer – is used to cut the bricks and also used to push the bricks if they come out of the course line.

Measuring wheel – is used to measure the distances or lengths. It contains a wheel of known diameter, which record the number of complete revolutions from which the distance can be measured.

Scratchers – plastering of a surface is carried out layer wise. Minimum 2 coats are necessary for plastering. To provide the good bond between the coats, bottom layer is scratched.

Bump cutter – is used to level the concrete surfaces like concrete floors, foundations etc. It is also called screed.

Concrete mixer – is machine which mixes the ingredients water, fine aggregate, coarse aggregate and cement to deliver the perfectly mixed concrete.

Wheelbarrow – is used for the purposes of moving materials and facilitating logistics.

Pick axe – is used to excavate the soil. It is more suitable for hard soil which is quite difficult to dig with spade or hoe.

Polisher – is used to smoothen the surface of tiles, wood works etc. The smoothening makes them shine and the process is called polishing.

Putty knife – is used level the putty finishing and also used to reduce the thickness of finish when it is more thick.

Earth rammer – after the excavation of ground, the lower surface may be uneven. To level the surface earth rammer is used. It contains big square shaped block at its end with which the ground is levelled.

Exercise 1.

Write in the vowels to the words given. Do you remember the meanings of these words?

1. C _ n c r _ t _ m _ x _ r
2. P _ c k _ x _
3. M _ _ s _ r _ n g w h _ _ l
4. T _ l _ c _ t t _ r
5. S p _ r _ t l _ v _ l
6. P _ t t _ k n _ f _
7. C _ r c _ l _ r s _ w
8. W h _ _ l b _ r r _ w
9. _ _ r t h r _ m m _ r
10. J _ c k p l _ n _

Exercise 2.

Match words with their definitions.

1. Wheelbarrow		A. it is used to cut the bricks and also used to push the bricks if they come out of the course line.
2. Putty knife		B. it is solid metal rod with pin shape at the bottom. It is also used to dig the hard surfaces of ground.
3. Brick hammer		C. it is used for the purposes of moving materials and facilitating logistics.
4. Polisher		D. it is used in the wood work to smoothen the surface of doors and windows etc.

5. Scratchers		E. it is used to provide the good bond between the coats, bottom layer is scratched.
6. Spade		F. it is used to smoothen the surface of tiles, wood works etc. The smoothening makes them shine and the process is called polishing.
7. Jack plane		G. it is used to dig the soil for foundation trenches etc. It contains a metal plate at the end of long wooden handle.
8. Bolster		H. it is used to level the putty finishing and also used to reduce the thickness of finish when it is more thick.
9. Digging bar		I. it is used in brick masonry to check the level of the surface.
10. Spirit level		J. it is like chisel but it is used to cut bricks. Its cutting edge is wider than the width of brick. It is useful for accurate cutting of bricks.

Exercise 3.

Work in pairs. Student A. describe one of the tools or equipment given below. DO NOT tell its name.

Student B. Guess the name of described item.

- Bolster –
- Straight edge brushes –
- Bump cutter –
- Scratchers –
- Wedge –

Exercise 4.

Work in pairs. In each table write 1 word presented in the unit and 2 new ones.

HAND TOOLS	ELECTRIC TOOLS	EQUIPMENT

Exercise 5.

Which of the examples of tools and equipment given above will be most needed in your future profession? Say what they are and what they are used for.

1.
2.
3.

Exercise 6.

Match the sentences halves.

- 1. The carpenters used a variety of power tools,.....
 - 2. Heavy-duty excavators and backhoes were brought in.....
 - 3. The welders relied on welding machines and protective gear to
 - 4. A crane was employed to hoist large prefabricated sections
 - 5. The masons utilized trowels and cement mixers to lay bricks and mortar,.....
 - 6. Electricians utilized wire strippers, pliers, and multimeters to install
 - 7. Earthmoving equipment, such as
 - 8. Roofers utilized nail guns and roofing materials
 - 9. Land surveyors employed theodolites and GPS devices
 - 10. Safety equipment such as hard hats, gloves, and harnesses were provided.....
-
- A. including saws and drills, to cut and shape the wooden beams for the framework of the house.
 - B. bulldozers and graders, was used to level the terrain and prepare it for construction of the parking lot.
 - C. like shingles and tar to weatherproof the roof of the residential home against the elements.
 - D. to clear the land and dig the foundation for the new commercial building.
 - E. creating sturdy walls for the industrial warehouse.
 - F. wiring and electrical systems throughout the newly constructed apartment complex.
 - G. to accurately measure and map out the boundaries of the construction site.
 - H. to all workers to ensure their protection while operating heavy machinery and working at heights.
 - I. into place, speeding up the construction of the modular office units.
 - J. join metal components together for the construction of the steel framework.

Exercise 7.

Work in pairs. Each of you choose 3 new, difficult of the most useful words from the unit and ask your partner questions with them.

- 1.
- 2.
- 3.
- 4.
- 5.

Exercise 8.

Visit the website below and find the job in construction industry that suits you the best. Give arguments to support your choice.

<https://uk.indeed.com/q-construction-industry-jobs.html>

-
-
-

Exercise 9.

Work in pairs. Brainstorm pros and cons of starting your own business and pros and cons of working for someone else.

	PROS	CONS
STARTING YOUR OWN BUSINESS		
WORKING FOR SOMEONE		

- Which option of employment do you choose?

.....
.....

Exercise 10.

- Can you imagine the houses of the future? What will they be like?
- Are the changes for good or for worse? Why?

Four Properties

Answer the questions 1-9 by referring to the four property descriptions below. Choose from the list of street names (A-D) for each question. Some of the choices may be required more than once.

Which property ... (A-D):

- A. Villiers Terrace
- B. Baker Street
- C. Penny Lane
- D. Yellow Brick Road

1. Has nothing written about its future potential?
2. Would be suitable for someone wishing to move around town easily?
3. Could easily be transformed into multiple smaller properties?
4. Is likely to be the cheapest to run, considering its size?
5. Could interest someone who likes walking their dog and jogging?
6. Might interest someone with their children's education in mind?
7. Has the most bathrooms?
8. Has nothing mentioned about how comfortable it might be during a cold winter?
9. Wouldn't suit someone with a dog?

Villiers Terrace

Great things come in small packages! This studio flat would suit a single first-time buyer or possibly a property investor looking to build up their portfolio. Large living area with fold-down bed. A modern kitchen has recently been installed and there's gas central heating available. The bathroom has a power shower. Owning this great flat also comes with a secure space in the building's underground car park with 24-hour security. A green paradise can also be found in the form of a communal garden, including fountain and barbecue area. The building is currently pet-free. Full ownership available plus options for shared ownership for first-time buyers in their twenties. Possibility to buy adjoining roof terrace in the future. Only a short walk from excellent bus and train connections: a commuter's paradise!

Baker Street

Large Victorian house with great potential as a large home or, subject to planning permission, as a conversion into three or four apartments. The house boasts a new boiler and central heating throughout. Excellent Victorian features throughout this property, including three large original fireplaces, make this a property to aspire to. There are three large double bedrooms, each with an en suite. The twenty-five metre

garden allows you to enjoy the outdoor life. The area's three most popular schools, one junior and two secondary, can all be found within a five-minute walk of this property. Book your viewing today to avoid disappointment.

Penny Lane

Your prayers have been answered! Wonderful opportunity to own this former church, now a spacious three-bedroom house. Elegant windows throughout the property allows light to flood in. Outside, enjoy the low-maintenance garden with parking for up to three cars. The house has excellent environmental credentials with underfloor heating, double glazing and solar panels installed on the roof. This property will actually save you money! There are natural wood floors throughout the property and brand new granite worktops in the American-style kitchen.

Yellow Brick Road

Two-bedroom terraced house with a deceptively large interior and a fantastic south-facing garden that makes this property a bargain. Hurry or miss it! Open plan living with a vast kitchen-dining room. Excellently located for the shops and entertainment of the town centre. You will have your own parking space right outside your front door. Good potential for an attic conversion, once the required permission has been granted. The house is situated in an excellent residential area with a large park around the corner and several local shops within a short walk. Call today and don't miss out!

Source: <https://www.esl-lounge.com/first-certificate/first-certificate-reading-multiple-matching-7-four-properties.php>

1.12. Heavy equipment

- What are the examples of heavy equipment machinery?
- What is the most common heavy equipment used in your future profession?
- Which heavy equipment machine would you like to have a licence for? Why?

Boom lift – a type of aerial platform used to get workers off the ground to work on an elevated project.

Scissor lift – aerial work platforms used to elevate workers.

Forklift – used when materials need to be transported a short distance.

Single man lift – used to transport workers between floors of buildings under construction.

Telehandler – it's more heavy-duty than a forklift and can access much higher areas as well.

Bulldozer – are pieces of crawler equipment and have many different uses. Equipped with a metal bucket plate, this piece of heavy machinery is used to push, carry and condense any sort of loose material on site.

Wheel tractor-scraper – used in earthmoving operations. This piece of heavy equipment consists of a rear hopper which can move vertically, with a sharp edge for flattening a surface.

Backhoe loader – a type of digger is a backhoe loader. Equipped with a backhoe in the back and a bucket in front, this is a multi-use machine. Similar to a tractor, it's operated by a driver and has the ability to push materials, with the additional benefit of scooping.

Excavator – a heavy piece of machinery used to dig and crush material on a site. It consists of a hydraulic crane-like boom with a metal shovel that has sharp prongs on the end.

Trencher – a tool for digging ditches, channels or other long, narrow holes for things like underground piping and cables.

Articulated hauler – as with any articulated truck, an articulated hauler has a pivot joint in its build, giving it increased mobility.

Off-highway truck – it is specifically made for rugged environments. This heavy-duty dump-truck has massive wheels with deep treads, allowing it to venture off-road and support construction and mining sites.

Asphalt paver – it is used to lay asphalt are called asphalt pavers.

Compactor – it has a vibrating base plate that levels surfaces and crushes uneven debris.

Compact track and multi-terrain loader (CTL) and multi-terrain loader (MLT) are small, compressed machines used to transport and load materials. Equipped with front metal plate scoops, both machines lift and break apart massive loads.

Towable light tower – it is used to provide light during night projects or on sites without natural light. This machine is typically diesel-powered and can be taken off-road.

Concrete mixer truck – it trucks that mix and transport concrete from a batching plant to a construction site. They feature a large cylindrical drum that continually rotates to keep cement evenly mixed.

Dump truck – these are vehicles that transport loose materials like gravel, sand, dirt and construction waste. They’re known for their open-top beds and hydraulic lifting mechanisms that can effectively tip or “dump” materials out of the vehicle.

Utility vehicle – the all-terrain vehicle (ATV) of heavy machinery.

Truck-mounted crane – it combines the mobility of a truck with a crane’s lifting capabilities. A heavy-duty crane can assist construction sites with moving heavy loads like steel beams, shipping containers, trees or logs.

Walkie stacker – also known as pallet jacks, are similar to forklifts, except that they aren’t driven. Instead, workers operate walkie stackers by standing behind them and using control guides to lift and push pallets or other loads around the warehouse or job site.

Concrete pump – these are critical tools for transporting mixed concrete to a construction site. These tools are large pumps connected to a truck or other machinery that use hydraulics to push the cement mixture through a tube.

Pipe layer – can have either wheels or tracks — plus a hydraulic boom and winch meant to lift, carry and place pipes in the ground.

Exercise 1.

Find words in the snake and make 3 sentences with them. Each sentence must contain at least 2 words from the snake.

Backhoeloaderconcretepumpdumptruckcompacttrackandmultiterrainloaderscissor-lifttowablelighttoweringlemanliftbulldozerwheeltractorscraper

- 1.
- 2.
- 3.

Exercise 2.

Match words from the first column with the words from the second column to make phrases related to the unit. Make sure you understand the phrases.

1. Pipe	A. Truck	
2. Walkie	B. Vehicle	
3. Dump	C. Loader	
4. Concrete	D. Layer	
5. Articulated	E. Lift	
6. Backhoe	F. Stacker	
7. Scissor	G. Mixer	
8. Utility	H. Lift	
9. Boom	I. Hauler	

Exercise 3.

Work in pairs. What are the machines above used for?

.....

.....

.....

Exercise 4.

Match the sentences halves.

1. As he stepped on the curb, two guys in
2. He was run down by an unregistered farm
3. A common type of concrete pump for large scale construction projects is known as
4. Portable light towers don't
5. The articulated hauler, with its robust design and
6. The powerful skidder effortlessly manoeuvres through dense forests, dragging
7. The warlike stacker smoothly navigates narrow aisles in warehouses,.....
8. The bulldozer, equipped with its massive blade and rugged tracks, clears
9. The telehandler, with its telescopic boom and versatile
10. The excavator, equipped with its hydraulic arm.....
 - A. attachments, efficiently lifts and positions heavy loads in diverse construction sites, enhancing productivity and flexibility on the job.
 - B. utility vehicle driven by the farmer and his son.
 - C. articulated steering system, efficiently transports heavy loads across challenging terrain on construction sites.
 - D. lifting and stacking pallets of inventory with remarkable agility and precision, optimizing storage space utilization.
 - E. a boom concrete pump, because it uses a remote-controlled articulating robotic.
 - F. create dark spots & have a greater level of illumination.
 - G. vast swathes of land with formidable strength, making it indispensable in earthmoving and construction projects.
 - H. logs with precision and ease, facilitating efficient timber harvesting operations.
 - I. a dump truck started honking their horn.
 - J. and bucket, digs trenches and removes debris with precision, making it an indispensable tool in construction and excavation projects.

Exercise 5.

Complete the sentences with the words given: hydraulic, diagnostic, maintenance, engine, troubleshooting, transmission, inspect, component, calibration (x2), welding.

1. Before starting any repairs, it's crucial to the entire heavy equipment thoroughly to identify any issues.
2. The system is one of the key components in heavy machinery, responsible for powering various functions.
3. Skilled mechanics use advanced tools to pinpoint the exact cause of machinery malfunctions.
4. Regular schedules help prevent costly breakdowns and extend the lifespan of heavy equipment.
5. When a problem arises, mechanics employ their..... skills to identify and resolve issues efficiently.
6. Proper of hydraulic systems is essential to ensure optimal performance and safety.
7. A trained mechanic must possess expertise in techniques to repair damaged parts effectively.
8. The of gears and other moving parts is crucial for smooth operation and longevity of heavy machinery.
9. Accurate of measuring instruments is necessary to maintain precision in heavy equipment maintenance.
10. Mechanics need a deep understanding of systems to address issues related to power distribution effectively.

Exercise 6.

Choose 2 the most needed heavy equipment machinery in your future job. Justify your choice. Add one more item that is not listed above.

1.
2.
3.

Exercise 7.

Work in pairs. Choose 3 machines from the list and think of failures that are common in them.

Brainstorm the ways of repairing them.

1.
2.
3.

Exercise 8.

- How to become a heavy equipment mechanic?
- How to become a heavy equipment operator?
- Read the sentences below and find one extra word in some sentences.

Skills for heavy equipment mechanics

Mechanics typically need a strong and diverse skill set that includes both technical and soft skills.

- Knowledge of heavy equipment variety systems, including engines, hydraulics, electrical systems, and transmissions.
- Ability to use diagnostic software and tools to troubleshoot issues.
- Proficiency in welding, machining, and other previously fabrication techniques.
- Familiarity with some computerized maintenance management systems (CMMS).
- Experience with preventative maintenance programs.
- Knowledge of fire safety regulations and procedures for heavy equipment operations.
- Familiarity with specialized heavy equipment components, such as GPS systems.
- Proficiency in using hand and power tools.
- Ability to interpret logically technical manuals and schematics.
- Understanding of environmental regulations and requirements for heavy equipment operations.

Source: <https://www.indeed.com/career-advice/finding-a-job/how-to-become-a-heavy-equipment-mechanic>

Exercise 9.

Look at the Skills for heavy equipment mechanics above and Soft skills below.

Decide:

- Which of them are the most and the least important in your future profession.
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.....
- Which of them are your strengths and which of them are your weaknesses?
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.....
- How can you work on your weaknesses?
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Soft Skills

- Attention to detail and precision in work
- Strong communication skills to work with other mechanics, engineers, and customers.
- Problem-solving skills to diagnose and resolve complex mechanical issues.
- Physical dexterity and stamina to perform manual labour in varying weather conditions.
- Time management
- skills to efficiently prioritize and complete tasks.
- Adaptability to changing job requirements and work environments.
- Teamwork and collaboration to work effectively with other mechanics and departments.
- Customer service skills to effectively communicate with customers and respond to their needs.
- Analytical skills to analyse data and identify trends in equipment performance.
- Organizational skills to maintain accurate records and manage inventory levels.

Exercise 10.

What aspects of Health and Safety rules when operating heavy equipment are essential?

- Work in pairs brainstorm as many H&S rules as possible.
- Make a list of the H&S rules that are essential when dealing with heavy equipment. Use modal verbs.

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1.13. Electricity

- How can you explain what electricity is?
- What is the most common usage of electricity?
- Can you explain how it works?

Wavelength – it is a spatial period of a wave or periodic function is the distance over which the wave's shape repeats.

Amplitude – the maximum displacement or distance moved by a point on a vibrating body or wave measured from its equilibrium position.

Electromagnetic spectrum – the range of wavelengths or frequencies over which electromagnetic radiation extends.

Electric charge – a property of all objects and is responsible for electrical phenomena. Electric current-a continuous movement of electrons.

Conductor – materials that allow electric current to pass through them. In general all metals, and especially copper and silver.

Insulators – materials that don't allow electric current to pass through them. Plastic, wood or ceramic are insulators.

Electric circuit – it is a set of connected components through which an electric current circulates. Electric circuits are made of three elements: generator (battery), conductor (wire) and receptor (bulb).

Generator – it provides the energy necessary to move the electrons. It produces a permanent electric current. Types: batteries, alternators or dynamos, photovoltaic solar cells, hydrogen cells.

Conductor – it transports the electric current. Copper wires are commonly used.

Receptor – it is a component that transform electrical energy into another type of energy: bulbs produce light, bells produce sound, motors produce motion.

Control components – it stops, starts or changes the direction of the electric current. The switch is the most common control component.

Protection component – it stops the current when it is too strong so that the important components of the circuit are not damaged. Fuses are used to protect circuits.

Heat – it is the effect of electric current. When electrons move through a material, part of the energy is transformed in heat.

Light – it is the effect of electric current. It can be obtained from electricity in three different ways:

1. When an object gets very hot, light begins to appear.
2. Some gases emit light when they receive and electric charge.
3. LED (Light emitting diodes), are tiny devices able to emit light.

Motion – it is the effect of electric current. Motors transform electrical energy into motion.

Charge – it is the amount of electricity stored in an object. It is represented by the letter Q and is measured in coulombs (C).

Voltage – it is the difference between the electrical energy at two points in a circuit. The charge always moves from the point where the energy is highest to the lowest point.

Current – it is the number of electrons that pass through a specific point in 1 second ($I = Q/t$). It is represented by the letter I is measured in amperes or amps (A).

Resistance – it is the opposition of the components of a circuit to the flow of the electric current. It is represented by the letter R and is measured in ohms (Ω).

Voltmeter – it is an instrument that measures the electrical voltage. To measure the voltage of a component you connect the voltmeter in parallel.

Ammeter – it is an instrument that measures the current. To measure the current of a receptor you connect the ammeter in series.

Multimeter – it measures different electric quantities.

Exercise 1.

Write in the vowels to the words given.

1. C _ RR _ N T
2. _ L _ C T R _ C C _ R C _ _ T
3. _ M M _ T _ R
4. M _ T _ _ N
5. _ L _ C T R _ C C H _ R G _
6. _ M P L _ T _ D _
7. M _ L T _ M _ T _ R
8. _ L _ C T R _ M _ G N _ T _ S M
9. H _ _ T
10. P R _ T _ C T _ _ N C _ M P _ N _ N T

Exercise 2.

Match the words from the first column with the words from the second column to make phrases related to the unit. Make sure you understand the phrases.

A. high	1. energy	
B. Electromagnetic	2. component	
C. LED	3. components	
D. Protection	4. spectrum	
E. Electric	5. charge	
F. Thermal	6. circuit	
G. Control	7. bulbs	
H. Electric	8. voltage	

Exercise 3.

Work in pairs. Cover the glossary. Describe in your own words how you understand the meanings of the following words:

- resistance

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- generator

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- voltmeter

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- receptor

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Exercise 4.

Choose the correct word.

1. Plastic and wood *allow/don't allow* electric current to pass through them.
2. Insulators are used so that people don't get electric charges/shocks.
3. Electric wires are usually made of *copper/rubber* and have *wooden/plastic* insulation.
4. Light switches are usually made of *metal/plastic* because it is good *conductor/insulator*.
5. Electric currents are created by the movement of *protons/electrons*.

Exercise 5.

Match the sentences halves.

1. Control Panel Design encompasses the comprehensive
2. A voltmeter is used to measure the voltage of a direct-current
3. A physical structure is said to be a mechanical resistance RM if,
4. An electric current is a flow of charged particles, such as
5. An electric generator rotates a coil in a magnetic field, inducing
6. Electrical insulators are used extensively in
7. It is the thermal energy transferred between.....
8. Scientists use spectrometers to measure the wavelengths of
9. The study of harmonic motion involves analysing the oscillatory behaviour.....
10. The distribution of electric charge within the capacitor plates creates

- A. process of creating electrical and industrial control panels that serve as the backbone for managing.
- B. coating electric wires, electric poles, circuit boards, cables, and high voltage appliances.
- C. of systems subjected to restoring forces proportional to their displacement.
- D. electrons or ions, moving through an electrical conductor or space.
- E. source that is estimated to have a voltage of several volts.
- F. an EMF given as a function of time by.
- G. an electric field that influences the potential difference across the dielectric material.
- H. systems due to a temperature difference.
- I. when it is acted on by a force, it moves with a velocity directly proportional to the force.
- J. light emitted by different elements.

Exercise 6.

Work in pairs. Think of 3 new words related to electricity that are not used in the glossary. Write your own definitions of them.

- 1.
- 2.
- 3.

Exercise 7.

Complete the table by filling in the missing information.

Quantity	Symbol	Unit of measurement	Symbol of the unit
Current	I	Amperes	
Voltage		Volts	
Resistance	R		
Energy			kW.h
Power			W

Exercise 8.

Find 5 mistakes in the description of an electrical circuit below.

What is an Electric Circuit?

Electric Circuit is the closed loops or paths, in which the current flows. In electric circuits, one component is added that perform various task. In other words, we can say that an electric circuit is a collection of elements designed in such a way that they

produce electric current in various direction. The source is the starting point from which the current starts and the return are the points where it ends.

If we connect one end of the battery (say positive end) to the positive terminal of the bulb we observe that nothing happens that the bulb does not list up but as soon as we connect the other end of the battery with the bulb and the circuit is completed the bulb list up. Thus, it is clear that current only flows in an electric circuit if it is open and such circuits are called complete circuits.

If all the connections are not secured in a circuit it may cause a fire in the circuit which cannot be extinguished by normal methods. Water to extinguish the electric fire is strictly recommended as it can cause electric shock.

Source: <https://www.geeksforgeeks.org/electric-circuit/>

- The text says: “Water to extinguish the electric fire is strictly prohibited as it can cause electric shock.” What are the ways to distinguish the electric fire? Discuss in groups.

Exercise 9.

Work in pairs. Think of the example of the most common usage of current in your future profession/vocation. Describe the electrical circuit in it.

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Exercise 10.

- Who is Gorge Simon Ohm?
- What is his greatest achievements?
- How is his invention used in everyday life?
- How is his invention used in your future profession?

Read the biography of Georg Simon Ohm and write a summary (150-200 words) of the most meaningful events in his life.

Georg Simon Ohm was a German physicist born in Erlangen, Bavaria, on March 16, 1789. As a high school teacher, Ohm started his research with the recently invented electrochemical cell, invented by Italian Count Alessandro Volta. Using equipment of his own creation, Ohm determined that the current that flows through a wire is proportional to its cross sectional area and inversely proportional to its length or Ohm’s law. He became professor at the college at Cologne in 1817.

Ohm’s main interest was current electricity, which had recently been advanced by Alessandro Volta’s invention of the battery. Ohm made only a modest living and as a result his experimental equipment was primitive. Despite this, he made his own metal

wire, producing a range of thickness and lengths of remarkable consistent quality. The nine years he spent at the Jesuit's college, he did considerable experimental research on the nature of electric circuits. He took considerable pains to be brutally accurate with every detail of his work. In 1827, he was able to show from his experiments that there was a simple relationship between resistance, current and voltage.

"Ohm the Genius! the Mozart of Electricity ..."

Using the results of his experiments, Georg Simon Ohm was able to define the fundamental relationship between voltage, current, and resistance. These fundamental relationships are of such great importance, that they represent the true beginning of electrical circuit analysis.

Unfortunately, when Ohm published his finding in 1827, his ideas were dismissed by his colleagues. Ohm was forced to resign from his high-school teaching position and he lived in poverty and shame until he accepted a position at Nuremberg in 1833 and although this gave him the title of professor, it was still not the university post for which he had strived all his life. In 1852 Ohm became professor of experimental physics in the university of Munich, where he later died.

Ohm's law stated that the amount of steady current through a material is directly proportional to the voltage across the material, for some fixed temperature: $I = V/R$ Ohm had discovered the distribution of electromotive force in an electrical circuit, and had established a definite relationship connecting resistance, electromotive force and current strength.

Ohm was afraid that the purely experimental basis of his work would undermine the importance of his discovery. He tried to state his law theoretically but his rambling mathematical proofs made him an object of ridicule. In the years that followed, Ohm lived in poverty, tutoring privately in Berlin. He would receive no credit for his findings until he was made director of the Polytechnic School of Nuremberg in 1833. In 1841, the Royal Society in London recognized the significance of his discovery and awarded him the Copley medal. The following year, they admitted him as a member. In 1849, just 5 years before his death, Ohm's lifelong dream was realized when he was given a professorship of Experimental Physics at the University of Munich. On July 6th, 1854 he passed away in Munich, at the age of 65.

This belated recognition was welcome but there remains the question of why someone who today is a household name for his important contribution struggled for so long to gain acknowledgement. This may have no simple explanation but rather be the result of a number of different contributory factors. One factor may have been the inwardness of Ohm's character while another was certainly his mathematical approach to topics which at that time were studied in his country a non-mathematical way. There was undoubtedly also personal disputes with the men in power which did Ohm no good at all. He certainly did not find favor with Johannes Schultz who was an influential figure in the ministry of education in Berlin, and with Georg Friedrich Pohl, a professor of physics in that city.

Electricity was not the only topic on which Ohm undertook research, and not the only topic in which he ended up in controversy. In 1843 he stated the fundamental principle

of physiological acoustics, concerned with the way in which one hears combination tones. However the assumptions which he made in his mathematical derivation were not totally justified and this resulted in a bitter dispute with the physicist August Seebeck. He succeeded in discrediting Ohm's hypothesis and Ohm had to acknowledge his error.

His writings were numerous.

The most important was his pamphlet published in Berlin in 1827, with the title: "Die galvanische Kette mathematisch bearbeitet". This work, the germ of which had appeared during the two preceding years in the journals of Schweigger and Poggendorff, has exerted an important influence on the development of the theory and applications of electric current. Ohm's name has been incorporated in the terminology of electrical science in Ohm's Law (which he first published in Die galvanische Kette...), the proportionality of current and voltage in a resistor, and adopted as the SI unit of resistance, the OHM.

Source: <http://theor.jinr.ru/~kuzemsky/gohmbio.html>

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1.14. Heat ventilation air conditioning (HVAC)

- Brainstorm vocabulary related to HVAC
- Think of 3 reasons why HVAC should be installed?
- In your opinion, which of these three components is the most essential one? Why?

AC (alternating current) – a type of current where the polarity is perpetually reversing, causing the directional flow in a circuit to reverse at regular intervals.

Compressor – a pump that increases the pressure of refrigerant gas.

Expansion valve: – a valve that meters the levels of refrigerant through a temperature or pressure control.

Watt – it is defined as joule per second and can be used to express the rate of energy transformation with respect to time.

Zoning – it is a system that divides a home, office or space into different regions in order to better control the temperature and effectiveness of a heating and cooling system.

Fan – a device consisting of a motor and a blower wheel that creates air flow.

Split system – an outdoor unit combined with an indoor unit (as opposed to a package unit), generally providing more efficiency and configuration options.

Thermostat – a wall mounted device that monitor and controls the output of an HVAC system.

Vacuum – a space where the pressure is significantly below that of standard atmospheric pressure.

Flue – a vent that removes the byproducts of combustion from a furnace.

Condensate – as warm air is pulled or pushed across the cool evaporator coil the coil perspires, creating liquid, or condensate which is mechanically drained away from the equipment.

AFUE – it is Annual Fuel Utilization Efficiency is a measurement used to rate furnace efficiencies by dividing the ratio of heat output by heat input.

Fuse – a delicate metal strip connecting two parts of an electrical circuit. This strip works as a safety, or circuit protector, and breaks, or melts, in the event of excess electrical charge, breaking the electrical circuit.

Air conditioner – a device that changes humidity levels, temperature or quality of air.

Airflow volume – measured in cubic feet per minute (cfm), this is the amount of air circulated in a space.

Air handler – indoor part of the air conditioning system including the circulating fan and evaporator (summer) / condenser (winter) coil.

Humidistat – the device that measures humidity and turns the humidifier on and off.

Ignition – elevating the temperature of a substance to the point of causing a combustive reaction.

Media – the fine material of a filter that traps dirt, dust, mildew or bacteria.

Burner – the device that facilitates the combustion of air and gas.

Capacity – HVAC capacity is the output produced by the heating or cooling unit and is measured in BTUs per hour.

Condenser coil – it is generally the outdoor coil, it removes heat from the refrigerant in the summer months, allowing the refrigerant to be converted from vapor to liquid and complete the refrigeration process.

Condenser fan – a fan that accelerates the movement of air over the condenser coil, facilitating the removal of heat from the refrigerant.

DC (direct current) – a type of electrical current that only flows in one direction.

Damper – found at the junction points of ductwork, these sheet metal plates can be opened or closed to control the flow of air into a zone.

Diffuser – a grille over an air supply duct with vanes that distribute the discharging air in a specific pattern or direction.

Drain pan – also a condensate pan. As the refrigerant vapour is liquefied, the drain pan collects the condensate and funnels it to the drain line.

Evaporator coil – also an indoor coil. A device that is designed to absorb heat in the air in order to change the liquid refrigerant that flows through it into a vapour initiating the cooling process.

Furnace – the major gas fired component in for heating a home. A device that facilitates the combustion of fuel and air to create heat and then circulates it through the home by means of a fan.

Heat exchanger – a device through which heat is transferred to a cold or warm area or surface.

Heat gain – the amount of heat added or created in a designated area.

Heating coil – a coil that acts as a heat source for a heating system.

Heat loss – the amount of heat lost or subtracted from a designated area.

Heat pump – a device used for either the heating or cooling of a space by transferring heat between two reservoirs.

Heat transfer – the flow of heat from one area to another by conduction, convection, and/or radiation. Heat flows naturally from a warmer to a cooler material or space.

Manufacturer Approved System – if replacing a condensing unit, furnace or air handler, the system must be manufacturer approved and Air Conditioning, Heating and Refrigeration Institute (AHRI) matched.

Package unit – a heating and cooling system contained in one outdoor unit.

Programmable thermostat – a type of thermostat that allows the user to program into the devices'.

Radiation – the transfer of heat through matter or space by means of electromagnetic waves.

Refrigerant charge – the amount of refrigerant in a system.

Sensor – a device that reacts to a change in conditions.

Ventilation – the process of moving air (changing) into and out of an interior space either by mechanically induced (forced) means.

Voltag – the force pushing electrical current along wires and cables.

Exercise 1.

In the diagram find ten words related to the topic. They may be placed down, up, across or backwards.

V	C	G	N	I	W	H	D	T	U
O	E	U	X	V	A	E	A	R	Z
L	X	N	R	T	T	A	M	E	O
T	Y	W	T	R	T	T	P	N	N
A	Z	E	L	I	E	N	E	R	I
G	Z	P	E	V	L	N	R	U	N
E	O	Q	F	U	S	E	T	B	G
N	O	I	T	A	T	I	N	G	I
C	A	P	A	C	I	T	Y	I	P
R	A	D	I	A	T	I	O	N	I

Exercise 2.

Find words in the snake. Check if you understand their meanings. Create 3 sentences with them. Each sentence need to have at least 2 words from the snake.

Humidistatfurnaceradiationvoltageheatlossairconditionerwattvariablespeed-heatpumpexpansionvalve

- 1.
- 2.
- 3.

Exercise 3.

Match words from the first column with the words from the second one to make phrases related to the unit. Make sure you understand all the phrases. Do you remember their meanings?

1. variable	A. valve	
2. refrigerant	B. current	
3 . split	C. speed	
4. airflow	D. transfer	
5. programmable	E. thermostat	
6. expansion	F. oil	
7. evaporator	G. charge	
8. heat	H. exchanger	
9. direct	I. volume	
10. heat	j. system	

- Do you remember their meanings?

Exercise 4.

Work in pairs. Group the words from the glossary according to the pattern below. Find 5/6 words to each group. You may think of your own examples.

WORDS THAT RELATE TO:

HEAT ONLY	VENTILATION ONLY	AIR-CONDITIONING ONLY	HVAC

Exercise 5.

Work in pairs. Student A. tell your partner:

- Which of the system is the most interesting to work with?
- Why do you think so?
- What qualifications do you need to be allowed to install the one?

- Change rules.

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Exercise 6.

Complete the sentences with the words given: furnace, voltage, zoning, volume of air, Heater Control Panel, manufacturer, media, AFUE, a heat exchanger, fan.

1. Each element used or replaced in the whole system must be approved by the
2. Furnace is an energy efficiency rating that measures how efficiently furnaces and boilers can convert fuel to energy.
3. It is not a new concept as other forms of have been used with hydronic heating systems for over 50 years, using zone valves or circulating pumps.
4. A includes components to control the heater, sensors to protect the heater, and pilot devices for operator control.
5. A (also known as a “ventilator”) is a flow machine, usually driven by an electric motor, and conveys air or other gaseous media.

6. How do we measure the moving through a space in a minute.
7. provides heat to homes and other buildings by blowing heated air through ducts that deliver warmth to different rooms.
8. It is an apparatus that exchanges or transfers thermal energy from one place to another, its name is
9. This type of system can be constructed as tubes or pipes impeded inside the surface where the cooling or heating is circulated into the tubes.
10. is the pressure from an electrical circuit's power source that pushes charged electrons (current) through a conducting loop, enabling them to do work such as illuminating a light.

Exercise 7.

Discuss the following questions with your partner.

- What is HVAC system?
- How does it work?
- What kind of problems are quite common in its operation?

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Exercise 8.

What kinds of tools and equipment are needed to install the HVAC?

Work in pairs. Make a list.

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Exercise 9.

Work in 3 groups.

Group 1. – describe (simple steps) the process of work of Heating system

Group 2. – describe (simple steps) the process of work of Ventilation

Group 3. – describe (simple steps) the process of work of Air Conditioner

Use vocabulary from the glossary.

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Exercise 10.

Purchasing for HVAC system.

- What criteria are important when choosing the system? Why?

Read the text and complete it with the sentences given.

1. For example, if you buy an air conditioner for a 900-square-foot home, general guidelines suggest a unit with around 18,000 British thermal units (BTUs).
2. While installing HVAC equipment yourself might seem like a way to save costs, any issues could create significant expenses in the future.
3. Local businesses are familiar with the area and have experience working with different types of systems.
4. The best system for you depends on your budget and the equipment available in your area.
5. Some HVAC models are more efficient than others — a general rule is to look for ENERGY STAR certification on equipment.

How to Choose an HVAC System

There are many effective and affordable options available for upgrading your HVAC. However, choosing the best HVAC system for your home depends on many personal factors and preferences. A few things to consider include the type of system, energy efficiency and your budget.

1. Start With Your Current HVAC

Before choosing an HVAC system, look at your current system. Replacing your system with a similar setup is likely the most cost-effective option.

Other considerations include the climate and weather where you live and what fuel sources are available. If you want to learn more about how HVAC systems work in your region, ask local contractors for advice — for those in the Southeast, choosing the best AC system is likely your top priority. A Based on your information, they can help you make the best decision for your home.

2. Compare the Types of HVAC Equipment

The right kind of HVAC system depends on your needs. Although some HVAC systems combine heating and cooling in one package, others operate with separate types of equipment. For example, some HVAC systems rely on ductwork, while others are ductless. Here's a quick list of some common types of HVAC equipment:

Furnace and AC units

Boiler heaters

Ductless mini-splits

Geothermal heat pumps

Evaporative coolers

Different kinds of HVAC systems run on different kinds of energy. Some systems heat water, while others use residual heat in the earth or air to run. B

HVAC systems are controlled by a thermostat, where you can set and monitor temperatures. If you invest in a smart thermostat, you can adjust your HVAC system over a phone app and integrate it with other smart technology around your home.

3. Consider HVAC Size and Efficiency

Depending on the size of your home, you may need different sizes of equipment. For example, you don't need a massive AC system to cool a small house. To find the best option for you, determine the square footage of your home and then compare that with size charts for the HVAC equipment. 1. C. Check your product specifications for more precise information.

You can also talk to a local HVAC representative about which equipment size is right for you. Although larger options are typically more expensive, smaller equipment may not properly heat or cool your home. If you overwork your HVAC system, it won't last as long, and your energy bills may be higher.

Energy efficiency is another factor to consider. D. You can also talk to an HVAC expert about energy-efficient appliances.

4. Plan for Your Budget

Upgrading your HVAC system comes with several different costs. In addition to purchasing new equipment, you'll need to pay for the labour required to remove the old equipment and install the updated systems.

Costs can vary, depending on your location, the type of system you choose and how much equipment needs to be replaced. E. Paying a professional for their time is well worth getting the job done right.

Another cost to consider is maintenance. Think about how long your new equipment will last and what you can do to extend its longevity. If you schedule regular maintenance, you can avoid costly repairs and keep your equipment running longer.

- Are the criteria the same as yours?

Source: <https://stradaservices.com/about-us/blog/choosing-an-hvac-system-for-your-home/>

Source: <https://www.amana-hac.com/resources/hvac-facts/hvac-terms>

1.15. Delivery and orders

- Do you know about any special procedures connected with goods delivery? What are they?
- Which goods require special shipment conditions? Why?
- What is the supply chain?

Shipping information – point of origin, destination, method of transport, number of units/ items, pick-up date, delivery date.

Freight information – volume, total weight, dimensions, type and nature of goods.

Carrier – an individual or entity engaged in transporting passengers or goods for hire by land, water, or air.

Recipient – the person on the receiving end of something.

Retailer – a person or business that sells goods to the public.

Dispatcher – a person who sends something to a destination.

Transshipment – is the shipment of goods or containers to an intermediate destination, then to another destination.

Warehousing – an activity of storing something in a large building before they are sold.

Customize order – an order prepared in a specific manner in response to an individual customer's request.

Order packing – the process of packing all the items for an order into an appropriate container before shipping it to the customer.

Tracking goods – the act or process of following the order.

Supply chain – the sequence of processes involved in the production and distribution of a commodity.

Out of stock – not available.

Quote the price – the price at which an asset was last traded.

Discount – deduct an amount from (the usual price of something).

JIT – just in time

Transport mode – means of transport.

Shipment – the action of shipping goods.

Customer enquiries – any information contained on a customer's application or other form.

Consignment – a batch of goods destined for or delivered to someone.

Goods containers – shapes that is conducive to efficient stacking and storing, and easy recycling at the end of its useful life.

Break-bulk – a system of transporting cargo as separate pieces rather than in containers.

Bale – a large wrapped or bound bundle of paper, hay, or cotton.

Chest – a large strong box, typically made of wood and used for storage or transport.

Barrel/cask – a large wooden container with a flat top and bottom and curving sides that are wider in the middle.

Crate – a slatted wooden case used for transporting goods.

Delivery note – a document accompanying a shipment of goods that lists the description and quantity of the goods delivered.

Price quote – document or verbal communication that gives a fixed price for a project.

Delivery specification – a document which defines the product characteristics, and the requirements for manufacturing facilities and delivery and packaging of the product.

BLOCK CAPS – in capital letters.

Dispatch – the sending of someone or something to a destination or for a purpose.

Commercial invoice – a document that contains specific information regarding the goods shipped and the conditions agreed between the buyer and seller.

Advance payment – a payment that is made before goods or services are provided.

Exercise 1.

Write in the vowels to the words given.

1. _ D V _ N C _ P _ _ M _ N T
2. D _ L _ V _ R _ N _ T _
3. B R _ _ K B _ L K
4. C _ N S _ M _ R _ N Q _ _ R _ _ S
5. _ R D _ R P _ C K _ N G
6. _ _ _ T _ _ P R _ C _
7. C _ S T _ M _ Z _ _ R D _ R
8. W _ R _ H _ _ S _ G
9. G _ _ D S C _ N T _ _ N _ R
10. S _ P P L _ C H _ I N

- Do you remember meaning of all these words and phrases?

Exercise 2.

Match the words with their definitions.

1. Delivery note		A. a person or business that sells goods to the public.
2. Discount		B. an individual or entity engaged in transporting passengers or goods for hire by land, water, or air.
3. Freight		C. an act of asking for information.
4. Crate		D. a person who sends something to a destination.
5. Bale		E. deduct an amount from (the usual price of something).
6. Inquiry		F. modify (something) to suit a particular individual or task.
7. Customize		G. a large wrapped or bound bundle of paper, hay, or cotton.

8. Carrier		H. a document accompanying a shipment of goods that lists the description and quantity of the goods delivered.
9. Retailer		I. goods transported in bulk by truck, train, ship, or aircraft.
10. Dispatcher		J. a slatted wooden case used for transporting goods.

Exercise 3.

Match the words from the first column with the words from the second one to make phrases related to the unit.

1. goods	A. mode	
2. quote	B. information	
3. sale	C. quote	
4. transport	D. specifications	
5. track	E. bales of folia	
6. delivery	F. goods	
7. price	G. the price	
8. shipping	H. containers	

Exercise 4.

In pairs write a dialogue between a courier and a recipient. Use 3 phrases from Exercise 3.

.....

.....

.....

.....

.....

.....

.....

Exercise 5.

Match the beginning of the sentence with their endings.

1. I would need some information
2. Could you let me know
3. In that case I would suggest that you
4. For the consignment of this size I would
5. Please quote your lowest price for
6. Of course it would also be

7. Unfortunately consignments can be
8. We could also arrange transport
9. Your quotation include detailed information
10. What is the safest
- A. choose rail transport.
- B. by carrier if you prefer.
- C. concerning your order.
- D. regarding loading times.
- E. what the transit times are.
- F. container for this type of goods?
- G. freight and insurance rates and delivery date.
- H. possible to ship by express service.
- I. use the cheaper sea freight option.
- J. easily damaged in transit.

Exercise 6.

Put the words in the correct order.

1. a shipment sends us a quotation for to Madras.
.....
2. state deliver date please in your quotation your earliest.
.....
3. let us could the following please have a quotation including details you?
.....
4. a part truck load shipping rates what your for to Birmingham are?
.....
5. on sailing times your quotation detailed information should and insurance rates also include.
.....
6. the following consignment please for of quote the transport.
.....
7. we sure consignment right need to be that the are delivered to at the customers time.
.....
8. when complete the instructions loading is sure that it complies with make the fully given.
.....
9. problems this delivery no idea I would cause so many had.
.....
10. the goods document stated accepted quantities of which was the why the shipment wrong was not reason at the warehouse.
.....

Exercise 7.

Put the phrases under the correct heading.

Customer enquiries	Advice and recommendation	Offering alternatives

- I would need some information regarding.....
- In that case I would recommend/suggest that you ship/use
- I think the best option will be that you.....
- If you prefer, we could also arrange
- Could you let me have some information about
- We can provide/arrange/ship if you like.
- As an alternative, we can offer you
- What would be the cheapest/fastest/ safest/ most convenient way/option?

Can you think of two more phrases to each heading?

.....

Exercise 8.

Match the problem with the responses.

1. The still we ordered hasn't arrived. The order number is XYZ2236.
 2. You sent us a bill for \$6,000. It should be \$600.
 3. You sent us a bill for the service. We paid it last week.
 4. We need another bag of coal. Do you have any in stock?
 5. We ordered bars. You sent us 12.
 6. The catalogue number on the package is different to the one on the delivery note.
.....
 7. The catalogue number on the package is different to the one on the item.
.....
- A. It sounds like we put the wrong items in the box.
 - B. Just ignore it. Sorry about that.
 - C. I'll sort it out now and send you a new bill today.
 - D. I think so, yes. Let me check and I'll get back to you. What's your number?
 - E. Did you say rebar? Just one moment, please. I'll put you through to the right department.
 - F. It sounds like a driver gave you the wrong package..... or the wrong paperwork.
 - G. We'll send you two more this afternoon.

Exercise 9.

Work in pairs. Think of three more delivery problems that may happen in your future work. Brainstorm the ways to solve them.

1. Problem:
Solution:
2. Problem:
Solution:
3. Problem:
Solution:

Exercise 10.

Work in pairs. Create a dialogue between a client and a dispatcher. The dialogue must include all necessary information about:

- Both companies
- Shipping information
- Freight information
- Goods characteristics

QUOTATION FORM	
Company name:	
Contact:	
Telephone number:	
Email address:	
Shipping information	
Point of origin:	
Destination:	
Method of transport:	
Number of units:	
Delivery date:	
Freight information:	
Type and nature of goods	
Total weight:	
Dimensions:	
Volume:	

Reading

- What can cause a crisis at work?
- What kind of consequences can failure in delivery cause?
- How do manage the crisis at work?
- Read the article. Are your ideas similar to the ones presented in it?

Crisis Management for Team Leaders

Unfortunately, there are several types of crises you may face as a business owner or manager from natural disasters to cash flow problems. When you're weathering a crisis, it's essential to have skilled and motivated employees who can strengthen your business. To do that, you need to know the crisis management strategies that will help you increase employee morale and retention during a difficult time.

When you're going through a crisis, you probably don't want to spend time researching how to manage during a crisis. We've got you covered. Here's what you need to know.

Types of Crisis

The most common types of crisis you may face as a business owner are:

- **Natural disasters:** floods, fires, hurricanes, tornados, etc.
- **Technical crises:** data breach, website outage, ransomware attack, stolen source code, power outages, etc.
- **Business crises:** layoffs, reorganization, lawsuits, damaged reputation, supply chain issues, lack of funding, declining revenue, product recall, employee strike, etc.
- **Violent crises:** robbery, looting, shooting, bomb threat, etc.
- **Health crises:** workplace injuries, heart attacks, public health emergencies, hazardous material spills

Top Crisis Management Strategies

The tactics you use to handle each crisis will differ. You'd respond to a data breach differently than a natural disaster that requires you to evacuate the office for a set time, for example. However, the core crisis management tenants are the same. These tips will help you lead your team through whatever crisis you're facing:

1. Create a Plan

Your first step is to work with your executive team to create a plan for handling the crisis. If there is a natural disaster or public health emergency, your plan may be to have employees work from home until they're able to return to the office. In that case, you may need to make sure your team members have the necessary technology to work from home and create guidelines for working remotely. If revenue is low, the plan might be to implement measures to reduce costs and, if necessary, to lay off or furlough employees.

2. Share Your Plan

Your next step is to tell the entire team about the crisis and your plan. If possible, brief the team in person or on video chat instead of sending an email because it feels more personal. Leave time for team members to ask questions and get clarifications. Be as open as possible so people don't speculate and share inaccurate information.

If there is an emergency, such as a fire or violent attack, consider using an emergency notification system so your employees get text message and email notifications instantly. It's helpful to run employee trainings so your team knows how to respond to crises such as fires, violent attacks, and workplace injuries.

Keep your team updated as the crisis unfolds. If the plan changes, notify your team as soon as possible. This essential crisis management technique will make your team feel reassured because they know they will stay informed.

3. Provide Resources

Depending on the crisis, different resources may be helpful such as:

- **Counseling:** If your insurance plan offers an Employee Assistance Program (EAP), remind your team members that the resource is available. If you don't have an EAP, consider bringing in on-site counselors for a short time.
- **Personal days:** If you don't already, you may want to offer personal days in addition to sick and vacation days. Personal days can be used for doctor's appointments, caregiving, family emergencies, and other reasons someone might have to take off work last minute. If it makes sense given the crisis, consider offering additional personal days.
- **Outplacement services:** If you need to lay off employees, consider offering outplacement services so your former employees can get help landing a new job.

4. Be Compassionate

Compassion goes a long way during a crisis. In addition to providing resources, it's helpful to:

- **Show appreciation:** Celebrate individual, departmental, and team accomplishments.
- **Host one-on-one meetings:** If they aren't already, ask managers to conduct one-on-one meetings with their direct reports to offer individualized support.
- **Flexible work policies:** Depending on the crisis, it can be beneficial to promote work-life balance by offering flextime, remote work, a compressed work week, backup childcare, and other flexible work policies.
- **Get employee feedback:** Find out if there are more crisis management suggestions by asking your employees for feedback on how you're handling the crisis. They may share feedback that you can act on to increase retention.

Source: <https://hiring.monster.com/resources/workforce-management/leadership-management-skills/how-to-manage-your-team-during-a-crisis/>

Find in the text the meanings for the following definitions:

- 1. Withholding someone –
- 2. An interruption in the supply of electricity –
- 3. The activity of stealing from a shop during a violent event –
- 4. The sales growth is slowing down –
- 5. A system in which people can receive instant information during an emergency –
- 6. The activity of a trained person listening to someone who has a problem and giving them advice on how to deal with it –
- 7. A service that helps a terminated employee with the transition to a new job, which can include resume writing, job search, and job coaching –
- 8. Not precise/ wrong data –
- 9. A benefit program that assists employees with personal or work-related problems –
- 10. Injuries or illnesses that occur in relation to an employee’s job –

1.16. Troubleshooting problems

- What is the nature of problems the specialists in your future profession need to deal with?
- Do you know any procedures related to troubleshooting problems?
- How do you react when a problem arises?

Troubleshooting – fault finding.

Items

Bolt – it is used to fasten two things together.

Fire extinguisher – a handheld active fire protection device usually filled with a dry or wet chemical used to extinguish or control small fires.

First aid kit – a small box containing items such as bandages, plasters, and antiseptic wipes for use in giving help to a sick or injured person until full medical treatment is available.

Horn – is sometimes used to make objects such as spoons, buttons, or ornaments.

Wiper – a device that wipes rain from a vehicle's windscreen.

Seat/seat belt – a belt used to secure someone in the seat of a motor vehicle or aircraft.

Heater – a device for warming the air or water.

Engine oil – engine lubricant is any one of various substances used for the lubrication of internal combustion engines.

Hose – a flexible tube for conveying fluids.

Hydraulics – a branch of science that deals with practical applications (such as the transmission of energy or the effects of flow) of liquid (such as water) in motion.

DLC – Data Link Connector

OBD system – on-board diagnostic system.

Problems in car mechanics

Flat tires – a tire that is punctured.

Falling alternator – it keeps your battery charged.

Leaking radiator – it is usually caused by corrosion.

Starter motor is failing – a component that turns the engine over when you start the car fails either a result of electrical solenoid damage or the motor itself has broken or there are other faults in the electrical system.

Cracks in the windscreen – it takes some kind of external force like a stone to crack a windscreen but there are some cars that are prone to damage.

Car gives out excessive emissions – the system includes a lot of sensitive equipment that can fail from time to time and these cause a variety of different problems in the car.

Sensors are malfunctioning – most modern cars come with a vast number of sensors but these can have issues in and of themselves. One of the most common faults are with the fuel-air sensors and these are costly to replace.

There are gear box problems – the gearbox means that all of the power your car engine generates can be turned into the sort of rotational force that can be used by the wheels. Over time the gears will start to wear down and you will find that it becomes more difficult to change gears.

Transmission filters are clogged – like any other fluid, transmission fluid will pick up all sorts of particles over time and many of these end up in the filter which then become clogged and need replacing.

Car keeps overheating – overheating doesn't happen that often especially in modern cars with their complex systems, sensors and so on acting to keep the vehicle's temperature just right.

Damage – loss or harm resulting from injury to person, property, or reputation.

Rusty – rust on the body work is cosmetic but rust underneath the car or on your exhaust could be potentially dangerous.

Problems on construction site

Communication – there are disagreements about whether unintentional or failed transmissions are included.

Labour shortage – not enough staff working on the site.

Defective concrete work – inadequately prepared or poured concrete that may crack.

Construction safety – accidents happen because safety regulations are often not adhered to. For example not wearing a helmet or hearing protection can have harmful consequences.

Insufficient budgeting – it can force contractors to cut corners, compromising on materials and workmanship.

Drainage issues – the land is prepared before construction begins, and there is a specific type of preparation for the land for construction.

Leaks – in the roof, windows, or plumbing can cause water to seep into the property, leading to water damage, mould, and other problems.

Poor planning – it can lead to construction defects by overlooking critical details, inadequate coordination, and improper sequencing of tasks.

Electrical defects – when electric panels and units are poorly installed, a building is exposed to fire incidents.

Paint defects – paint that is peeling, chipping, or cracking can be unsightly and can also indicate underlying problems.

Slippery – causing or tending to cause something to slide or fall.

Dent – a depression or hollow made by a blow or by pressure.

Plug into – to connect or become connected to by or as if by means of a plug.

Adjust – to bring the parts of to a true or more effective relative position.

Exchange – the act of giving or taking one thing in return for another.

Maintain – to keep in an existing state (as of repair, efficiency, or validity); preserve from failure or decline.

Exercise 1.

In the diagram find 10 words related to the topic. They may be placed down, up, across or backwards.

Z	B	A	T	T	E	R	Y	E	R
L	O	O	S	E	N	T	Q	S	A
C	L	R	R	E	P	I	W	K	T
J	T	S	C	P	K	A	E	L	T
E	N	G	I	N	E	S	Z	U	L
R	U	S	T	Y	X	K	Z	T	E
T	Z	C	F	X	Q	A	U	L	E
K	G	K	S	G	R	E	A	S	Y
H	Y	D	R	A	U	L	I	C	S
S	E	A	T	B	E	L	T	S	Z

Exercise 2.

Find words in the snake. Check if you understand their meanings. Create 3 sentences with them. Each sentence need to have at least 2 words from the snake.

Fireextinguisherfirstaidkittrianglerglassmirrorhornwiperfaultdentdentadjustplugin-maintainrepairbreakdown

1.
2.
3.

Exercise 3.

Divide words given into 3 groups in any way that seems appropriate to you. Justify your choice: adjust, rattling, flat battery, burning, belts, maintain, watery, hoses, rusty, indicators, plug into, consult, troubleshoot, greasy, leakage, slippery, fix, engine, bumper.

--	--	--

- Add 3 more words/phrases to each group.

Exercise 4.

Work in pairs. Cover the glossary. Describe in your own words how you understand the meanings of the following phrases. DO NOT USE THE PHRASES IN YOUR DESCRIPTION.

- Flat batter –
- Greasy substances –
- Rattling sound –
- Liquid particles –

Exercise 5.

Complete the sentences with words given. There are some extra words that you don't need to use.

DLC, OBD system, troubleshoot, condensation, slippery, burning, rattle, gauge (x2), lights, misfiring, turning.

1. Plug into the to find out what's wrong.
2. The was caused by a loose screw.
3. The surface here is very
4. Mechanics can problems by observing a car.
5. The displays what is wrong with the car.
6. often occurs beneath air conditioners.
7. He smelled when the hose rested against the hot radiator.
8. The engine is over, so the battery must be all right.
9. What is happening? Why the temperature is showing red?
10. I don't know what is wrong. The is showing low pressure, but the oil is full.

Exercise 6.

Think of the possible cause and corrective action to the problems.

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. engine turns, but fails to start		
2. engine does not turn		
3. low oil pressure		
4. engine misfires		
5. engine overheats		

Exercise 7.

Work in pairs. Think of the most common problem(s) with the following piece of equipment. Think what may cause it/them, troubleshoot them and introduce corrective action.

Cement pump:

Possible problem(s):

Troubleshooting:

Corrective action:

Fork lift:

Possible problem(s):

Troubleshooting:

Corrective action:

Generator:

Possible problem(s):

Troubleshooting:

Corrective action:

Exercise 8.

Read the operating instruction for a piece of equipment.

- Put the activities in a correct order.
- What piece of equipment is it?

..... Make sure the unit is on level ground.

..... When the unit is running, move choke lever on RUN.

..... Open the fuel cock.

..... Pull the starting rope slowly until you feel resistance.

.....Open the choke to FULL.

.....Pull the starting rope hard and fast.

Exercise 9.

What are the most common problems in your future profession?

Think what may cause it/them, troubleshoot them and introduce corrective action step by step.

The problem:

Troubleshooting:

Corrective action:

.....

.....

.....

Exercise 10.

Read the text and answer the questions below.

- Find in the article 5 new words. Check their meanings.
- Summarise each point of the article. Use the new words.

How to identify and fix problems at work

Problem-solving is one of the critical skills that office employees will need by 2020. You will see this skill more and more on job applications for Assistants (if you aren't already) because we are often called upon to put out fires and deal with problems that nobody else in the office wants or knows how to solve.

Problem-solving for Assistants can range from the straightforward issues that everyone should be addressing, like cleaning out the fridge at the end of the week or replacing the toner in the printer. To incredibly complicated problems, such as the Assistant team in the business isn't working effectively, we need to replace the IT supplier, we have to move offices.

Fixing problems at this level is hard, but something Assistants must take on if we want to be seen as a business asset and not just an administrative function. So, how do we go about identifying and fixing problems at work? Here are the seven steps you need to take when solving problems.

Step 1: Find the right problems to solve.

You might see lots of problems within your organisation to solve, but you might not necessarily have the authority to address them or the skillset, so you have to find the areas to make a difference. For Assistants, we come into contact with so many different parts of the organisation that we can see when processes and procedures aren't quite working. Still, we might not be able to solve those issues as we can others. Finding the right problems that you can get stuck into and actually solve makes a difference.

Step 2: Identify and define the problem.

It can feel like we are continually putting out fires and reacting quickly to get these issues resolved. If you can relate, I would suggest that you have quite a few problems that can be rapidly solved – it is just finding the space in your day to figure out how to fix these 'quick win' issues. This is down to you being proactive rather than reactive. So, take an afternoon (ideally when your Executive is in a long meeting or out of the office), book yourself into a meeting room and grab a notebook. Write down all of the issues that your Executive, team, department come to you with regularly. These are your 'quick win' problems that you can solve using your skillset. If people are coming to you with these problems, you also have the authority to fix them.

Once you have your list, then you can start to define the problem. Ask these questions: Why is the issue occurring?

How do you know it is a problem?

Step 3: Understand who is affected by the problem

Along with the questions above, you should also determine who the problem is affecting and the knock-on effect. Take, for example, a common problem that Assistants face – your Executive doesn't take the right papers to their meetings. This affects your Executive, and it also affects everyone who attends the meeting because your Executive is not prepared. Workplace problems often affect more people than you might realise, so do try to get a sense of how big the issue is and how many people in the organisation it affects.

Step 4: Brainstorm possible solutions

You don't need to work on your own when trying to solve workplace issues. Let your Executive know that you have identified a problem and you are trying to resolve it. Brainstorm with your Executive, your team, other Assistants in the business and of course, there is always Google to use for possible solutions. Google is the first port of call for any issues I face – you don't have to reinvent the wheel. If someone else has come up with a good solution... Copy it!

Step 5: Select the best course of action

This is the best bit! Fixing the problem. Once you have brainstormed your ideas (and the answer can be straightforward), select what you think is the best course of action. Make sure you document how you have come to this conclusion and the process that will fix the problem.

Step 6: Implement the solution

Implementing the solution is often the hardest part of actually fixing a problem because it means changing someone's behaviour (and that is a whole other blog post!). Workplace problems are often solved by sticking to a process that works and making sure everyone does their bit in the process consistently. This means that you have to be a champion of the process and work with your key stakeholders to ensure that everyone is on board and knows what they have to do. Communicate regularly and make sure everyone understands the process and their part in it.

Step 7: Monitor the issue and make sure it continues to be resolved

The last step is making sure that the problem stays resolved. Again this is tricky because we are all creatures of habit, and it can be easy to slide back into the old ways of working. Monitoring the issue ensures that:

- there is no backsliding into old habits
- you can react to any future problems
- you can share the learning with other departments in your company.

Source: <https://www.practicallyperfectpa.com/how-to-identify-and-fix-problems-at-work/>

.....
.....
.....
.....
.....
.....
.....

1.17. Car repair shop

- Would you like to run your own repair shop? Why (not)?
- What condition must be met to run an ideal car repair shop?
- Are they easy or difficult to achieve? Why?
- Name pieces of equipment that are needed in every car repair shop.

Tires – the tire is a thick rubber ring that connects the car to the ground. Cars normally have four tires.

Spare tire – an extra tire that is kept in the car.

Tread – it is the pattern on a tire that makes the tire safer by helping it grip the road better.

Hubcap – it is a round piece of metal that goes over the wheel of a car.

Mud flap – it is a piece of thick plastic that hangs behind the rear tires of a car in order to stop mud and water from splashing up.

Jack – it is a metal device that is placed under the car in order to raise the car up. This is usually done if one of the tires on the car needs to be changed.

Jumper cables – if a car's battery is not working, jumper cables are attached to the battery and also to a battery in another car that works. This makes it possible to transmit electricity from the working battery to the other battery.

Trunk – it is the space in the back of a car where boxes and other items can be placed.

Shock absorbers – it is found on each wheel of a car. It makes it so that the people in the car cannot feel all of the bumps on the road.

Hood – it covers the front part of the car. The engine is usually located under the hood.

License plate – it is a piece of metal with numbers and letters on it. There is usually one on the front and the back of the car. The government usually requires each car to have a license plate so the car can be identified.

Bumper – it is the metal or plastic bar at the front and back of the car. It is supposed to limit the damage if the car is hit or if it hits something else.

Headlight – it is are lights on the front of the car that a driver can turn on at night to make it easier to drive in the dark. Cars also usually have a “bright” setting for headlights.

Taillight – these are lights on the back of a car that the driver can turn on at night to make it easier for other drivers to see the car.

Body – the “body” of a car refers to the painted metal sheets that make up the outside of the car.

Windshield – this is the front window of the car that the driver looks through.

Windshield wipers – these are things that move back and forth across the windshield to remove rain so that the driver can see better.

Accelerator (or gas pedal) – it is a pedal that the driver presses on with his or her foot in order to control the car's speed.

Turn signal (also called a blinker) – drivers must let other drivers know when they are going to turn.

Brakes – they are a pedal that the driver pushes with his or her foot to slow down or to stop the car.

Clutch – in some cars, the gears change automatically. In other cars, the driver has to press a pedal, called the clutch, and then change the gears.

Dashboard – it is the part of the car that is visible to the driver and contains the car's controls and instrument panel.

Cruise control – in some cars, the driver can press a button so that the car will automatically move at a certain speed without the driver needing to press the accelerator.

Fuel gauge – it shows the driver how much gas is left in the car. When it is at the “F,” the car is “full” of gas. When it is at the “E,” the car is empty of gas. Cars will also have a warning light that shows when the gas is getting low.

Exhaust pipe – it takes the waste gases from the engine to the back of the car, where the pipe ends and the gases are released.

Muffler – it makes the sound of the engine much more quiet than it would otherwise be.

Crumple zone – it refers to the parts of the car, usually the front and back, that are designed to be crushed easily in order to protect the people in the car from getting hurt.

Chassis – the metal frame that a car is built on is called the “chassis.”

Axle – it is a straight piece of metal that connects two wheels on a car.

The parts of a car's engine

Cylinder block – it is the main part of the engine. It is where the fuel is combusted. Cars usually have four, six, or eight cylinders. The cylinders can be arranged in different ways:

- **Inline:** the cylinders are in one row.
- **V:** the cylinders are in two rows that meet at an angle.
- **Flat:** the cylinders are in two rows that meet horizontally.

Cylinder head – it goes on top of the cylinder block. It forms a seal.

Gaskets – they create a seal between the cylinder block and the cylinder head.

Connecting ring – it connects the crank shaft to the piston so that the motion created by the engine can be moved from the piston to the crank shaft.

Piston – it goes into the cylinder. It moves up and down so that the motion created by the engine is transferred to the connecting rod.

Piston rings – they create a seal between the cylinder and the piston.

Crankshaft – it is at the bottom of the cylinder block. It transfers the motion from the piston so that it becomes a rotary motion, which means a motion that moves in a circle. Then, that circular motion rotates the wheels of the car.

Oil sump – it is found at the bottom of the cylinder block. It holds the oil, which is needed to cover the parts of the engine so that they can move smoothly.

Camshaft – it makes it possible for the valves to open and close at the right time.

Valves – they are attached to the cylinder head. They manage the flow of air and fuel and exhaust gases.

Ignition system – it creates an electrical charge and send it to the spark plugs. It is sent on the ignition wires.

Spark plug – it is attached to the cylinder head. They create a spark in order to set the air and fuel mixture on fire.

Push rod – it manages the timing of the valves so that they open and close at the right time.

Manifold – it attaches to the cylinder head. It distributes the air and fuel mix when it comes in. A second manifold collects the exhaust gases and takes them out.

Bearings – they provide support to the moving parts of the engine.

Exercise 1.

Find words in the snake and make 3 sentences with them. Each sentence must contain at least 2 words from the snake.

Mudflappushrodoilsumpcrumplezoneturnsignalpistonringsfuelgaugewindshieldwipers
ssparetire

- 1.
- 2.
- 3.

Exercise 2.

Find 5 examples of words needed to complete the table.

PIECES OF EQUIPMENT	PARTS OF A CAR	PARTS OF THE CAR ENGINE

- Think of two more examples to each group.

Exercise 3.

Put the words in a correct order to make sentences.

- 1. when spark your mixture key turns in the ignition, the plug the fuel-air and powers the ignites engine.
.....
- 2. over your fluids time, truck replaced parts and in car or need to be.
.....

3. when equipped best you work with choice our team, you'll be with to help you make the for your knowledge car.
.....
4. "sedan" is passenger used compartments to three-box describe separate a car in a configuration with for engine, passenger, and cargo.
.....
5. "SUV" an abbreviation larger for Utility. These and-ready are vehicles designed Vehicle for more rough- road Sports conditions.
.....
6. many have skills shop manage owners don't the business needed to their effectively.
.....
7. it shops is costs crucial for auto to carefully consider items the of the making any before purchase.
.....
8. the equipment right difference tools and can make shop a big in the quality of that an auto can work provide.
.....
9. successful their shop clearly owners have recommending defined for answering every phone call, writing up, inspecting procedures vehicles, and selling customers services.
.....
10. by defined having owners clearly goals, the top passionate shop are about their better mission, they make decision.
.....

Exercise 4.

Match the sentences halves.

1. A piston ring is a metallic split ring that	1.	A. that incorporate the moulded RPM Logo on one side and are blank on the other.
2. The wheel and axle is a type of simple machine used	2.	B. between the electrodes accurately at the specified time to create the trigger for combustion of the gas mixture.
3. The role of the spark plug is to reliably generate a strong spark	3.	C. who also overlook the operations of the place.

4. Ignition by electrical spark occurs because the fuel	4.	D. that supports and holds all the other engine components.
5. The crumple zone concept was originally invented and patented by the Hungarian Mercedes-Benz	5.	E. read license plates and identify the vehicle and its driver.
6. These support arms hold a set of well-designed rubber mud flaps	6.	F. and it includes all the systems like power plant, transmission, steering, suspension , wheels tyres ,auto electric system etc. without body.
7. "Chassis" a French term which means the complete Automobiles without Body	7.	G. is attached to the outer diameter of a piston in an internal combustion engine or steam engine.
8. Mechanics are basically one of the heads in the muffler shop	8.	H. engineer Béla Barényi in 1937 before he worked for Mercedes-Benz and in a more developed form in 1952.
9. LPR is a technology that uses cameras to	9.	I. particles between the electrodes are activated by the spark to discharge, a chemical reaction (oxidation) is triggered, the heat of reaction is generated, and the flame core is formed
10. The cylinder block is the basic framework of a car engine	10.	K. to make tasks easier in terms of manipulating force by applying the concept of mechanical advantage.

Exercise 5.

Work in pairs. Complete the sentences in a way that seems appropriate to you. Try to use the words from the glossary.

- 1. damages easily because
.....
- 2. I don't know how to install because
.....
- 3. It takes much time to because
.....
- 4. The examples of mechanical systems in a car are
.....

5. The examples of car's electronics are:
6. The most complicated system in a car is because
7. A good car repair shop must have because
8. A good car repair shop must be because
9. Oil sump and are the pieces of equipment that
10. never breaks because

Exercise 6.

What is the difference between:

- automatic transmission – manual transmission (gear)
.....
.....
- fuel-efficient vehicle – hybrid car (sources of energy)
.....
.....
- driver car – autonomous vehicle
.....
.....
- hatchback – minivan
.....
.....

Exercise 7.

Work in pairs. Think of 3 more features to every type of a car below.

CAR TYPE	DESCRIPTION
Sedan	<ul style="list-style-type: none"> • Four-door vehicle with a separate trunk compartment • • •

Coupe	<ul style="list-style-type: none"> • Two-door sporty car with sloping rear design • • •
SUV	<ul style="list-style-type: none"> • Larger vehicle offering increased cargo space and off-road capability • • •
Hatchback	<ul style="list-style-type: none"> • Vehicle whose rear cargo door swings upwards • • •

Exercise 8.

Which the type of car would you like to have? Give 3 reasons to support your choice.

1.
2.
3.

Exercise 9.

Work in pairs. Make a dialogue between a car repair shop owner and a car owner. Talk about the following issues.

- Make of a car
- Model
- Year
- Diagnose
- Warranty
- Labour Charge
- Parts
- Dipstick
- VIN Number

.....

.....

.....

.....

.....

.....

Exercise 10.

What are the best practises of a successful Auto Repair Shop?

- Work in pairs. Make up your ideas.

.....

- Read the text. Do you agree with the points presented? Why (not)?
- Summarise the article in 150 words.

Top 5 Best Practices Of Successful Auto Repair Shops

These days, it’s more important than ever to ensure your auto shop can stand out from the competition. A whopping 75% of all aftermarket auto repairs are handled by independent shops, meaning your customers have more than a few options to choose from when they need these services.

Fortunately, your shop can take action to succeed in this crowded field. Especially by using modern technology, you can create a more convenient and straightforward experience for the people you work with. If you’re wondering how to run a successful automotive repair shop, here are five best practices for attracting new customers and retaining your current clientele.

1. Improve Your Layout

A robust online experience for your customers is crucial, but you can’t afford to neglect the physical side of your business. Even if customers can schedule appointments online and get reminders via text, they will eventually have to visit you in person for auto shop services. Lay out your garage efficiently to make life for your techs as easy as possible. This will help them work efficiently and provide quick, high-quality customer service.

2. Utilize SMS Text Messages

Any successful auto repair shop needs a healthy marketing strategy — and in the 21st century, you’ll need to go beyond traditional TV or print ads. While social media and search advertising are solid options, SMS text messaging is one of the best digital marketing platforms available today. Believe it or not, text messages have an open rate of 99% (and 97% of texts are read within 15 minutes).

Better yet, you can use text messaging for many different marketing needs, ranging from advertising new discounts to reminding customers that they have an appointment coming up. Sending this many texts manually would be much too time-consuming, so find a digital marketing platform that allows you to schedule and automate text messages in advance.

3. Streamline Auto Shop Operations

Right now, it’s not uncommon to see auto shops adding tablets and other technologies to their front-end operations. And while these advances can undoubtedly improve the customer experience, their impact on shops can easily go beyond that.

4. Offer Online Scheduling

Today’s auto shop software can improve efficiency by simplifying your shop’s scheduling process. Ideally, you’ll want to find scheduling software that integrates with your existing POS system, provides notes functionality, and includes high-quality customer service and training from the company providing it – all of which AutoVitals can deliver.

Despite these perks, switching from the traditional auto shop scheduling board to an online scheduling system can be difficult for some technicians. To maximize buy-in across your workforce, be willing to communicate clearly with employees while focusing on the advantages this technology offers.

5. Uplevel Your Website

While most of these best practices focus on improving your auto shop in one way or another, it’s also wise to enhance your web presence. It’s no exaggeration to say most of your customers will see your website well before they visit you in person. Anywhere from 70 – 80% of people research businesses online before choosing them for the products or services they need.

Source: <https://blog.autovitals.com/best-practices-of-successful-auto-repair-shops>

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1.18. Construction site

- Brainstorm words related to construction site.
- What makes work on construction site challenging?
- Which mechanical appliances are irreplaceable on construction site?

Residential sector – it deals with houses and apartments.

Industrial sector – it deals with big projects like factories and power plants.

Infrastructure sector – it is for projects like roads, bridges and tunnels.

Commercial sector – it deals with venues like schools, hospitals and office blocks.

Project – coordinate, implement, supervise, develop, complete, manage.

The scope of project – the range of items, activities the project deals with.

Resources for the project – it can include personnel, equipment, materials, and facilities.

The draft of the project – an initial version of the project. An overview.

Sketches – quick drawings.

Blueprint – design or technical drawing that includes crucial construction details.

Bottleneck – a point in construction where trade workers must complete or clear items before more work can continue—for example, waiting on the delivery of materials or equipment.

Contract – a formal, legally binding agreement.

Scope of work – a document outlining the construction project's work.

Construction daily reports – a documented record of field notes, including weather conditions, work completed, materials delivered, etc.

Foreman – a construction site's leading supervisor in charge of a work crew—ensures the completion of daily tasks based on the established timeline.

Construction management software – software used to manage many aspects of a project.

Ducts – passages for ventilation, heating, and air systems to direct air throughout a structure or building.

Capital construction project – it is a project to build new facilities or make significant long-term improvements to existing ones.

Estimator – he determines total cost of a construction project; responsible for takeoffs, markups, and overhead costs.

Beam – it is a piece of wood, steel or other material that runs across the structure of a building to hold weight

Consultant – someone who provides professional advice throughout varying stages of construction.

General contractor – the person responsible for day-to-day oversight of a site. They typically work directly with the property owners.

Procurement – the act of obtaining a service or product.

Backfilling – it is a process where the builder replaces the soil in the holes dug during construction or excavation.

Cost-plus contract – a contract where a contractor receives payment for all expenses plus a payment for profit.

Drywall – this is a board usually made from plaster that’s used to create the interior walls of a structure.

Trade – an occupation or craft typically involving manual skill, such as a plumber, framer, or electrician.

BOQ – it stands for Bill of Quantities. It is a list of materials and other expenditures that are used in a construction project.

Dependencies – tasks that contractors must complete before the next task can begin, such as running wiring before installing electrical features.

Subcontractor – a person or business that performs part of the work specified in another, larger contract.

All-in rate – it is the overall cost of an item comprising all direct and indirect costs.

Take off – a list of the types and quantities of materials needed for a phase of the construction project—or for it to be completed in its entirety.

Damages – that arise when a party to a construction contract breaches terms under their contract.

Exercise 1.

In the diagram find ten words related to the topic. They may be placed down, up, across or backwards.

D	R	Y	W	A	L	L	L	C	B
U	A	M	U	C	R	W	D	O	L
C	R	M	K	G	U	Y	R	N	U
T	S	Q	A	E	Y	R	A	T	E
S	Z	B	W	G	B	C	W	R	P
T	A	Z	E	T	E	V	I	A	R
A	X	L	L	A	A	S	N	C	I
T	R	A	D	E	M	I	G	T	N
P	R	O	J	E	C	T	S	O	T
X	B	S	S	E	C	T	O	R	Y

- Do you remember meanings of these words?

Exercise 2.

Match the words with their definitions.

1. Backfilling	1.	A. one determines total cost of a construction project; responsible for take offs, mark ups, and overhead costs.
2. Estimator	2.	B. a list of the types and quantities of materials needed for a phase of the construction project – or for it to be completed in its entirety.
3. Take off	3.	C. it means Bill of Quantities. It is a list of materials and other expenditures that are used in a construction project.
4. Construction management software	4.	D. one who provides professional advice throughout varying stages of construction.
5. Dependencies	5.	E. it is a process where the builder replaces the soil in the holes dug during construction or excavation.
6. Procurement	6.	F. that arise when a party to a construction contract breaches terms under their contract
7. Consultant	7.	G. design or technical drawing that includes crucial construction details.
8. BOQ	8.	H. the act of obtaining a service or product.
9. Blueprint	9.	I. tasks that contractors must complete before the next task can begin, such as running wiring before installing electrical features.
10. Damages	10.	J. programme used to manage many aspects of a project.

Exercise 3.

Divide words given into 3 groups in any way that seems appropriate to you: develop, architectural, damages, engineering, capital construction, carry out, cost-plus, coordinate, technical, the scope of work, oversee, launch, preliminary, original, terms and conditions.

--	--	--

- Add two extra words to each group.

Exercise 4.

Complete the sentences with the words given: damages, commercial sector, backfill, bottlenecks, all- in-rate, foremen, procurement, BOQ, scope of duties, trade.

1. We simply pay that a contracting party claims against us for breaches of contract.
2. doesn't include all expenses associated with the insurance of our project.
3. In larger construction projects we use and it consists of a list of materials and services required to perform a project.
4. Remember about highest quality of as it supports foundation walls and prevents water from pooling around the base.
5. My is limited only to that sector. I am afraid of too much responsibility.
6. There is never enough amount of physical space on a construction site leading to safety risks and logistical
7. In order to complete the project and acquire all the materials, equipment and services we are forced to go through the process of
8. Who is the leading in that construction site?
9. The construction of buildings and other structures used in require special kind of contracts.
10. That is very common so there is no problem to find efficient employers.

Exercise 5.

Work in pairs. Think of 3 new words or phrases that may be connected with the following aspects of the industry. Explain how they are connected with the following:

Residential sector:

-
-
-

Capital construction project:

-
-
-

Scope of work:

-
-
-

Exercise 6.

Work in pairs. Decide who and in what situation may say the following statements?

- 1. The drawing is still incomplete. I need another few hours and an access to Auto-cad to get it finished.
.....
- 2. Where are new labourers? I haven't seen them since morning!
.....
- 3. We need to order more beams and a tone of cement. Everything for today.
.....
- 4. Sorry, but I am not sure what the projects says, is it 30 or 50 cm?
.....
- 5. Unfortunately, we have underestimated the costs and it makes all the process much more complicated.
.....
- 6. The completion time prolongs. We may not meet the deadlines and it is connected with financial penalties.
.....
- 7. Both parties of the agreement agree in terms of quality of materials used.
.....
- 8. Where can I find something to drink? I am tired and thirsty!
.....
- 9. I ought to talk to a general contractor. This issue is beyond my scope of duties.
.....
- 10. The bottleneck is just there. Don't forget to leave all your items after you finish job.
.....

Exercise 7.

What may happen if the workers from the exercise above fail to complete their tasks. In pairs think of possible scenarios.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Exercise 8.

Problems on the construction site.

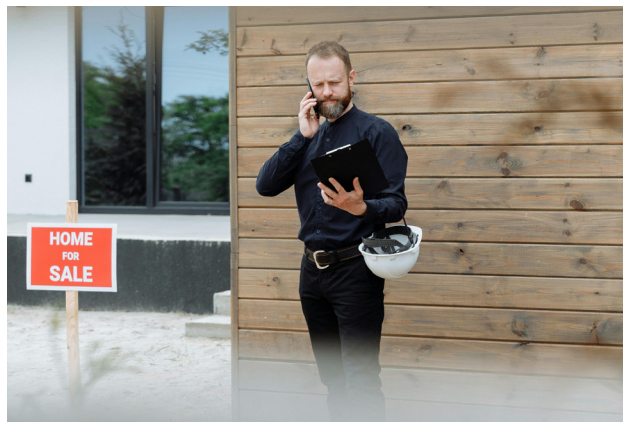
Look at the photo. Discuss the following questions with your partner.

- What is the place?
- What are the people doing?
- What had happened before the photo was taken?
- What questions would you like to ask them?
- Think of the possible ways to solve the problem.

.....

.....

.....



Source: Pexels

Exercise 9.

Work in groups of 5. Think about ways how mechanical solutions and innovation may make work on construction site easier.

.....

.....

.....

Exercise 10.

- What is the mechanical engineering?

- What does the role of a mechanical building engineer involve?
- What are pros and cons of this job?

Mechanical building engineering is a broad field. The role of a mechanical building engineer is exciting and multifaceted, and no two days are the same. On a large and complex project, you may be designing ventilation systems on one day and inspecting drainage systems on another.

By delivering numerous projects in a wide range of sectors, including health, industrial, education, and data centres, AtkinsRéalis has built a strong reputation in the mechanical and electrical engineering of buildings. We're known for our health and safety and environmental protection priorities, which we're extremely proud of.

Overseeing the design and drawing of mechanical systems

A mechanical building engineer is responsible for overseeing the design and drawing of mechanical systems within buildings, such as ventilation, air conditioning and fire protection. They will also analyse problems, perform calculations, supervise work, and carry out end-of-work inspections, ensuring quality, efficiency, and affordability throughout the lifecycle of a project. Increasingly, our engineers are using technology like Building Information Modelling (BIM) to provide accurate and holistic designs. BIM supports building mechanical engineers in designing and documenting systems in detail, whilst also enabling teams to work more collaboratively to deliver projects faster and more efficiently.

Collaborating in a diverse team

Mechanical engineers are part of diverse teams with varied skills and experience from which professionals can learn. Depending on the project, you could be working with project managers, civil engineers, structural engineers and more. To be effective, you'll need excellent stakeholder relations skills to communicate with the team and clients and thrive working within a dynamic project delivery environment. Collaboration is critical, and by sharing challenges early on, issues can be resolved more effectively, with better outcomes. By being genuinely collaborative and working within diverse teams, mechanical building engineers at AtkinsRéalis grow in confidence and develop their skillset to pave a successful career path in the industry.

Innovating in all areas

A good mechanical building engineer knows that traditional methods are not always the most efficient. At AtkinsRéalis, we're keen to constantly innovate and learn so that we are best equipped to react quickly to changes and discover new opportunities. Therefore, our mechanical building engineers benefit from continuous training while promoting advanced technologies, the environment and energy efficiency. Our professionals have the opportunity to master design technologies, including BIM and project integration as part of LEED® and Envision certifications.

Designing sustainably

It is imperative for mechanical building engineers to keep sustainability at the forefront of their minds. With the construction industry being responsible for 39% of global CO₂ emissions, it's not enough to add green solutions post-build; sustainability must be factored in early in the design stage. Innovative mechanical building engineers combine traditional and modern principles to create energy-efficient solutions. New forms of energy that are in the works can be integrated into buildings. Sensor technology, for example, ensures that lighting and air conditioning minimize energy requirements. Net Zero Carbon by 2050 is the global deadline we cannot afford to miss so, and at AtkinsRéalis, we're committed to building the future and safeguarding it for generations to come with sustainable, innovative and resilient projects and processes. Our teams benefit from vast expertise, and we're always looking to collaborate and share our knowledge, skills and innovations with passionate people. In our recent Engineering Net Zero Canadian Technical Report, we describe how we plan to lead a low carbon future by using emerging and disruptive technologies and leveraging cross-sector solutions. However, we need driven engineers with new and exciting ways of thinking to help us deliver it.

Source: <https://careers.atkinsrealis.com/blogs/2021-8/what-is-the-role-of-a-mechanical-building-engineer>

- What is the context of the following words and phrases in the article:
 1. Expertise –
 2. Keep sustainability –
 3. Complex projects –
 4. BIM –
 5. Resilient projects –
- Is It the job for you? Why (not)?

2. GRAMMAR

2.1. Present tenses

PRESENT TENSE	USE	EXAMPLE	TIME EXPRESSIONS
PRESENT SIMPLE	<ul style="list-style-type: none"> • Current habits • Regular activities • Permanent situations • General truths and facts 	<p>I work in construction industry.</p> <p>She works remotely some days a week.</p> <p>I don't have work ID.</p> <p>Does the company operate in Poland?</p>	<p>Always, often, sometimes, usually, seldom, hardly ever, ever, every day/ week....</p>
PRESENT CONTINUOUS	<ul style="list-style-type: none"> • Actions happening now • Temporary situations/ activities • Changing/ developing situations. • Annoying habit (with always) • Fixed arrangements for the future 	<p>I am learning English now.</p> <p>This week We aren't attending his lectures.</p> <p>Is it getting colder?</p> <p>She is always taking my staff.</p>	<p>Now, at the moment, these days, for the time being</p>
PRESENT PERFECT SIMPLE	<ul style="list-style-type: none"> • Situations/states that started in the past and are still true. • A series of actions continuing up to now. • Completed actions at a time in the past which is not mentioned. • Completed actions in the past with the present result. 	<p>I have had this car for 7 years.</p> <p>I haven't checked all those projects yet.</p> <p>She has travelled to 5 Asian countries.</p> <p>Have you read the book?</p>	<p>For, since, yet, already, just, recently, lately, still, so far, ever, never, before, this week/ month</p>
PRESENT PERFECT CONTINUOUS	<ul style="list-style-type: none"> • Actions continuing up to the present moment. • Actions stopping just before the present moment. 	<p>He has been driving the car for the last eleven years.</p> <p>I am so dirty because I have been building that new shed.</p>	<p>For, since, yet, already, just, recently, lately, still, so far, ever, never, before, this week/ month...</p>

STATE VERBS- are not normally used in continuous tenses because they don't describe actions.

STATE VERBS refer to:

thinking	believe, imagine, know, mean, think, understand
existence	be, exist
emotions	hate, like, love, need, prefer, satisfy, want
the human senses	hear, smell, sound, taste
appearance	appear, look, resemble, seem
Possessions and relationships between things	belong to, consist of, have, include, involve, own

Source: Mann, Taylore-Knowels, 2012.

Exercise 1.

Put the verbs in the correct present tense.

1. you (use) that pen now? Can I (take) it?
2.anyone (see) my keys? I don't know where I (put) them
3. I (work) on this project since we (start) our cooperation in2020.
4. I (go) on a conference in Stockholm next month. I never (be) there.
5. Why are you so tired? I (repair) my car since morning.
6. I can't stand him. Healways (ask) the same question.
7. I can't talk to you right now. I (work) on that terribly difficult task.
8. you (talk) to Mr Smith this week?
9. My construction company (analyse) the proposal of cooperation this week. The management (look) very preoccupied.
- 10.I (change) tyres in cars since morning. I (change) 20 of them so far.
11. What kind of work you (do)? Is it the same what..... you (work) on now?
12. What they (do)? Dirt is everywhere!
- 13.He (run) his own company for years but he (never/meet) such a challenging customer.
14. What you (do) recently? The construction should have been completed a week ago.
15. she (help) you? Yes, she whenever she (have) some free time.

Exercise 2.

- Think of your everyday routine. What activities do you do on regular basis but you don't like them?
- Make 3 sentences using Present Simple.

1.
2.
3.
4.

- Ask you partner about his experience.

Exercise 3.

- Think of your first year at the University. What activities that are happening now are new to you?
- Make 3 sentences using Present Continuous

1.
2.
3.

Exercise 4.

Think of the following aspects and make 3 sentences in Present Perfect Simple/Present Perfect Continuous:

- Your pastime/hobby
- Professional experience
- Learning English

1.
2.
3.

- Ask your partner if he/she has similar experience to yours.

Answer the questions.

1. What have you never done but you would like to do?
2. What have you been doing more than usual recently?

Exercise 5.

Work in pairs. Make up a dialogue to find out more about each other. Use the following time expressions: for the time being, more than usual, hardly ever, so far, just. Ask 6/7 questions.

.....

.....

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2.2. Past tenses

PAST TENSE	USE	EXAMPLE	TIME EXPRESSIONS
PAST SIMPLE	<ul style="list-style-type: none"> Action completed in the given past time Past habits Past actions happening one after another Past actions that won't happen again. 	<p>I worked in construction industry last summer.</p> <p>She worked remotely some days a week.</p> <p>I had my breakfast and went to work.</p> <p>The late Queen loved Baltimore in Scotland.</p>	<p>Yesterday, last week/ month/ year, three days ago, in 2021, when..</p>
PAST CONTINUOUS	<ul style="list-style-type: none"> Past actions in progress at a given time. Past action in progress interrupted by another action. Simultaneous actions in the past 	<p>I was learning English at 5 pm yesterday.</p> <p>We were attending his lectures when he died.</p> <p>She was working on the project when I was still analysing data.</p>	<p>When, while</p>
PAST PERFECT SIMPLE	<ul style="list-style-type: none"> Past action which happened before another past action Situations and states before the past. 	<p>I had had this car for 7 years before it broke down.</p> <p>When we arrived at the station, the train had already left.</p>	<p>Before, already, just , never, before, by the time,</p>
PAST PERFECT CONTINUOUS	<ul style="list-style-type: none"> Past action continuing over a period of time before another past action. 	<p>He had been driving the car for the last eleven years before it broke down.</p> <p>I was so dirty because I had been building that new shed.</p>	<p>For, since, yet, already, just, still, ever, never, before,</p>

Exercise 1.

Put the verbs in the brackets in the appropriate past tense.

- When he (drive) his car, he (lose) his way.
- When I (arrive) to work, everybody (discuss) the new project.

3. How long (work) for this company before they (fire) you?
4. He (try) to work out the problem for an hour when he (realise) there (be) a mistake in it.
5. The workers (stand) under the crane when they (hear) the alarm from the shed.
6. They (cooperate) for a few months when they (decide) to set up a company together.
7. The supervisor (not tell) his employees that in the past he (spend) a few years in prison.
8. While the engineers (analyse) the new project , someone (break) into the office and (steal) all important documents.
9. I (not understand) what (go on). Everybody (stare) at me while I (try) to stand up.
10. Mary (not wear) her glasses at the time, so she (not notice) what car the man (drive).
11. We (not work) outside yesterday because it (rain) all day.
12. I (phone) you several times yesterday but you (not answer). What you (do) that time?
13. The professor (explain) the problem for some time when he (realise) that his students (not listen) to him.
14. David (work) on Japanese apparatus before so he (know) how to handle it.
15. The crew (not pay) attention to the client's complains because they (hear) them so many times before.

Exercise 2.

Think of the last summer internship/job that you did. Describe it in 3 /4 sentences. Use Past Simple, Past Continuous and Past Perfect.

1.
2.
3.
4.

Exercise 3.

Work in pairs. Ask your partner about details concerning his last summer job experience.

.....
.....
.....

Exercise 4.

Work in pairs. Make dialogue with the words given (6/7 questions and answers): while, before, did, when, ago in.

A.....
B.....
A.....
B.....
A.....
B.....
A.....
B.....

Exercise 5.

Think of the most challenging project you have ever completed and say:

- When it took place
- The type of a project
- 2 facts of the process of doing it
- A failure you came up against while working on it.

.....
.....
.....
.....
.....

2.3. Future tenses

FUTURE	
PRESENT TENSES	FUTURE TENSES
<p>PRESENT SIMPLE</p> <ul style="list-style-type: none"> • Arranged future actions (timetables, arrangements): <i>The match starts at 7.</i> • Calendar: <i>My birthday is on the 7th of June.</i> 	<p>FURURE SIMPLE</p> <ul style="list-style-type: none"> • Predictions/offers/promises: <i>I think it will cost more.</i> • Decisions made at the time of speaking: <i>I will buy it.</i> • Opinions, hopes, fears: <i>I think it will cost more.</i> • In IF- clauses in conditional sentences: <i>If it is hot, I will put the air conditioning on.</i> • After <i>as soon as, when, before, after, until</i>-clause
<p>PRESENT CONTINUOUS</p> <ul style="list-style-type: none"> • Definite arrangement in the near future: <i>I am staying with my parents next weekend.</i> 	<p>FUTURE CONTINUOUS</p> <ul style="list-style-type: none"> • Actions in progress in a given future time: <i>I will be working hard tomorrow.</i> • With expressions: <i>This time.../ In days time.../ At O'clock, from to.... I will be working hard.</i>
<p>BE GOING TO</p> <ul style="list-style-type: none"> • Intention: <i>I am going to learn hard.</i> • Planned actions: <i>I am going to clean the window.</i> • There is evidence that sth is going to happen: <i>It is going to rain.</i> 	<p>FUTURE PERFECT</p> <ul style="list-style-type: none"> • Action finished before certain future time: <i>BY the time/When you come, I will have finished decorating the house.</i>
	<p>FUTURE PERFECT CONTINUOUS</p> <ul style="list-style-type: none"> • Duration of an action up to a certain time in the future: <i>By the time you come, I will have been decorating the house for 3 hours.</i>

Exercise 1.

Choose correct forms.

1. What are you *going to do/ will you do* this afternoon? Have you made any arrangements?
2. Don't come to me between 7:00 and 9:00, I *will learn/ will be learning*.
3. This time next week I *will be taking/will take* my English exam.
4. I promise I *never do /will never do* it again.
5. Look at the clouds in the sky! It *will/is going to* rain.
6. If I meet her again, I *will tell/am going to tell* it to her.
7. By the time you come back, I *will finish/ will have finished* redecorating our room.

8. What time *will/do* the classes start?
9. Let me know as soon as you *know/will know* the results.
10. It is confirmed! They *are arriving/ will be arriving* next weekend.

Exercise 2.

Put the verbs in the correct future forms.

1. I cannot come to you on Tuesday. My boss (visit) my office.
2. What you (buy) for the money you won in the lottery?
3. I don't think you (have) any problem with that task.
4. (you accept) the job they've offered you in Scotland?
5. What time (you start) night shift?
6. If you don't come back by 6 o'clock, all best offers (disappear).
7. In 10 years' time I (work) in our headquarter in Chicago.
8. You have to be on duty until you (finish) all your obligations.
9. This time next week I (enjoy) myself in Tenerife.
10. There is no need to hurry. Joel (drive) us to the airport.

Exercise 3.

Finish the sentences in a way that is true for you. Use future forms.

1. At 7 pm I
2. This time next month I
3. By the time I finish the semester I
4. Next week I am going to because
5. I promise myself I will

Exercise 4.

Think of your future job. What 3 criteria does it have to meet. Use 3 different future forms to describe it.

1.
2.
3.

Exercise 5.

Work in pairs. Make up a dialogue (5 questions and answers) that starts in the way shown below:

- A: This time next week I will be flying to Malesia!
- B:
- A:
- B:
- A:
- B:
- A:
- B:
- A:

2.4. Passive voice

I **WATCH** THE MOVIE. → THE MOVIE **IS WATCHED** BY ME.

TENSE	ACTIVE VOICE	PASSIVE VOICE
PRESENT SIMPLE	I watch the movie.	The movie is watched by me.
PRESENT CONTINUOUS	I am watching the movie.	The movie is being watched by me.
PAST SIMPLE	I watched the movie.	
PAST CONTINUOUS	I was watching the movie.	
PRESENT PERFECT	I have watched the movie.	
FUTURE SIMPLE	I will watch the movie.	
PRESENT INFINITIVE	I must watch the movie.	

Exercise 1.

Change the sentences into passive form.

1. Someone is cleaning the windows.

.....

2. People spend a lot of money on food.

.....

3. I hate it when people tell me what I am supposed to do.

.....

4. She saw that review in the magazine.

.....

5. I was doing my homework that time.

.....

6. Clive hasn't cut the grass yet.

.....

7. We have been analysing that issue for a long time.

.....

8. I will definitely visit her in hospital.

.....

9. I must read all set books this summer.

.....

10. Who broke the mug?

.....

11. Police is questioning the witness of the accident now.

.....

12. Someone took the documents while I was out.

.....

13. They have been renovating the hospital for the last seven weeks.

.....

14. The team of mechanics have worked out the assembly of these machines.

.....

15. A postmen delivers mails every day before noon.

.....

Exercise 2.

Work in pairs. Write down (4/5 points) the procedure of:

a) pouring concrete on a construction site.

- Use the following verbs in Passive form: mix, pour, rotate, use, transport.
- Another useful words: portable mixer, drum, transport truck, chute.

b) changing a tire in a car.

- Use the following verbs in the Passive: unscrew, loose, lift, take off, put on, inflate.
- Another useful words: wheel, tyre, screw, inflator, car lift, spanner.

.....
.....
.....
.....
.....
.....

Exercise 3.

Read the extract of the Instruction Manual of DeWALT (C980-XE, DC981-XE, DC983-XE, DC987-XE

HEAVY DUTY XRP™ 1/2" (12.7MM) CORDLESS DRILL/DRIVER) drill/driver.

Were it is possible, change the sentences into Passive form.

5. BATTERY TOOL USE AND CARE

- Ensure the switch is in the off position before inserting battery pack.** Inserting the battery pack into power tools that have the switch on invites accidents.
- Recharge only with the charger specified by the manufacturer.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- Use power tools only with specifically designated battery packs.** Use of any other battery packs may create a risk of injury and fire.
- When battery pack is not in use, keep it away from other metal objects like paper clips, coins, keys, nails, screws, or other small metal objects that can make a connection from one terminal to another.** Shorting the battery terminals together may cause burns or a fire.
- Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help.** Liquid ejected from the battery may cause irritation or burns.

- a.
- b.
- c.
- d.
- e.

Source: https://nps.edu/documents/111291366/113869380/Dewalt_Cordless_Drill.pdf/2f090e29-aabe-48cf-b3e1-0d251ce423fd?t=1554211130000

Exercise 4.

Work in pairs.

- Student A. Tell your partner the procedure of safety use of cordless drill/driver. Make a few mistakes in it.
- Students B. Ask your partner some questions about the details of the procedure of safety use of cordless drill/driver to find out the mistakes.
- Use Passive Voice to form statements and questions.

.....

.....

.....

2.5. Reported speech

Changing from direct speech into reported speech

DIRECT SPEECH	REPORTED SPEECH
Present Simple: "I work 5 days a week" he said	Past Simple: He said that he worked 5 days a week.
Present Continuous: "I am working on the project now" he said.	Past Continuous: He said that he was working on the project then.
Present Perfect: "I have bought a new car" he said	Past Perfect: He said that he had bought a new car.
Present Perfect Continuous: "I have been working here 7 years" he said	Past Perfect Continuous: He said that he had been working there 7 years.
Past Simple: "I was at home yesterday" he said	Past Perfect: He said that he had been at home the day before.
Future Simple: "I will do this soon" he said.	Would form: He said that he would do that soon.
Must: "I must complete the task" he said.	Had to: He said that he had to complete the task.

QUESTION:

"Do you work here?" She asked	She asked if I worked there
"Where do you work?" she asked	She asked where I worked.

COMMANDS:

"Wear your helmet on the construction site" he said.	He told me to wear my helmet on the construction site."
"Don't smoke on the construction site" he said.	He told me not to smoke on the construction site.

The following words also change:

Here - there

Now - then

This/these - that/those

Today - that day

Tonight - that night

Yesterday - the day before/ the previous day

Tomorrow - the following day

Last night - the night before

Exercise 1.

Put the following sentences into reported speech.

1. "He keeps asking these silly questions" he said.
.....
2. "When are you going to start working on the project?" she asked.
.....
3. "Does he know that I have started a new job?" she asked.
.....
4. "I don't know where the problem is." she said.
.....
5. "I have to finish the task by 2 pm." he said.
.....
6. "I am writing this report now" she said.
.....
7. "Don't change the tire yet, wait for a car owner" he said.
.....
8. "I have been working in this company for the last 3 years" she said.
.....
9. "I want to change my job as soon as possible" she said.
.....
10. "This is my first project I am doing alone" he said.
.....

Exercise 2.

Put the following sentences into reported speech.

1. "Never do the task first, double check the detail." She advised me
2. "Remember to check fastening of the harness before working on heights." He reminded me
3. "They give me too challenging tasks, I can't cope with them." He complained that
4. "Look! That layer is not stiff enough!" He noticed that
5. "And this is the easiest way to do it." He explained
6. "Don't use that equipment without supervision. It's too dangerous." He forbade us

7. "Tomorrow you have a day off." Supervisor informed us
8. "How about having some coffee?" My colleague suggested
9. "Can you say that again but a bit louder? She asked
10. "If you do that again I will be forced to punish you!" She warned

Exercise 3.

Work in pairs. Student A – You are an apprentice. Read the advice from your supervisor about working with or near heavy earth-moving equipment. Report it to your partner.

- Don't give hand signals unless you've trained.
- Make sure the driver can see you. Don't stand behind the vehicle.
- Keep away from cables and moving parts.
- Don't touch any controls an switches.

He told us not to give hand signals unless

.....

.....

.....

Source: Frenedo, 2012.

Exercise 4.

You are an apprentice painter. Read the advice from your supervisor about using electrical equipment. Report it to your partner.

- Keep wet hands away from electrical equipment and light switches.
- Don't disconnect anything by pulling on the cable.
- Pull out the plug.
- Unplug equipment when it isn't in use.
- Don't cover the switches with wallpaper paste.

He told us to keep wet hands away from

.....

.....

.....

.....

Source: Frenedo, 2012.

Exercise 5.

Work in pairs. Your instructor presented you the tips “How to Use a Drill”. Report them to your partner, use the following verbs: order, remember, instruct, tell, advise, remind.

How to Use a Drill: 11 Tips So Simple Anyone Can Do It

- 1. Wear Safe Clothing, Eye and Ear Protection
- 2. Choose the Correct Drill Bit for Your Project
- 3. Fit the Drill Bit into the Drill
- 4. Run the Drill to Check It’s Working
- 5. Clamp Down Material Before Drilling
- 6. Handle the Drill Cord Carefully
- 7. Apply Steady Pressure to the Drill
- 8. Adjust the Clutch to Increase the Power
- 9. Use the Reverse Switch on Your Drill
- 10. Avoid Overheating the Drill Bit

Source: <https://www.mteevanhire.co.uk/blog/how-to-use-a-drill-11-tips-so-simple-anyone-can-do-them/>

The instructor advised us to

.....

.....

.....

.....

.....

.....

2.6. Modal verbs

ABILITY	POSSIBILITY/ IMPOSSIBILITY	PERMISSION
<p>He can do that task.</p> <p>He was able to complete that alone.</p>	<p>He can send it by e-mail.</p> <p>He could be tired after such a tiring day.</p> <p>It may be a hard day tomorrow.</p> <p>It might be a hard day tomorrow.</p> <p>You can't leave work earlier.</p> <p>He couldn't leave work earlier.</p>	<p>Can I park my car here?</p> <p>Could I see you in a moment?</p> <p>May I say something?</p> <p>Might I use your meter?</p> <p>You can keep this meter until tomorrow.</p>
OBLIGATION	NECESSITY	PROHIBITION
<p>I must work harder.</p> <p>I have to finish that project.</p> <p>I had to do it yesterday.</p>	<p>He needs to be supervised.</p> <p>He has to find a new job.</p> <p>The machinery needs checking.</p>	<p>You mustn't smoke here.</p> <p>You are not allowed to smoke here.</p> <p>You can't enter the construction site without your ID.</p>
ABSENCE OF OBLIGATION OR NECESSITY	LOGICAL ASSUMPTION (AFFIRMATIVE)	LOGICAL ASSUMPTION (NEGATIVE)
<p>You needn't pay the fee- the entrance is free.</p> <p>You don't have to be there so early.</p> <p>You needn't have checked it so many times. (but you did)</p> <p>You didn't need to check it so many times. (and you didn't)</p>	<p>That building must be very old. (it looks old)</p> <p>He must have overslept. (he hasn't come yet)</p> <p>They must have gone out. (Nobody answers the phone).</p>	<p>He can't be in the office. (I am sure he isn't)</p> <p>I can't have made a mistake. (I am sure I didn't do it)</p> <p>You can't have been working so hard. (You look relaxed)</p>
ADVICE	CRITICISM	REQUEST, OFFERS, SUGGESTIONS
<p>You should check the manual again.</p> <p>You ought to supervise the staff.</p> <p>You shouldn't supervise the staff.</p>	<p>You should have told me that before. (but you didn't)</p> <p>You could have informed the staff about the changes. (but you didn't)</p> <p>You ought to have called the manager earlier. (but you didn't).</p>	<p>Can I open the window, please?</p> <p>Could you pass me that torch?</p> <p>Shall I check the progress of work?</p> <p>You should do it much faster.</p> <p>You ought to read the manual first.</p>

Exercise 1.

Choose the best option to complete the sentences.

1. Let’s inform him about the changes. He must not/might not know about them.
2. I can’t stay any longer. I have to/might go.
3. Someone is at the door. It has to/must be a delivery man.
4. In my opinion, the manager should/needs to give us a pay rise.
5. You mustn’t/ don’t have to give the answer now.
6. When he was younger he could/might handle it within an hour.
7. It’s a construction site rule. All workers must/have to wear helmets.
8. If you want this job, you must/needn’t apply as soon as possible.
9. If you are afraid of heights, you don’t have to/ mustn’t work on scaffoldings.
10. You should have told/ can have told her about the changes, now she doesn’t know what to do.
11. My manager tells that I needn’t have taken out / didn’t need to take out that drill. That made the work more complicated.
12. You needn’t/ shouldn’t ask me for permission if you want to use my gloves.
13. He needn’t have bought/ couldn’t have bought a new overall because I had lent him mine.
14. Might/ Should you close that door? It’s very loud inside.
15. When I was in the previous company we mustn’t/ didn’t have to wear our ID all the time.

Exercise 2.

Think of 3 rules that need to be obeyed on a construction site/ in a car workshop. List them below:

1.
 2.
 3.
- Do you know why it is important to obey them?

Exercise 3.

Work in pairs. Think of 3 examples of prohibition that are enforced in a University laboratory. List them below:

1.
2.
3.

- Do you know why it is important to enforce them? Why?

.....
.....

Exercise 4.

In pairs think of the general health and safety rules being enforced in your future profession. Give examples of 3, use the modal verbs listed above.

1.
2.
3.

Exercise 5.

Act out a dialogue (6/7 questions) between a supervisor and an apprentice. Instruct the one on the safety rules in the workplace. Use at least 5 modal verbs listed above.

.....
.....
.....
.....
.....

2.7. Conditionals

I CONDITIONAL – FUTURE

IF + PRESENT SIMPLE, FUTURE SIMPLE.

If I have time, I will help you.

If = Should

Should I have time, I will help you.

II CONDITIONAL – UNREAL PRESENT

IF + PAST SIMPLE, PERSON+ WOULD + INFINITIVE

If I were you, I would do it.

If – Were

Were I you, I would do it.

If I had a car, I would go there.

If – Suppose/ Supposing

Suppose I had a car, I would go there.

III CONDITIONAL – PAST

IF + PAST PERFECT , PERSON+ WOULD + HAVE + PAST PARTICIPLE

IF I had been there, I would have done it.

IF = Had

Had I been there, I would have done it.

Phrases with a similar meaning to “if”:

Unless/in case/as long as/provided that/but for/ on condition that/otherwise/even if

Exercise 1.

Underline the most suitable form in sentences.

1. If the machine *stops/will stop*, you *press/will press* this button.
2. I can't understand what it means! If I *wear/wore/will wear* glasses, I *read/would read* it with ease.
3. If you *help/helped* me with this machine, I *will/would* do the same for you one day.
4. According to the timetable, if the train *leaves/left* on time, we *will/would* arrive at 5:30.
5. If it *is/will* be fine tomorrow, we *start/will start* the project outside.
6. If you *help/helped* me, we *will/would* finish the assembly on time.
7. Why didn't you tell me? If you *told/had told* me, I *had helped/would have helped* you.
8. It's quite simple really. If you *fit/will fit* that screw here, then the whole system *work/ will work/would work*.
9. If Tom *didn't drive/hadn't driven* so fast, his car *didn't crash/wouldn't crash/wouldn't have crashed* into a tree.
10. I don't like this job. I think I *am/will be* happier if I *change/will change/would change* not only the job but the country!
11. I don't know how to fix this drill, but I am sure that if I *will do/did*, I *fix/will fix/would fix* it a lot quicker than anyone in your team.
12. Let me give you some advice. If you *smoked/would smoke/had smoked* less, you *didn't feel/wouldn't feel/wouldn't have felt* so tired.
13. We have a suggestion to make. How *do you feel/would you feel* if we *offered/would offer/had offered* you the job of assistant manager?
14. If I *phone/will phone/phoned* you tonight, *are you/will you be* in?
15. If Bill *didn't steal/hadn't stolen* that car, he *wasn't wouldn't be/hadn't been* in prison now.

Exercise 2.

Match the sentences halves.

1. If the materials are late, we can't
2. If we expect bad weather, we allow
3. If we had wanted a ten-foot wall, we
4. If we didn't make a profit, we were out
5. If you had had a large project, estimating
6. If you want to prevent accidents,
7. If you read the manual, you will
8. If everyone had worked well,
9. If iron gets wet,
10. If I had a problem,

- A. need more bricks.
- B. of business.
- C. start work.
- D. never happens to it.
- E. the project wouldn't have taken so much time.
- F. I would talk to my supervisor.
- G. for stoppages.
- H. know how to it the device.
- I. becomes quite complex.
- J. always wear protective clothes.

Exercise 3.

Finish the sentences.

1. If I were you,
2. If I had been there,
3. If I complete the task on time,
4. I would have never
5. I would work more eagerly
6. I will operate that crane when
7. Unless you help me,
8. I wouldn't be so tired now if I
9. As long as you provide us with an efficient training we
10. Call emergency in case

Exercise 4.

Speculate about the following situations.

1. The labourer cannot find a proper job.
If the labourer
2. The weather is too windy to commence the project outside.
.....
3. The plane crashed into the bridge due to the faulty brakes.
.....
4. The drill broke down after two weeks of usage.
.....
5. The drawings were incomplete so we didn't take it on.
.....

Exercise 5.

Work in groups of 4. Look at the picture of the collapse of the hotel. Discuss:

- What/who caused it to happen.
- What would you do now.
- Which tools/equipment/machinery would you use.
- What preventive measures will you take for the future.



Source: *Unsplash.com*

- Use I, II, III Conditional.
- Explain your conclusions to the class.

.....

.....

.....

.....

.....

.....

.....

2.8. Adjectives

- Adjectives are used to describe nouns: what kind they are, what colour, how much, how many and which.
- They usually come before nouns.
- Some adj. can be used with *the* – when they represent the group e.g. The unemployed, the underqualified.
- Regular comparisons of adjectives:

Adjective	Positive	Comparative	Superlative
One-syllable	long	longer (than)	the longest (of/in)
	clean	cleaner (than)	the cleanest (of/in)
Two-syllable	friendly	friendlier (than)	the friendliest (of/in)
	careful	more careful (than)	the most careful (of/in)
More than two syllables	intelligent	more intelligent (than)	the most intelligent (of/in)
	dangerous	more dangerous (than)	the most dangerous (of/in)

- Two-syllable adjectives ending in -er, -ly, -y, usually form their comparatives and superlatives by adding -er and -est to the positive form.
- Irregular comparisons of adjectives:

bad – worse – the worst
 good – bad – the best
 little – less – the least
 many/much – more – the most
 far – further – the further

- Other constructions to describe comparisons: as + adjective + as ; not so/ as + adjective + as ; the same as....., twice/three times, etc./ half as + adjective + as ; less + adjective than....., the least _ adjective of/in

Adverbs – most adverbs are formed by adding -ly to the end of the related adjective: slow – slowly, clever – cleverly.

Exercise 1.

Create the comparative and superlative forms of the following adjectives.

- 1. Strong -
- 2. Hard -
- 3. Tough -
- 4. Quick -
- 5. Brittle -
- 6. Powerful -
- 7. Specific -
- 8. Expensive -

Exercise 2.

Think of 3 more adjectives that may be useful in your future job. Create comparative and superlative forms.

- 1.
- 2.
- 3.

Exercise 3.

Complete these sentences with materials of your choice. Create three more sentences. Use other constructions to describe comparisons.

- 1. A rubber band is more elastic than
- 2. A ceramic tile is more brittle than
- 3. A piece of steel is harder than
- 4. Soil is more porous than
- 5.
- 6.
- 7.

Exercise 4.

Divide the following adjectives into 3 groups in a way that seems appropriate to you: industrious, solid-state, incompetent, rough, best hands-on, sturdy, skilful, automotive, necessary, essential, (in)significant, spatial, worn-out, high-quality, robotic, power-driven, reflex, durable, efficient, functional, precise safe, sustainable, versatile, well-planned, knowledgeable.

--	--	--

- Add two more adjectives to each group.

Exercise 5.

Put the words in the correct order to make the sentences. When it is possible use either comparative or superlative form of the adjective.

1. That/ much/ device/ is/ innovative/ durable.
.....
2. In/ need/ element/ order/ used/ to sustainable/ the/ development/ keep /
you/ to/ replace the/ worn- out/ process.
.....
3. I/ tool/ believe/ workshop/ is/ used/ the/ versatile /in/ the.
.....
4. It's/ skilful/ be/ as/ extremely/ precise/ essential/ to/ as/ and/ possible.
.....
5. In/ equipment/ automotive/ quality/ our/ service/ we/ the/ only/ available/
use/ the/ best/ in/ market.
.....
6. The/ knowledgeable/ be / profession /essential/ our/ skills/ needed/ in/ is/
to/ and/ efficient.
.....
7. It/ maintain/ power/ properly/ driven /is/ obligatory/ to/ all /devices.
.....
8. The/ will/ solution/ be /functional/ robotic/ awarded.
.....

9. That/ is/ sturdy / not/ type/ material/ of/ and/ porous/ durable.

10. You/ planned/ need/ competent/ to/ your/ be/ twice/ colleagues/ as/ much/
and/ well /as are.

Exercise 6.

Work in pairs. Look at the website: <https://www.screwfix.com/c/tools/impact-drivers-wrenches/cat830838>

- Each of you choose one electric drill that may suit you.
- Compare your choice with your partner.
- Use at least 3 different adjectives.

.....

.....

.....

Speaking

- Which option is more attractive to you: working in Poland or working abroad? Why?
- What can we do to be more efficient at work?
- What is more important to you: job satisfaction or salary?
- Who is the most industrious person you know? Why do you think so?
- Which tool is the most versatile in your opinion?
- What kind of material is the most efficient to work with? Why do you think so?

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