

Health and Safety

- 1/ Describe 4 pieces of equipment that are used in engineering work shops.
- 2/ What are the hazards associated with using a Lathe?
- 3/ What type of protective equipment is used when working a workshop environment?
- 4/ Name 4 good safe working practices that we need to adhere to in our work shops.
- 5/ What are the safety control measures we use when using a furnace/forge?
- 6/ what are the dangers associated with the Guillotine?
- 7/ Explain the safety signs below:



8/ Challenge: **Justify the need for a risk assessment in a workplace.**

- 9/ On a risk assessment what is the Risk Rating?
- 10/ What would you do if you noticed an issue with a piece of equipment?
- 11/ Who do you report safety issues to?
- 12/ Can hand tools be dangerous? If so how can we make sure we use them safely?
- 13/ How would carry a heavy materials safely?
- 14/ What is the safe and legal limit in KG for lifting heavy objects?
- 15/ If there is a fire in the workshop what should you do?

- E - Environment
- S - Safety
- C - Customer
- A - Aesthetics
- P - Price
- E - Ergonomics
- F - Function
- M - Materials

Analyse one of the products below using ESCAPE FM



Careers

- 1/ In Engineering there are many sectors you could work in, can you name 4 of them?
- 2/ What qualifications do employers like you to have to work in Engineering?
- 3/ Name 4 employability skills and employer needs to you to have.
- 4/ Name 4 issues that would make an employer consider that you should not work for them
- 5/ Name 4 colleges that provide FE (Further Education) training in your local area.
- 6/ What does Self-employed mean?
- 7/ What is the average wage of someone in the UK?
- 8/ Challenge: **Research 3 available Engineering jobs on the internet.**

**Interesting links.**

- <https://www.gov.uk/apply-apprenticeship>
- <https://www.engineeringjobs.co.uk/>
- <https://www.indeed.co.uk/>
- <https://www.cv-library.co.uk/>

- 9/ Investigate what a CV is (Curriculum Vitae) and think how yours might look.
- 10/ How would you write a letter for an employer? Can you write a well presented letter that could help you apply for a job
- 11/ Research local colleges and find out when at least two open day/evening events are on.

## Materials

### DO NOW ACTIVITY

MATCH THE NAME OF THE COMPOSITE/SMART AND MODERN MATERIALS WITH THE IMAGES

Kevlar	Graphite composite	Polymorph materials	Shape Memory Alloys	Titanium
Carbon fibre reinforced plastic	Glass reinforced plastic (GRP)	Laminated composites		

### Product Analysis Help Sheet with Sentence Starters

E – Ergonomics are how the product fits the human form  
 S – Safety is to ensure the product is safe for humans to use  
 C – Client is the type of person that would purchase it  
 A – Aesthetics is what the product looks like  
 P – Price is the cost of the materials, production and profit  
 E – Environment is the type of area it will be in and how is it environmentally friendly  
 F – Function is what the product does  
 M – Materials the product could be made from  
 The product is **ergonomically** designed to fit the human form because.....The scooter is designed for children between 4 and 16 tears old which means some parts may need to be adjustable. The handle bars are.....  
 The **materials** used to build the scooter will need to be.....The materials we could consider would be...../  
 The properties of titanium are...../  
 The scooter **functions** as a .....It can be used to.....It has a brake that works by.....

## ENGINEERING KNOWLEDGE ORGANISER

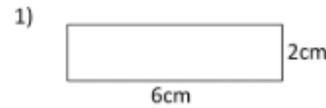
Mathematics in Engineering:

Area =  $L \times H = \dots\dots\dots m^2$

Perimeter =  $L + H + L + H = \dots\dots\dots m$

Work out the area and perimeter of the following rectangles.

They are not to scale. Remember - **area inside** and **perimeter outside**.



Area = \_\_\_\_\_ square cm

Perimeter = \_\_\_\_\_ cm



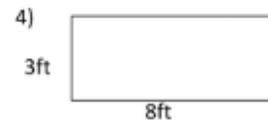
Area = \_\_\_\_\_ square mm

Perimeter = \_\_\_\_\_ mm



Area = \_\_\_\_\_ square m

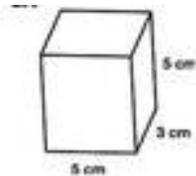
Perimeter = \_\_\_\_\_ m



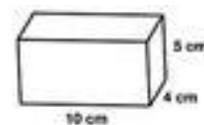
Area = \_\_\_\_\_ square ft

Perimeter = \_\_\_\_\_ ft

Volume =  $L \times H \times D = \dots\dots\dots m^2$

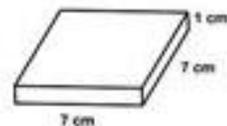


Volume = \_\_\_\_\_



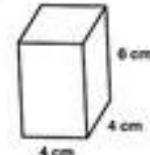
Volume = \_\_\_\_\_

g.



Volume = \_\_\_\_\_

h.



Volume = \_\_\_\_\_

## Tools and Equipment

Name the tools and equipment



What are the three materials used to remove the scratches and polish up metal products?

What is accuracy and why is it important?

What is a tolerance used for and why is it important?

What is knurling and why do we use it?

Name 4 ways we can add a protective layer to metal.

Name 4 safety rules when working in a workshop.

Describe four different parts of the lathe and explain what they do.

Explain what forging is and why it is important.