

Resistant Materials

Year 8 Homework Booklet

Name:

Teacher:

Form:

My teacher is going to test me on all of my homework at the start of each lesson.

For my technical knowledge I need to know:

- How to spell the word correctly
- What the meaning is
- How and where it is used.

Marks

Date	Test number & total mark	My mark	%
	Test 1 - 8 marks		
	Test 2 - 6 marks		
	Test 3 - 16 marks		
	Test 4 – 10 marks		
	Test 5 – 10 marks		
	Test 6 – 20 marks		
	Test 7 – 13 marks		
	Test 8 – 10 marks		
	Test 9 – 13 marks		
	Test 10- 8 marks		
	Test 11 - 6 marks		
	Test 12 - 6 marks		
	Test 13 - 8 marks		
	Test 14 – 8 marks		
	Test 15 – 11 marks		
	Test 16 – 9 marks		
	Test 17 – marks		
	End of module test – 60 marks		

Learning towards excellence UPUR

How I have performed

What I need to do

Homework 1: Maintenance on Machines

Research:

Why is it important for machines to be maintained, looking at:

- Safety
- Reliability
- Sustainability
- Efficiency
- Cost

Homework 1: Maintenance



The is an electronic toothbrush and charger.

Question	Answer	Marks
Identify and describe two features of the electronic toothbrush that show that the designer has thought about product maintenance?	Feature Description Feature Description	4
Explain why it is important for a designer to think about maintenance when designing Products?		4

Homework 2: Quality control and quality assurance

Research:

- What is quality control when manufacturing products
- What is quality assurance when manufacturing products
- Why quality control is important
- Different measuring tools- ruler, jigs, templates, multi meter.

Homework 2: Quality control and quality assurance

Question	Answer	Marks
Explain the purpose of 'quality control'?		2
Describe one method of 'quality control' that is used when making prototype products?		2
Explain the importance of <i>tolerance</i> when manufacturing components?		2

Homework 3: Industrial revolution

Research:

- How Britain changed from the industrial revolution

Key information about the inventions listed below and what made it so significant

- The flying shuttle- John Kay
- The spinning jenny-James Hargreaves
- The water frame-Richard Arkwright
- The mule-Samuel Crompton
- The power loom-Edmund Cartwright
- Iron- Henry Cort

Homework 3: Industrial revolution

Question	Answer	Marks
What were the main changes in Britain due to Industrial Revolution?		4
What did John Kay invent and why was it significant?		2
What did James Hargreaves invent and why was it significant?		2
What did Richard Arkwright invent and why was it significant?		2
What did Samuel Crompton invent and why was it significant?		2
What did Edmund Cartwright invent and why was it significant?		2
What did Henry Cort invent and why was it significant?		2

Homework 4: Brunel

Research:

- The life and work of Isambard Kingdom Brunel
- Look at areas Brunel was involved via engineering

Great Western Railway

Box tunnel

SS Great Western

Thames tunnel

The Great Britain

Homework 4: Brunel





Question	Answer	Marks
Why was the Thames tunnel significant?		2
How long did it take the SS great western to travel from New York to Liverpool?		1
What was Brunel most famous for?		4
Where did the rail line travel to and from that Brunel created for the Great Western Railway?		2
What record did the box tunnel hold, when it was completed?		1

Homework 5 :Comparing flat pack furniture to traditional techniques

Research:

- Flat pack furniture fixings-dowel-modesty blocks, cross dowel fixing, CAM lock fitting, hinges and screws
- Advantages and disadvantages of Flat pack furniture compared to traditional furniture.

Homework 5: Comparing flat pack furniture to traditional techniques



Question	Answer	Marks
What are the advantages of using Flat pack furniture?		3
What are the disadvantages of using Flat pack furniture?		3
Write the correct name of the fixing? 		1
Write the correct name of the fixing? 		1
Write the correct name of the fixing? 		1
Write the correct name of the fixing? 		1

Homework 6 : Topic test next lesson, revise all topic areas.

Revise:

- Machines to be maintained-Safety-Reliability-Sustainability-Efficiency-Cost
- Quality control and different measuring tools
- Industrial Revolution-The flying shuttle- The spinning jenny-The water frame-The mule-The power loom and Iron
- The life and work of Isambard Kingdom Brunel
- Flat pack furniture compared to traditional techniques

Homework 6 : Topic test

Question	Answer	Marks
Two changes from the industrial revolution?		2
What was Isambard Kingdom Brunel famous for?		3
Name the tool and its use? 		2
Name the tool and its use? 		2
Identify two features of the Fretsaw that show that the designer has thought about product maintenance?		2
What is the purpose of quality control?		2
Name two measuring tools that are used to aid quality control when manufacturing?		2
Give two advantages of using flat pack furniture?		2
Give two disadvantages of using flat pack furniture?		2
Give an example of a flat pack fixing component?		1
Total		20

Homework 7 : Forces






Research different forces and stresses, for each of the following, you need to understand each and give an example of use:

- Static load
- Dynamic load
- Torsion
- Compression
- Tension
- Shear
- Bending

Homework 7 :Forces

Identify the force acting upon each of the following **three** parts of the high chair when in use.



Question	Answer	Marks
Legs?		1
Seat?		1
Straps?		1
Name the force and give an example? 		2
Name the force and give an example? 		2
Name the force and give an example? 		2
Name the force and give an example? 		2
Name the force and give an example? 		2

Homework 8 : Motion and movement

Research different motions and movement:

For each of the following, you need to understand each and give an example of use:

- Linear motion
- Rotary Motion
- Reciprocating motion
- Oscillating motion

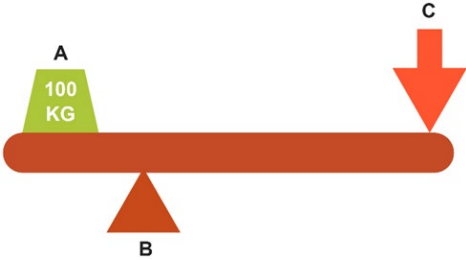



Looking at levers:

- What is a load
- What is the effort
- What is the fulcrum

Looking at linkages for where they can be used:

- Parallel motion
- Reverse motion
- Bell crank
- Crank and slider

Homework 8 : Motion and movement

Question	Answer	Marks
Which of the words describes a mechanism?	Electricity Thermoplastic Static Movement	1
On the drawing label the fulcrum, the effort and the load?	<p>A B C</p> 	3
Complete the sentence with the correct number.	There are _____ different orders of lever.	1
What is the name of the linkage shown?		1
The change in motion taking place in the car jack below is best described as?		1
On the image, label the fulcrum, effort and load?		3

Homework 9 : Nuts Bolts and fixings

Research:



- Why would companies use pre-manufactured components.

Pre manufactured components and their use:

- Nuts
- Bolts
- Washers
- Screws
- Nails

Homework 9 : Nuts, bolts and fixings

Question	Answer	Marks
Explain why a furniture manufacturer would buy pre-manufactured components rather than make them?		4

Fastening	Full name	Function
		
	Bolt	
		

Homework 10: Hegarty Maths Drawing 3D shapes in isometric(832 – Drawing 3D shapes)

<https://hegartymaths.com/drawing-3d-shapes>

Watch the video makes note and bring into your next lesson to put in your work book.

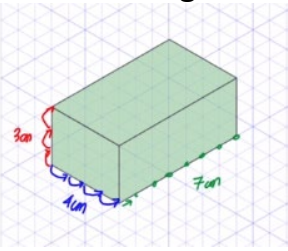
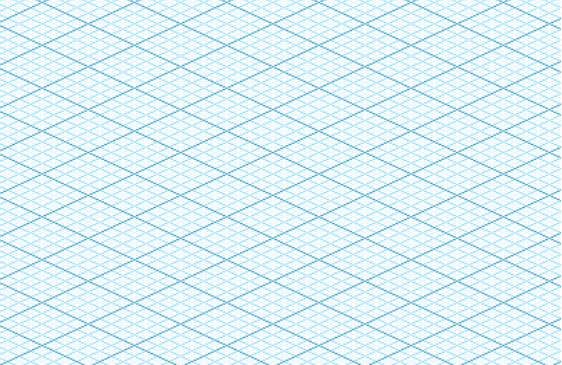
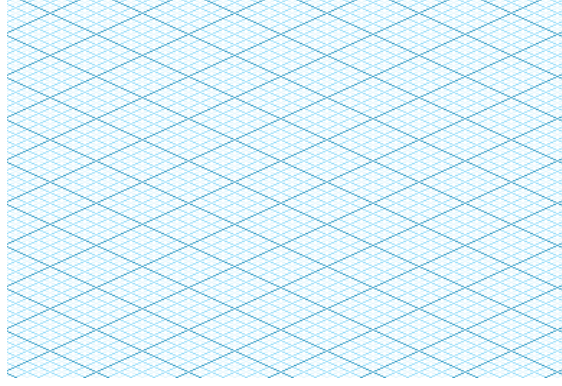
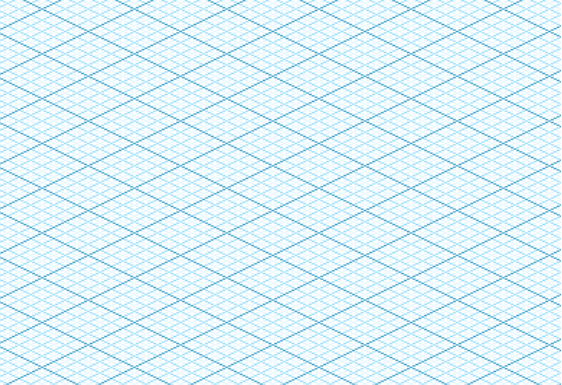
Complete the quiz, you must achieve 80%

You will be tested in class too.

Quiz - marks your teacher will upload your results

Homework 10 : Hegarty Maths Drawing

3D shapes in isometric (832 – Drawing 3D shapes)

Question	Answer	Marks
<p>What are the dimensions of the cuboid given on the isometric grid below?</p> 		2
<p>Using the isometric paper draw a cube with 3cm edge.</p>		2
<p>Using the isometric paper draw a cuboid with a length of 5cm, width 3cm and height 2cm.</p>		4
<p>A prism has a cross-section which is a right-angled triangle. It has a base of 6cm, a height of 4cm and a depth of 7cm. Draw this accurately on the isometric grid.</p>		4

Homework 11: Sustainability

Research:

- Life cycle analysis of a product processes from wood
- 6 R's
- Environmental impact of processing materials manufactured from wood.

Homework 11: Sustainability

Question	Answer	Marks
Discuss the environmental impact of using wood to manufacture products.		6

Homework 12: Health and safety laws

Research:

- Health and safety at work act
- Health and safety executive
- British standards institute

Homework 12: Health and safety laws

Question	Answer	Marks
What does HSE stand for and what do they do?		2
What is the Health and Safety at Work Act and when was it introduced?		2
What does the British Standards institute do?		2

Homework 13: Flow charts

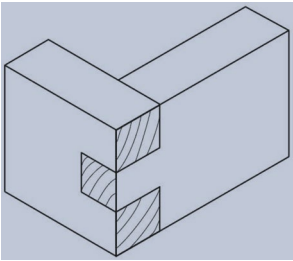
Research:

- Different flow chart symbols
- Where flow charts are used

Homework 13: Flow charts

Stages in producing a wood joint




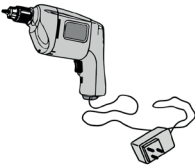


Question	Answer	Marks
<p data-bbox="49 583 409 666">Study the image of the wood joint below</p>  <p data-bbox="49 1020 394 1184">Use flow chart symbols place the stages of producing a wood joint in the correct order.</p> <p data-bbox="49 1238 386 1358">See the stages of producing a wood joint above.</p>		8

Homework 14: Adhesives

Research the glues below, you need to find out what materials the glue is used for, how long the glue takes to dry and how strong the glue is once dry and how you apply the glue:

- PVA
- Contact Adhesive
- Epoxy Resin
- Glue gun
- Super glue
- Solvent Cement

Homework 14: Adhesives

Question	Answer				Marks	
<p>Complete the table by:</p> <ul style="list-style-type: none"> • suggesting a suitable use for each adhesive • giving an advantage of each adhesive • giving a disadvantage of each adhesive. 	<p>Adhesive</p>	<p>Use</p>	<p>Advantage</p>	<p>Disadvantage</p>	<p>8</p>	
	<p>PVA</p> 					
	<p>Glue gun</p> 					
	<p>Solvent cement</p> 					
	<p>Epoxy resin</p> 					

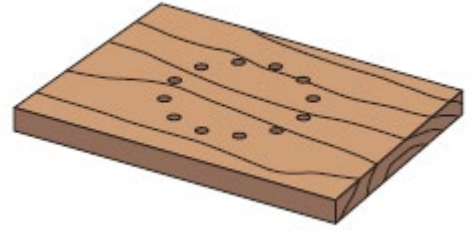
Homework 15: Manufacturing using Jigs

Research:

- What is a drilling jig
- Why and where are they used?
- What main features do drilling jigs need when manufacturing products.

Homework 15: Manufacturing using Jigs

Study the wooden block shown below. This wooden block is to be made in a school workshop.



Question	Answer	Marks
Produce a labelled drawing of a simple drilling jig that will allow 100 similar wooden blocks to be drilled?		5
Explain how the use of jigs, moulds and templates affect the manufacture of products?		6

Homework 16: Finishes

Research:

- Why finishes are applied to materials
- What type of finishes can be applied to metal
- What type of finishes can be applied to wood
- How to apply the finishes to the surface of the materials

Homework 16: Finishes



Study the pine table shown


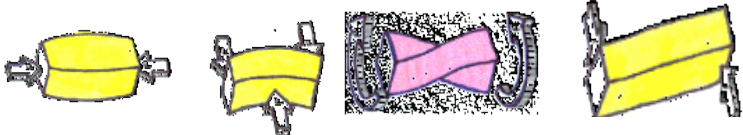
Question	Answer	Marks
Name a suitable finish for the pine table		1
Give two reasons for choosing the finish you have named.		2
Use notes and sketches to describe how you would apply the finish you have named.		6

Homework 17: Topic Test

Research:

- Finishes-metals-woods-why are they applied-how to apply
- Drilling jigs, moulds, template and formers
- Adhesives- PVA, contact adhesive, epoxy resin, glue gun, super glue, solvent cement
- Flow chart symbols and where they are used
- Health and safety at work act- Heath and safety executive- British standards institute
- Life cycle analysis-6Rs-enviomental impact of processing products manufactured from wood
- Motions and movement- Linear motion-Rotary Motion- Reciprocating motion-Oscillating motion
- Looking at levers-What is a load-What is the effort-What is the fulcrum
- Looking at linkages for where they can be used- Parallel motion-Reverse motion-Bell crank-Crank and slider
- Pre manufactured components and their use-Nuts-Bolts- Washers-Screws-Nails
- Forces and stresses- Static load-Dynamic load-Torsion- Compression-Tension-Shear-Bending
- Hegarty Maths fix up 5

Homework 17 : Topic test

Question	Answer	Marks
What is the difference between a static and dynamic load?		2
What are the three views of an orthographic drawing?		3
What is the tool and it's use? 		2
What finish can be applied to wood and what does it do?		2
What are the four main areas that improve when using jigs for mass production?		4
If you are gluing wood to wood, what type of glue should you use?		1
If you are gluing plastic to wood, what type of glue should you use?		1
Draw the three flow chart symbols?		3
When was the health and safety at work at introduced and what is it?		2
What are the 6Rs?		6
What are the names of the following forces? 		4
Total		30