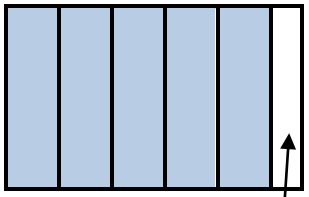
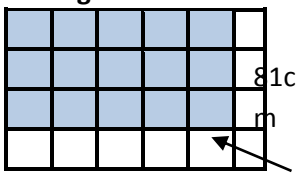
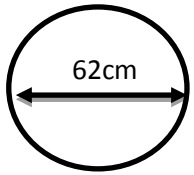
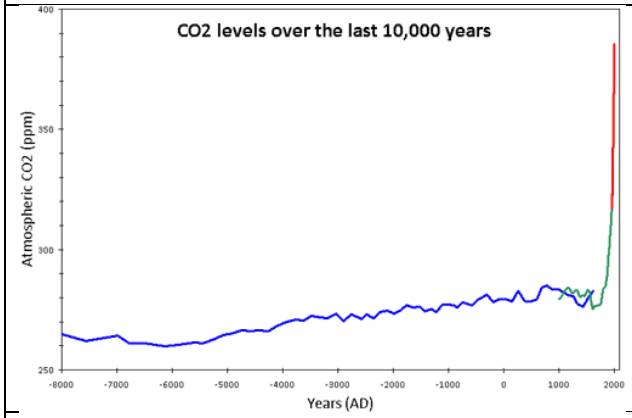
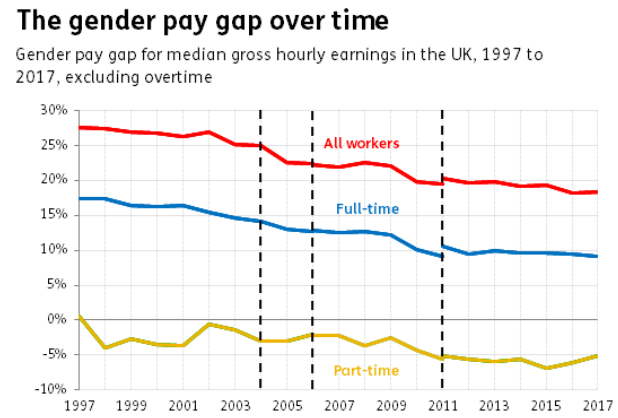
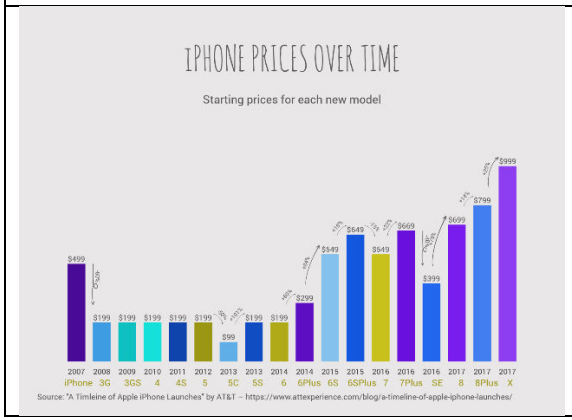
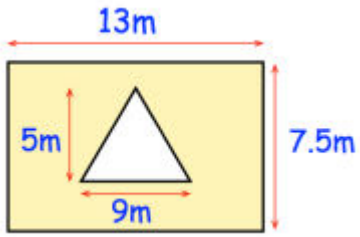
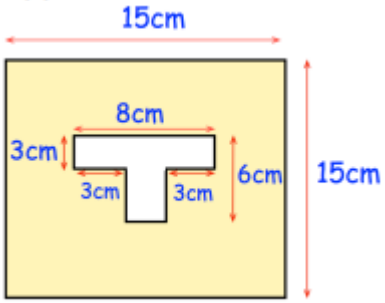
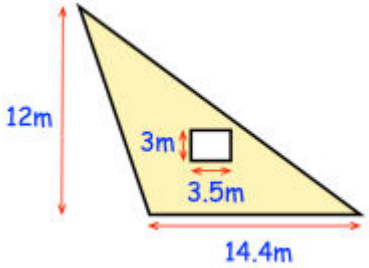
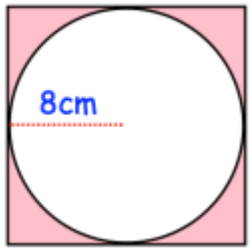
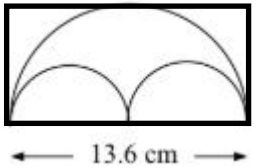
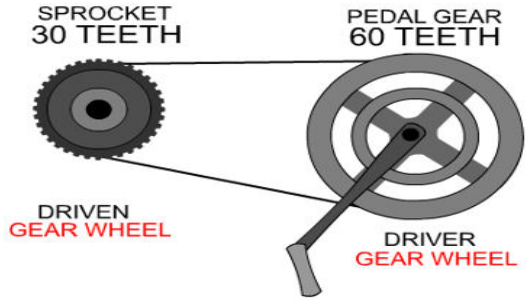
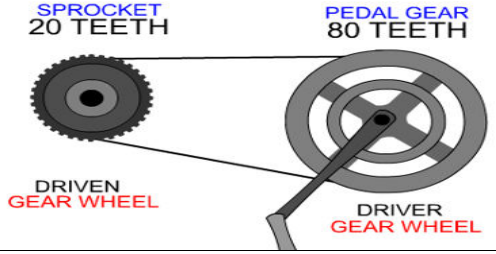
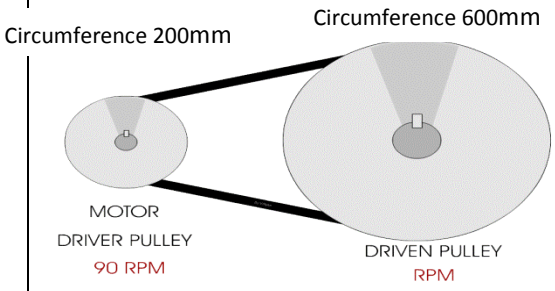
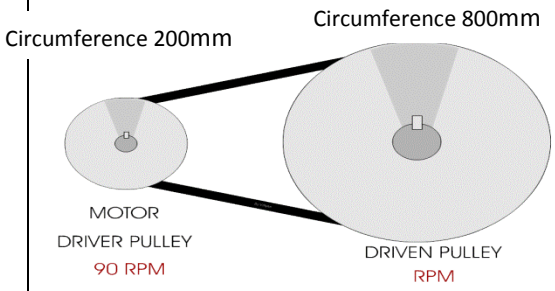
Question **Area questions**	**Convert all measurements to the same units.**	**Sketch the dynamics of the large piece of material.**	**Using the length of the wanted pieces mark on how many would fit on length ways.**	**Using the width of the wanted square mark on how many would fit on width ways.**	**Answer**
Example MDF is available in 81cm x 1.3m sheets. Calculate how many 250mm x 250mm squares can be cut from the available sheet.	250mm to cm 10mm = 1cm 250 ÷ 10 = 25cm 1.3m to cm 1m = 100cm 1.3 x 100 = 130cm **remember that the original piece will only allow some pieces to fit – with some waste too small to cut**	130cm 81cm 	**How many times does 25cm go into 130cm?** 130cm  This part is waste as 25 only fits into 130 five times.	**How many times does 25cm go into 81cm?**  81cm This part is waste as 25 only fits into 81 three times.	You can cut 15 squares from the large sheet of MDF. Mathematically: Area of MDF =81 x 130 = 10530 cm^2 Area = 25 x 25 = 625cm^2 10530 ÷ 625 = 16.848cm The extra tile here is made up of the waste material but not cut straight from the MDF.
MDF is available in 1.5m x 160cm sheets. Calculate how many 25cm x 200mm rectangles can be cut from the available sheet.					
MDF is available in 2.5m x 160cm sheets. Calculate how many 45cm x 200mm rectangles can be cut from the available sheet.					
Plywood is available in 300cm x 160cm sheets. Calculate how many 25cm x 200mm rectangles can be cut from the available sheet.					

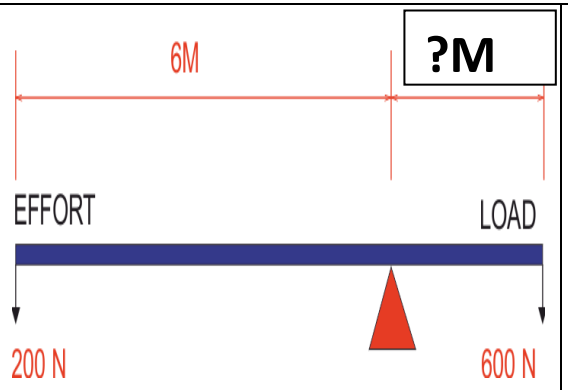
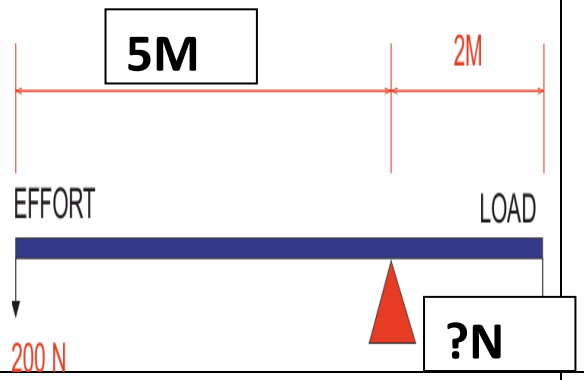
Question **Circumference & Distance**	**Draw a diagram for the information given.**	**Circumference of the circle**	**Revolutions (a full rotation)**	**Answer to the given degrees of accuracy**
A bicycle wheel has a diameter of 62cm. The wheel makes 80 complete revolutions. How far has the bicycle travelled? Give your answer in metres to 2 decimal places.		Circumference = πd or 2πr = π x 62 = 62π	62π cm is one full turn. It is going to make 80 full turns. 80 x 62π = 4960π = 15582.29956 cm	100cm = 1m 15582.29956 ÷100 = 155.8229556m = 15.82 m
A penny-farthing is a bicycle that has a large front wheel of diameter 132 cm and a much smaller rear wheel. During a journey, the front wheel makes 200 revolutions. How many metres does the penny-farthing travel?				
Maggie has a marble with a diameter of 14 mm. She rolls her marble towards another marble that is 160 cm away. How many revolutions will Maggie's marble make before hitting the second one?				
An old oak tree has a diameter of 65 cm. Dawn wants to wrap yellow ribbon around the tree. How many metres of ribbon will she need if she wants the ribbon to go around the tree 100 times?				
The diameter of a car wheel is 62 cm. Work out the number of times the wheel rotates in a journey of 20 km.				

Question Interpreting data	Understanding the data graphically. What does the data explain?	What can we expect to see?
	The graph is showing the carbon dioxide levels over the last 10000 years. The trend in the data shows that CO2 levels are steadily increasing over time.	We could expect to see a continuation in the current trend. • What could effect and change the trend? Carbon dioxide is effected by the burning of fossil fuels – so a reduction in this could reduce the increases • What would happen if the carbon dioxide levels continued to increase at this rate? The atmosphere will become poisonous to animal life
		
		Make a prediction for the next cost of the iPhone? Why could there be a dip in cost in some years Can this just continue to increase ? Why do you think so ?

Question **Area / subtraction**	**Area of the whole shape**	**Area of the removed pieces**	**Area remaining**	**Answer to the given degrees of accuracy**
Calculate the shaded area. 	Area of rectangle = 13 x 7.5 = 97.5m^2	Area of triangle = (b x h) ÷ 2 = (9x5) ÷ 2 = 22.5m^2	Area remaining will be the area of the rectangle subtracting the area of the triangle. 97.5 – 22.5 = 75m^2	
Calculate the shaded area. 				
Calculate the shaded area. 				
Calculate the area of the waste material. 	You have all the sizes you need!			

Calculate the area of the waste material.  	You have all the sizes you need!			

Questions Velocity Ratio	Diagram			Answer
EXAMPLE: If the pedal gear revolves once how many times will the sprocket gear revolve? 		NUMBER OF TEETH ON PEDAL GEAR / NUMBER OF TEETH ON SPROCKET = 60 TEETH / 30 TEETH = 2 The gear ratio is : 2 : 1 **The driven gear at the back wheel will turn twice for every one turn of the pedals gear**		**Ratio = 2:1**
If the pedal gear revolves once how many times will the sprocket gear revolve?				
EXAMPLE: **Pulleys** **What is the velocity ratio?** **What is the speed of the driven gear** **RPM = revolution per minute, is the speed of rotation**		METHOD ONE: DISTANCE MOVED BY DRIVEN PULLEY / DISTANCE MOVED BY DRIVER PULLEY = 600mm / 200mm = 3 OR METHOD TWO: VELOCITY RATIO = DRIVER PULLEY MOVES 3 REVOLUTIONS / DRIVEN PULLEY MOVES 1 REVOLUTION = 3/1 VELOCITY / SPEED OF ROTATION OF DRIVEN PULLEY WHEEL = RPM OF DRIVER PULLEY / 3 = 90 rpm / 3 = 30 rpm at Driven pulley wheel		**Ratio = 3:1**
Pulleys **What is the velocity ratio?** **What is the speed of the driven gear**				

Velocity Ratio **Balance equation Example** **Question** **What is the unknown distance in Meters?**		**Velocity ratio :** 200n x 6m (Nm) =600n X **?** m (Nm) carry across the X600 200n x 6m (Nm) = X **?** m (Nm) **600n** It becomes a + 600 **1200 = 2** **600** **Effort is callculaed as - 6M X200N = 800** **Load is calculated as - 2m X 600N = 800**		**The unknown Distance = 2M** **Dont forgat** • **Distance in Meters = M** • **Force in Newtons = N** • **Velocity in Netom Meters = Nm**
What is the unknown force in Newtons?				
What is the unknown distance in Meters?