SILS 4

Mathematics Homework Booklet

Year: 11

Scheme: Foundation

Term: 2

Name:

Homework Sheet 15

2: Find the prime factorisation of 252.

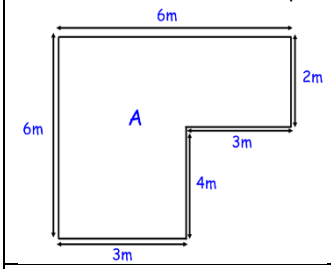
3: Write 2×10^4 as a decimal number.

4: Timmy is conducting a survey on opinions of internet usage in teenagers. Suggest one way Timmy could take a suitable sample of opinions.

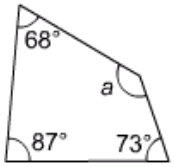
C5: The table below is to be used to draw the graph of $y = x^2 + 3x + 2$. Complete the y values in the table.

x	1	2	3	4	5	6	7
y							

C6: Find the area of this shape.



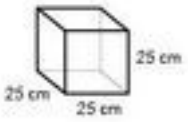
C7: Find the size of angle a



8: Roxanne has a 1p, a 2p, a 5p and a 10p coin. Roxanne takes two coins at random. List all of the possible amounts of money Roxanne could make.

C9: Steve thinks of two numbers that are 5 apart. Their sum is 12. Work out the numbers.

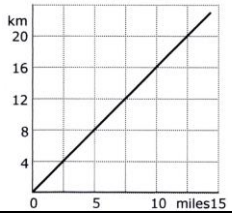
C11: Find the volume of this cube.



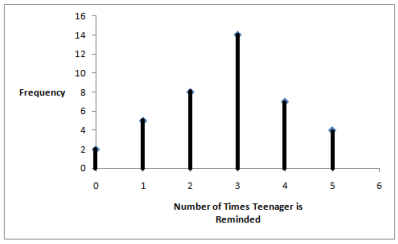
C12: The number of bacteria doubles in size every 3 hours. If there are 40 bacteria at the start of the day, how many are there 6 hours later?

C13: 35% of a number is 17. Work out the number.

15: How many kilometres is equivalent to 15 miles?



16: How many teenagers need to be reminded twice?

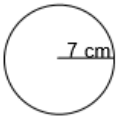


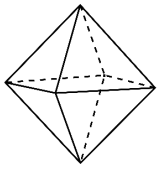
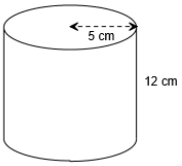
17: How many people recorded a time between 16 and 17 seconds?

Time, T (seconds)	Frequency, f
$13 < T \leq 14$	12
$14 < T \leq 15$	21
$15 < T \leq 16$	39
$16 < T \leq 17$	20
$17 < T \leq 18$	8

18: What sort of correlation would you expect to see if the price of a computer is plotted against the age of the computer?

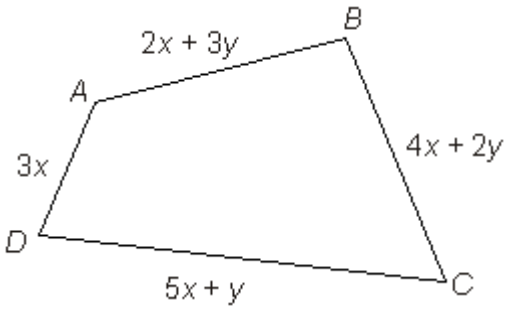
C19: Find the circumference of this circle.



10: Write down the number of edges of this octahedron. 	C20: Find the volume of this cylinder. 
Mark:	Effort:

Exam Question Homework: Equations and Shapes

ABCD is a quadrilateral.



Not drawn accurately

(a) Write down an expression for the perimeter of the quadrilateral in terms of x and y. Simplify your answer.

.....

.....

Answer .....

(2)

(b) When $x = 4$ cm, the perimeter of the quadrilateral is 68 cm.

Find the value of y.

.....

.....

.....

.....

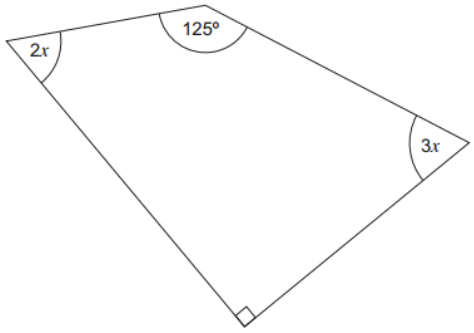
Answer .....cm

(3)

(Total 5 marks)

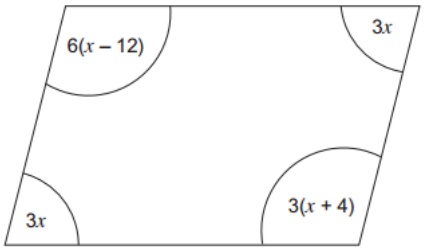
Work out the value of x.

[4 marks]



Not drawn accurately

Here is a parallelogram.
All angles shown are in degrees.



Not drawn accurately

Work out the value of x.

[4 marks]

Homework Sheet 16

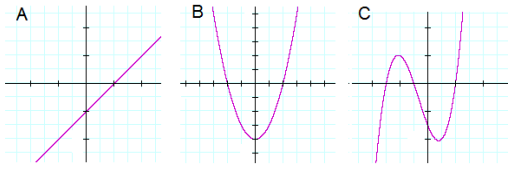
1: The point (3, -2) is reflected in the line $x = 7$. Give the coordinate of the image point.

2: The prime factorisation of $360 = 2^3 \times 3^2 \times 5$. Find the HCF of 252 and 360.

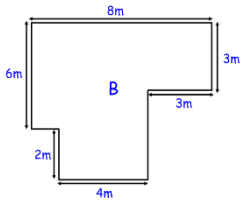
3: Write 1.8×10^{-7} as a decimal number.

4: Timmy is conducting a survey on opinions of internet usage in teenagers. Write a suitable question for the survey. Include a response section.

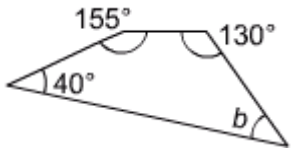
C5: Which of these graphs is an example of a cubic?



C6: Find the area of this shape.

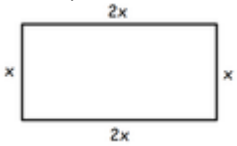


C7: Find the size of angle *b*.

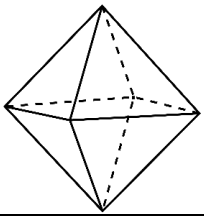


8: Roxanne has a 1p, a 2p, a 5p and a 10p coin. Roxanne takes two coins at random. Find the probability that Roxanne takes an odd amount of money.

C9: The perimeter of this rectangle is 45 cm. Find the value of *x*.

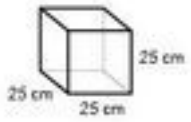


10: Write down the number of faces of this octahedron.



Mark:

C11: Find the surface area of this cube.

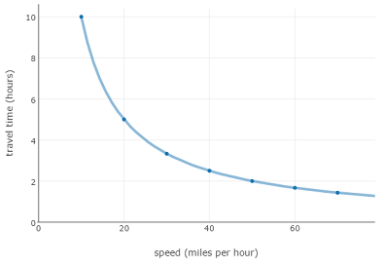


C12: The number of bacteria doubles in size every 3 hours. If there are 40 bacteria at the start of the day, how many are there 12 hours later?

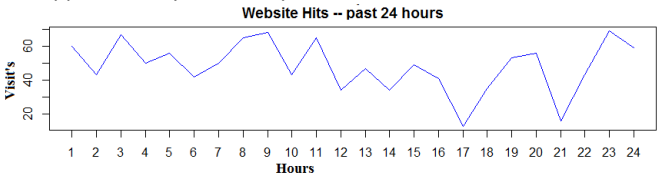
C13: 17% of a number is 35. Work out the number.

14: For how long altogether is Dan stationary?

15: Approximately how long does the journey take at 60 mph?



16: Approximately how many hits did the website have at 6 hours?

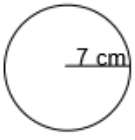


17: How many people recorded a time between 16 and 18 seconds?

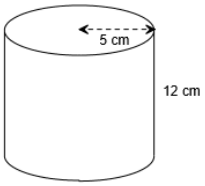
Time, T (seconds)	Frequency, f
$13 < T \leq 14$	12
$14 < T \leq 15$	21
$15 < T \leq 16$	39
$16 < T \leq 17$	20
$17 < T \leq 18$	8

18: What sort of correlation would you expect to see between hours of revision and test scores?

C19: Find the area of this circle.



C20: Find the surface area of this cylinder.



Effort:

Exam Question Homework: Equation Problems

Pete is a plumber.
He uses this formula to work out his charge, in pounds (£), for a job.

Charge = 20 + 38 × number of hours the job takes

Pete charges £286 for a job.

How many hours does the job take?

[3 marks]

Sita is x years old.

Teri is 3 years older than Sita.

Helen is 2 years younger than Sita.

The total of their ages is 43 years.

Set up and solve an equation to work out their ages.

[5 marks]

Andrew, Nigel and Sam are picking oranges.

Andrew picks x oranges.

Nigel picks $2x$ oranges.

Sam picks 12 oranges more than Andrew.

Altogether they pick 84 oranges.

Set up and solve an equation to find the number of oranges Sam picks.

[5 marks]

Homework Sheet 17

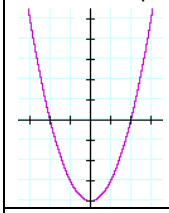
1: The point (3, -2) is rotated by 90° clockwise around centre (0, -2). Give the coordinate of the image point.

2: The prime factorisation of 360 = $2^3 \times 3^2 \times 5$. Find the LCM of 252 and 360.

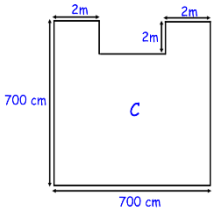
3: Calculate $2 \times 10^4 \times 1.8 \times 10^{-7}$ giving your answer in standard form.

4: Timmy is conducting a survey on opinions of internet usage in teenagers. He decides to ask his form group to complete the survey. Explain why this is not a suitable sample.

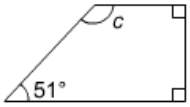
C5: The equation of the graph below can be written as $y = x^2 - a$ where a is a positive whole number. Write down the value of a.



C6: Find the area of this shape.



C7: Find the size of angle c.

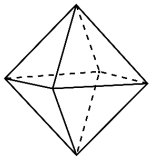


8: Complete the sample space.

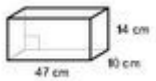
	Adult	Child	Total
Vanilla	52		78
Chocolate	41	105	146
Total		131	

C9: Three numbers are part of an arithmetic sequence with common difference of 4. They sum to 16. Work out the three numbers.

10: Write down the number of vertices of this octahedron.



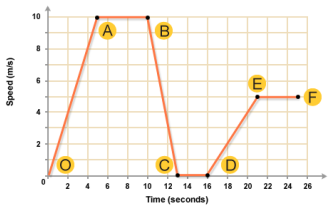
C11: Find the volume of this cuboid.



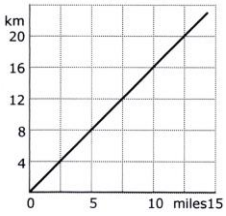
C12: The number of bacteria doubles in size every 3 hours. If there are 40 bacteria at the start of the day, how many are there a day later?

C13: A bottle of lemonade has 12.5% extra free. The bottle is normally 1.25 litres. Work out the size of the new bottle.

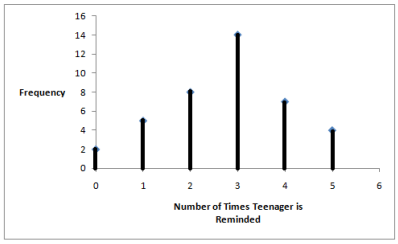
14: What is happening between A and B?



15: How many miles is equivalent to 10 kilometres?



16: How many more teenagers were reminded four times than five times?



17: How many people recorded a time over 15 seconds?

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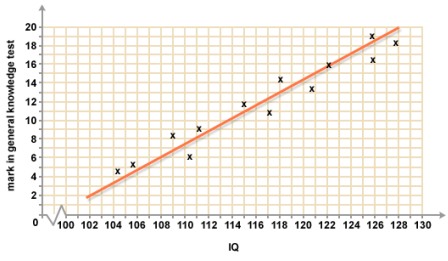
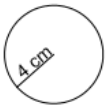
$17 < T \leq 18$	8

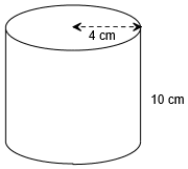
18: How many marks are on the general knowledge test?



C19: Find the circumference of this circle.



C20: Find the volume of this cylinder.

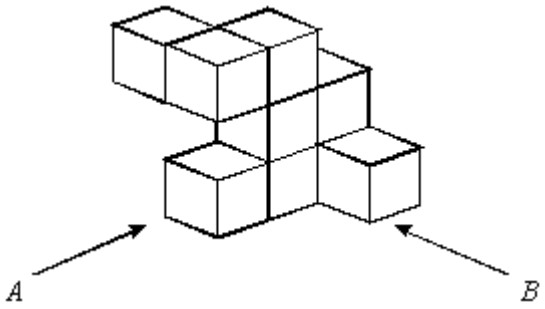


Mark:

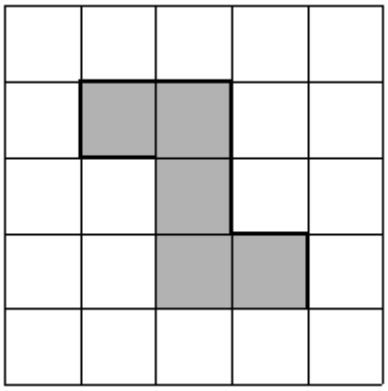
Effort:

Exam Question Homework: Representing 3D shapes

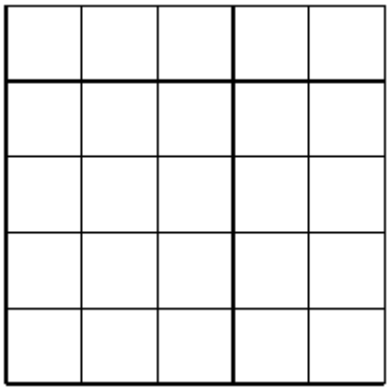
The diagram represents a solid made from 9 small cubes.



The view of the solid from direction *A* is shown below.

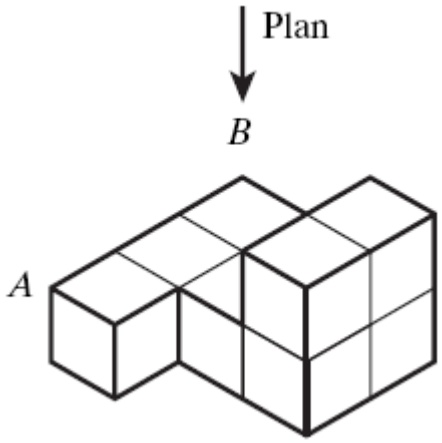


On the grid below, draw the view of the solid from direction *B*.



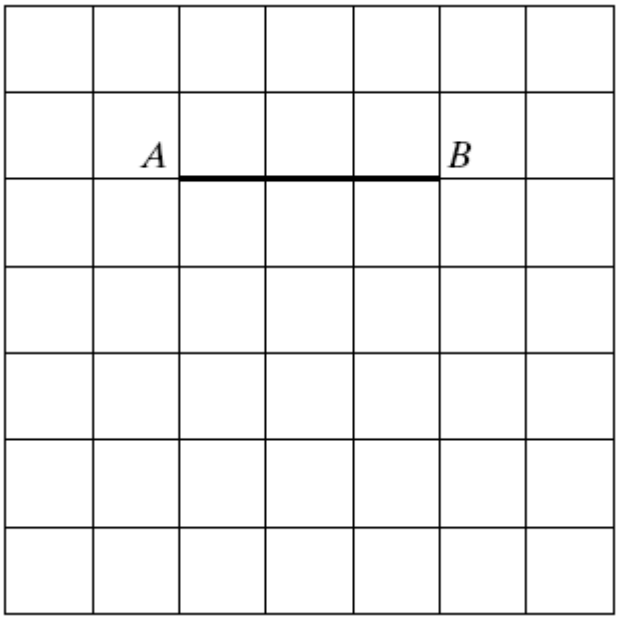
(Total 2 marks)

The diagram shows a solid shape made from 8 cubes.

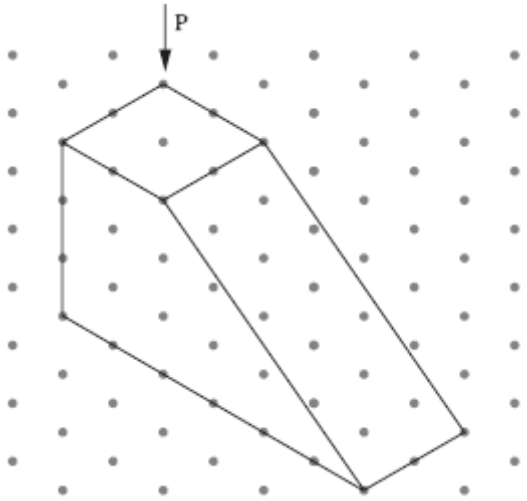


[2 marks]

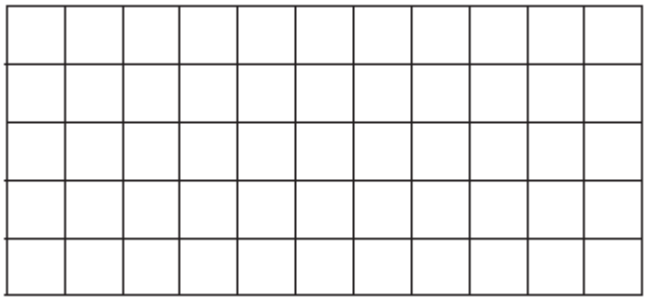
Complete the plan view of the solid on the grid below.



The diagram shows a prism drawn on 1 cm isometric paper.



(a) On the grid, draw an accurate plan of the prism viewed from direction P.



[2 marks]

(b) How many vertices does the prism have?

[1 mark]

(c) The prism has a surface area of 56 cm^2. Convert 56 cm^2 into square millimetres.

[2 marks]

Homework Sheet 18

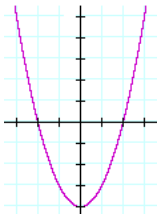
1: The point (3, -2) is enlarged by scale factor 3 centre (1, 1). Give the coordinate of the image point.

2: Simplify $x^3 \times x^{5\frac{1}{2}}$

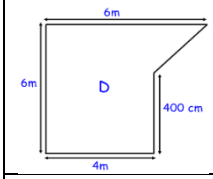
3: Calculate 2 x 10^4 ÷ 1.8 x 10^{-7} giving your answer in standard form.

4: Timmy is conducting a survey on opinions of internet usage in teenagers. Timmy asks "How many hours do you spend on the internet?". Give a criticism of this question.

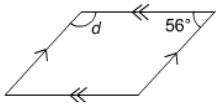
C5: Write down the roots of the equation shown in the graph below.



C6: Find the area of this shape.



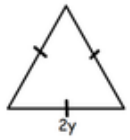
C7: Find the size of angle *d*.



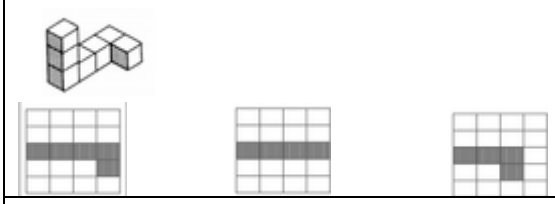
8: Find the probability that a person chosen at random is an adult that chose chocolate.

	Adult	Child	Total
Vanilla	52		78
Chocolate	41	105	146
Total		131	

C9: The perimeter of the triangle is 15 metres. Find the value of *y*.

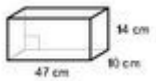


10: Which 2D shape shows the correct plan of the 3D shape?



Mark:

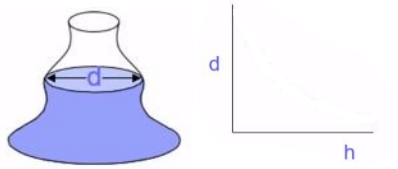
C11: Find the surface area of this cuboid.



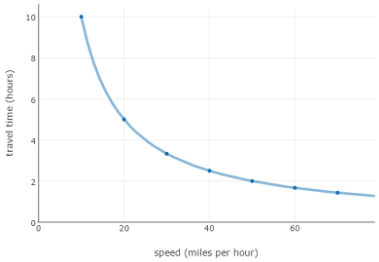
C12: A ball bounces to ¾ of its previous height. If the ball is dropped from 2 metres, what is its height after one bounce?

C13: A jacket has its price reduced by 30% in a sale. If the sale price is £59.50. Work out the original price of the jacket.

14: Sketch the graph of water surface diameter (d) against time as the vessel fills.



15: Approximately what speed is needed to complete the journey in 3 hours?



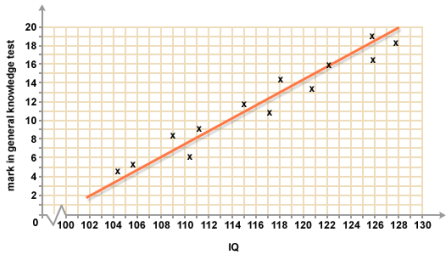
C16: Find the mode of the list of data.

5, 7, 6, 7, 16, 8, 7, 5, 7, 6.

17: How many people recorded a time under 17 seconds?

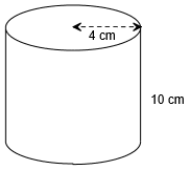
Time, T (seconds)	Frequency, f
13 < T ≤ 14	12
14 < T ≤ 15	21
15 < T ≤ 16	39
16 < T ≤ 17	20
17 < T ≤ 18	8

18: How many people took both the IQ and general knowledge test?



C19: Find the area of this circle.

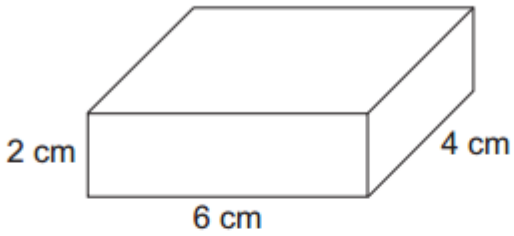
C20: Find the surface area of this cylinder.



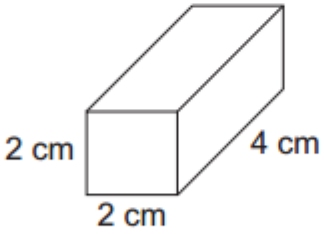
Effort:

Exam Question Homework: Volume and Surface Area

Large cuboids are 6 cm by 4 cm by 2 cm



Small cuboids are 2 cm by 4 cm by 2 cm

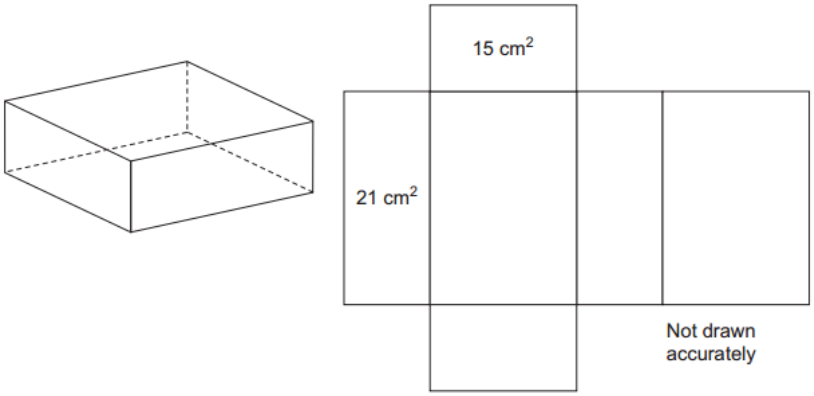


Show that

the volume of **one** large cuboid is the same as the total volume of **three** small cuboids.

[2 marks]

A cuboid has a net as shown.
The areas of two of the faces are shown on the net.
The lengths of the sides of the cuboid are whole numbers of centimetres greater than 1



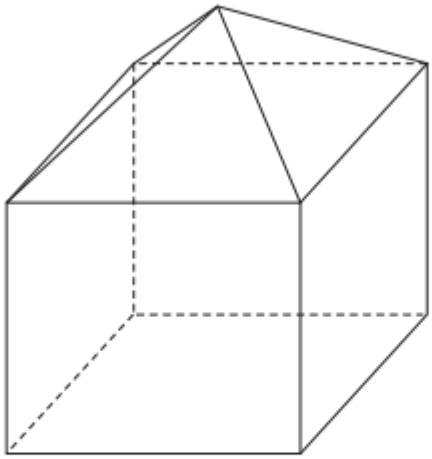
Work out the **total** surface area of the cuboid.
You **must** show your working.

[4 marks]

A cube and a pyramid are joined to make a small, solid metal paperweight.

The cube has edge 4 cm

The pyramid has a square base of side 4 cm and a vertical height of 2.5 cm



Volume of a pyramid = $\frac{1}{3} \times$ area of base $\times$ height

Show that the volume of the paperweight is $77\frac{1}{3}\,\text{cm}^3$

[3 marks]

Homework Sheet 19

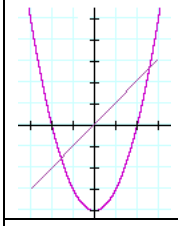
1: The vector **a** is $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$. Write down the vector **-a**.

2: Simplify $x^3 \times x^{5\frac{1}{2}} \div x^{-2}$

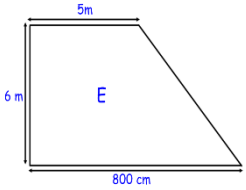
3: Write 8.4 x 10^5 as a decimal number.

4: Timmy is conducting a survey on opinions of internet usage in teenagers. He asks "What do you spend most of your time doing on the internet?" Design a suitable response section for this question.

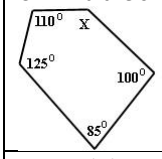
C5: Write down the approximate values where the curve intercepts the line $y = x$.



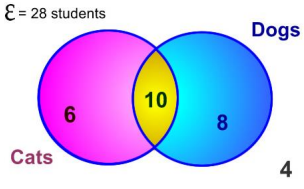
C6: Find the area of this shape.



C7: Find the size of angle x

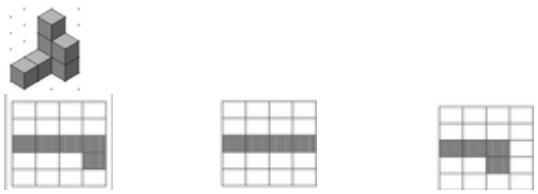


C8: Find the probability that a person chosen at random only owns a cat.



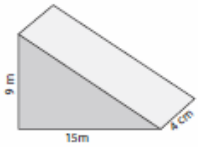
C9: The mean of 5 numbers is 7. The second number is one more than the first. The third number is 3 more than the first. The fourth number is double the first. The last number is 3 more than the fourth. Work out the first number.

10: Which 2D shape shows the correct plan of the 3D shape?



Mark:

C11: Find the volume of this triangular prism.

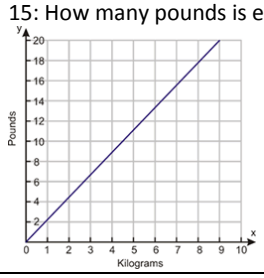


C12: A ball bounces to ¾ of its previous height. If the ball is dropped from 2 metres, what is its height after two bounces?

C13: An investment earns 4.6% per annum. If Umar invests £72000 for 3 years, how much will he have at the end of the 3 years.

14: What is Dan's walking speed during each of his three walks?

15: How many pounds is equivalent to 5 kilograms?



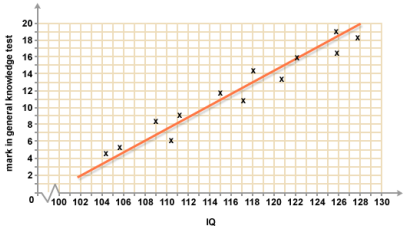
C16: Find the median of the list of data.

5, 7, 6, 7, 16, 8, 7, 5, 7, 6.

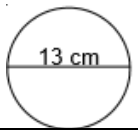
17: How many people recorded a time?

Time, T (seconds)	Frequency, f
13 < T ≤ 14	12
14 < T ≤ 15	21
15 < T ≤ 16	39
16 < T ≤ 17	20
17 < T ≤ 18	8

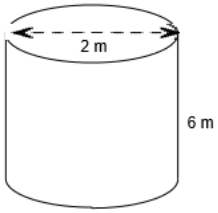
18: Describe the correlation between IQ and general knowledge.



C19: Find the circumference of this circle.



C20: Find the volume of this cylinder.



Effort:

James invests £700 for 2 years at 10% per year compound interest.
How much interest does he earn?

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Answer £ .....

(Total 2 marks)

An internet auction site has two identical cars for sale.
Both cars are priced at £10 000.
The price of each car is to be reduced each week until they are sold.
The first car is reduced by 10% each week.
The second car is reduced by £800 each week.
Assuming that no-one buys the cars, after how many weeks will the second car be cheaper than the first?

You **must** show all your working.

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Answer .....

(Total 4 marks)

A bank gives 3% compound interest per year on an investment.
Tariq invests £1750 for 4 years.

Work out the total value of his investment after 4 years.

[3 marks]

Homework Sheet 20

1: The coordinate (a, b) is translated by vector $\begin{pmatrix} 2 \\ -5 \end{pmatrix}$ to give the image (4, 1). Write down the values of a and b.

2: Write 490 as a product of primes.

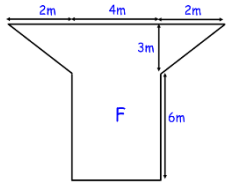
3: Write 1.2×10^{-3} as a decimal number.

4: Lori is conducting a survey of spending money among teenagers. Suggest a way of choosing a suitable sample for the survey.

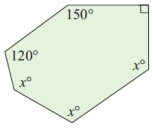
C5: The table below is to be used to draw the graph of $y = x^3 + 3x + 2$. Complete the y values in the table.

x	1	2	3	4	5	6	7
y							

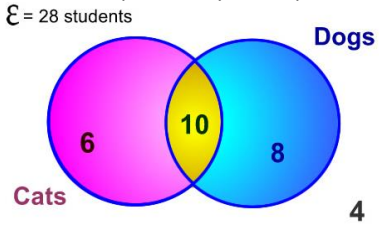
C6: Find the area of this shape.



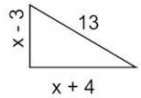
C7: Find the size of angle x



C8: Find the probability that a person chosen at random owns a cat.



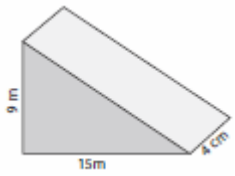
C9: The perimeter of this triangle is 37 cm. Find the value of x.



10: Draw the plan of this shape.

Mark:

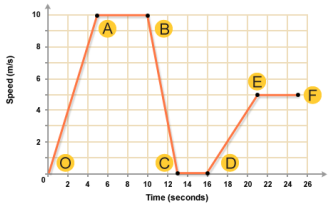
C11: Find the surface area of this triangular prism.



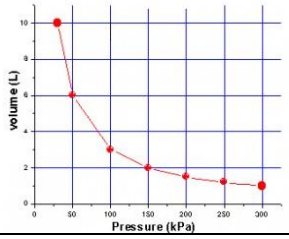
C12: A ball bounces to ¾ of its previous height. If the ball is dropped from 2 metres, what is its height after five bounces?

C13: 107% of a number is 59.92. Work out the number.

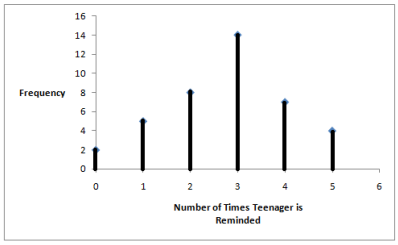
14: What is happening between D and E?



15: Find the volume at 75 kPa.



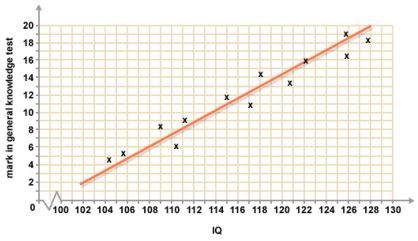
16: How many teenagers were sampled?



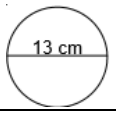
17: Which class of times is the modal class?

Time, T (seconds)	Frequency, f
$13 < T \leq 14$	12
$14 < T \leq 15$	21
$15 < T \leq 16$	39
$16 < T \leq 17$	20
$17 < T \leq 18$	8

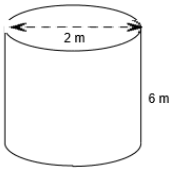
18: A person has an IQ of 114. Estimate their likely mark on the general knowledge test.



C19: Find the area of this circle.



C20: Find the surface area of this cylinder.



Effort:

Exam Question Homework: Proportion and Percentages

There are 140 counters in box A.
There are 220 counters in box B.

The number of counters in box A is **increased** by 20%

The number of counters in box B is **decreased** by $\frac{1}{4}$

Which box now has more counters?
You **must** show your working.

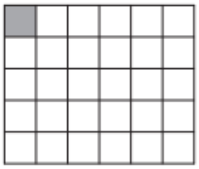
[4 marks]

Here are four grids.

A

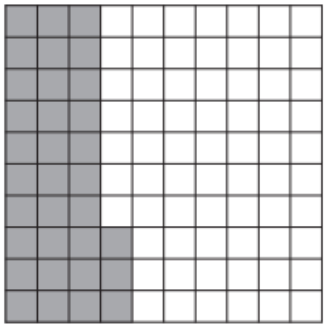
3 squares with 1 shaded

B



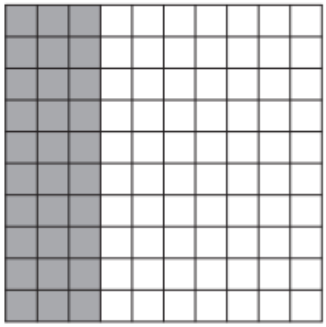
30 squares with 1 shaded

C



100 squares with 33 shaded

D



100 squares with 30 shaded

Which grid has exactly 30% shaded?
Circle your answer.

[1 mark]

Jane is on holiday in France.
She buys a chocolate bar costing €4.60
At home she pays £3.50 for the same type of chocolate bar.

The exchange rate is £1 = €1.27

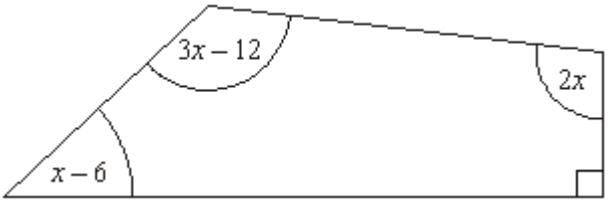
How much cheaper is the chocolate bar at home?
Give your answer in pence to the nearest penny.

[3 marks]

Exam Question Holiday Homework:

A quadrilateral has one right angle.
The other angles are $2x$, $3x - 12$ and $x - 6$

Not drawn accurately



(i) Write down an equation in terms of x.

Answer .....

(1)

(ii) Solve your equation and find the size of the largest angle in the quadrilateral.

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Answer x = ... degrees

Largest angle = ... degrees

(3)
(Total 4 marks)

Suki has four parcels.

Each parcel weighs x kg

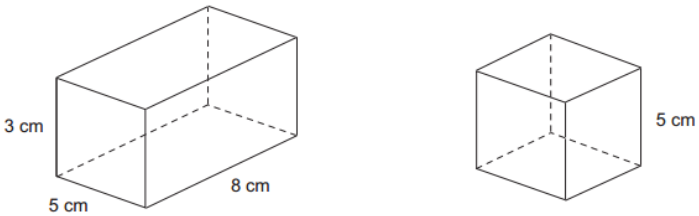
Suki weighs 57.6 kg

Suki and the four parcels weigh a total of 67.2 kg

Set up and solve an equation to work out the value of x.

[3 marks]

Here are a cuboid and a cube.



Which has the greater volume?
You **must** show your working.

[3 marks]

£4500 is invested at 3.2% compound interest per annum.
How many years will it take for the investment to exceed £5000?

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Answer ..... years

(Total 3 marks)

Andy pays £3500 to buy a car that needs repairing.

He spends £750 repairing the car.

He sells the car for 65% more than the £3500 he paid.

Work out his profit.

[3 marks]

Homework Sheet 21

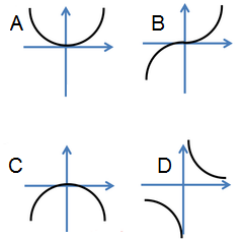
1: The coordinate (a, b) is reflected in the line $y = x$ to give the image (4, 1). Write down the values of a and b.

2: The prime factorisation of 350 = 2 x 5^2 x 7. Find the HCF of 350 and 490.

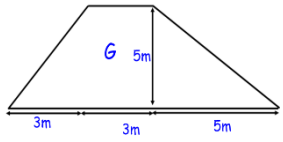
3: Calculate $8.4 \times 10^{5} \times 1.2 \times 10^{-3}$ giving your answer in standard form.

4: Lori is conducting a survey of spending money among teenagers. Write a question she could ask as part of the survey.

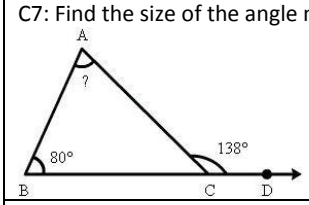
5: Which of these graphs is an example of a reciprocal graph?



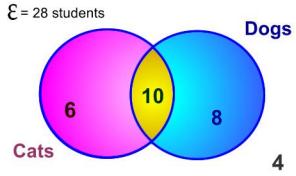
C6: Find the area of this shape.



C7: Find the size of the angle marked with a ?.

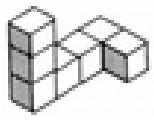


C8: Find the probability that a dog owner chosen at random also owns a cat.

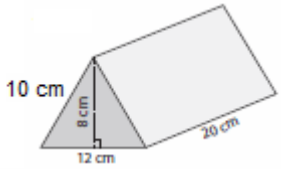


C9: Ryan drives k miles to work. Hannah drives 3 fewer miles. Altogether they drive 22 miles. How far does Ryan drive to work?

10: Draw the front elevation of this shape (the shaded faces).



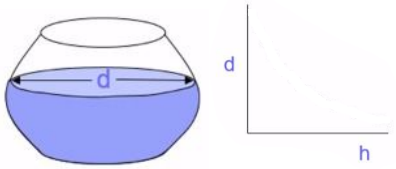
C11: Find the volume of this triangular prism.



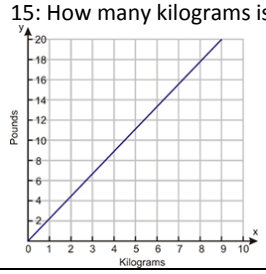
C12: A ball bounces to ¾ of its previous height. If the ball is dropped from 2 metres, what is its height after two bounces?

13: Find 52% of 75.

14: Sketch the graph of water surface diameter (d) against time as the vessel fills.



15: How many kilograms is equivalent to 15 pounds?



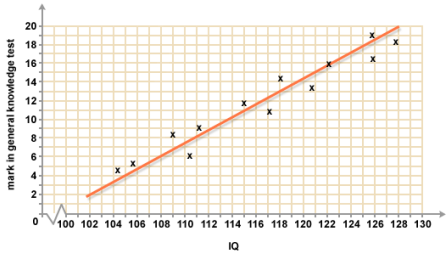
C16: Find the mean of the list of data.

5, 7, 6, 7, 16, 8, 7, 5, 7, 6.

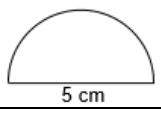
17: Which class of times does the median time lie in?

Time, T (seconds)	Frequency, f
13 < T ≤ 14	12
14 < T ≤ 15	21
15 < T ≤ 16	39
16 < T ≤ 17	20
17 < T ≤ 18	8

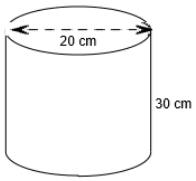
18: A person scores 17 on the general knowledge test. Estimate their IQ.



C19: Find the area of this shape.



C20: Find the volume of this cylinder.

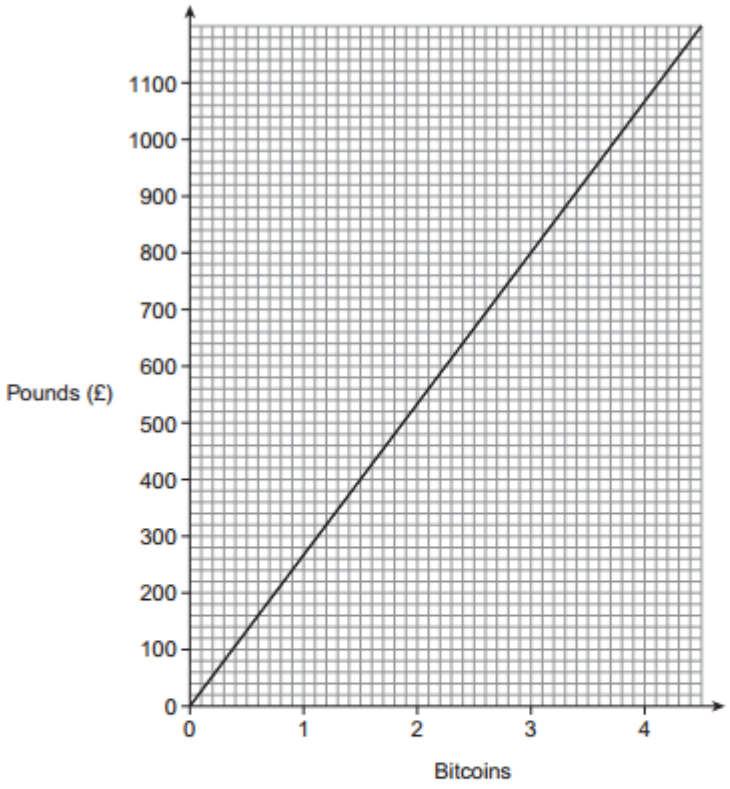


Mark:

Effort:

Exam Question Homework: Graph Problems

Here is a conversion graph for bitcoins and pounds (£).



Work out the value, in pounds, of 2.5 bitcoins.

[1 mark]

Answer £ .....

Work out the value, in bitcoins, of £4000

[2 marks]

Leo drives a car while on holiday in Spain.

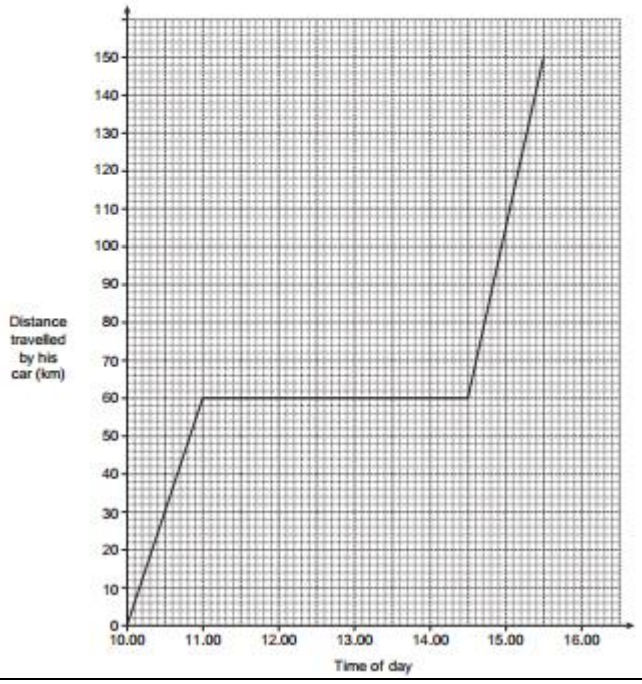
On Monday, Leo

drives to Madrid and parks his car

goes sightseeing

continues his car journey.

The graph shows this information.



For how long does he go sightseeing?
Give your answer in hours.

[1 mark]

Answer ..... hours

Write down his speed when driving to Madrid.

[1 mark]

Answer ..... km/h

Tick a box to show when he is travelling at a faster speed.

On the way to Madrid ☐ After leaving Madrid ☐

Give a reason for your answer.

[1 mark]

.....

.....

On Tuesday, Leo travels at an average speed of 104 kilometres per hour.

Show that 104 kilometres per hour is more than 60 miles per hour.

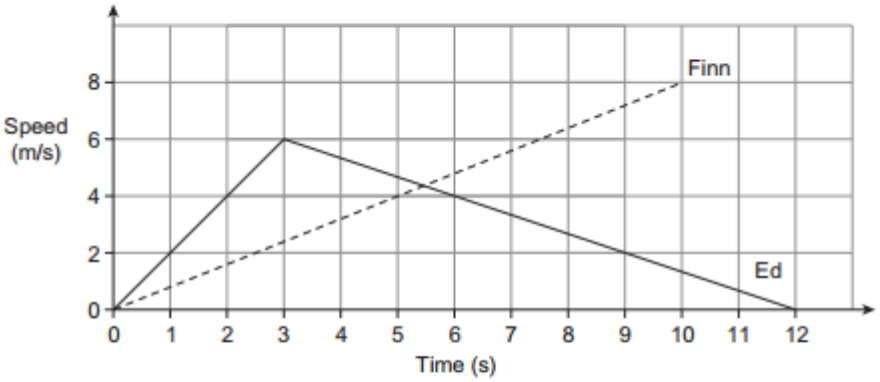
[3 marks]

Ed and Finn both run along the same track.

Ed runs for 12 seconds.

Finn runs for 10 seconds.

The graphs show their runs.



What is Ed's speed after 2 seconds?

[1 mark]

Answer _____ m/s

Who runs the further distance?
You **must** show your working.

[3 marks]

Homework Sheet 22

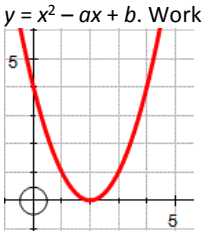
1: The coordinate (a, b) is rotated 180° around centre (3, 2) to give the image (4, 1). Write down the values of a and b.

2: The prime factorisation of 350 = 2 x 5^2 x 7. Find the LCM of 350 and 490.

3: Calculate $\frac{8.4 \times 10^{5}}{1.2 \times 10^{-3}}$ giving your answer in standard form.

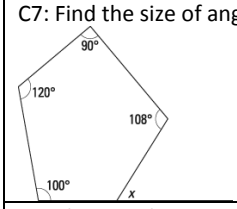
4: Lori is conducting a survey of spending money among teenagers. She asks teenagers in the local shopping centre. Explain why this would not lead to a suitable sample.

C5: The equation of the graph below can be written as $y = x^2 - ax + b$. Work out the values of a and b.

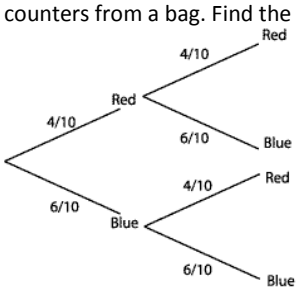


C6: Find the area of this shape.

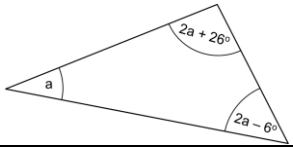
C7: Find the size of angle x



C8: The tree diagram shows the probability of taking red or blue counters from a bag. Find the probability of getting red then blue.



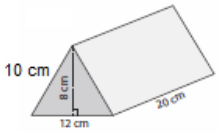
C9: Find the value of a.



10: Draw the front elevation of this shape:

Mark:

C11: Find the surface area of this triangular prism.

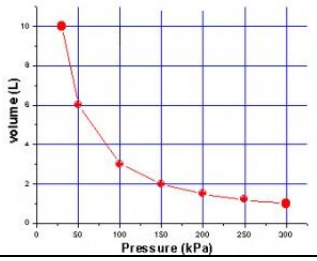


C12: The height of a tree increases by $\frac{1}{20}$ every 4 months. If the tree is originally planted when it is a metre tall, work out how tall it would be four months later.

C13: Susan is on a diet. She starts off weighing 80 kg. In 3 months she loses 4.2%. Find her weight after 3 months.

14: What is Dan's average speed over his whole trek?

15: Find the pressure at 8 litres.



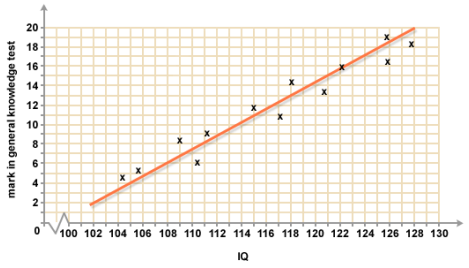
C16: Which average, mode, median or mean, is the best choice for this data? Justify your answer.

5, 7, 6, 7, 16, 8, 7, 5, 7, 6.

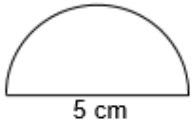
17: Find the midpoint of each class of times.

Time, T (seconds)	Frequency, f
13 < T ≤ 14	12
14 < T ≤ 15	21
15 < T ≤ 16	39
16 < T ≤ 17	20
17 < T ≤ 18	8

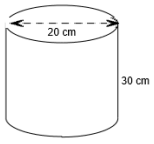
18: A person has an IQ of 120. Estimate their score on the general knowledge test.



C19: Find the perimeter of this shape.



C20: Find the surface area of this cylinder.



Effort:

Exam Question Homework: Graphs and Averages

A hockey team played 24 matches.
The number of goals the team scored in each match is shown.

1	0	2	1	0	3	1	1
0	2	0	4	2	1	2	2
1	0	1	2	1	0	0	1

Complete the table.

[2 marks]

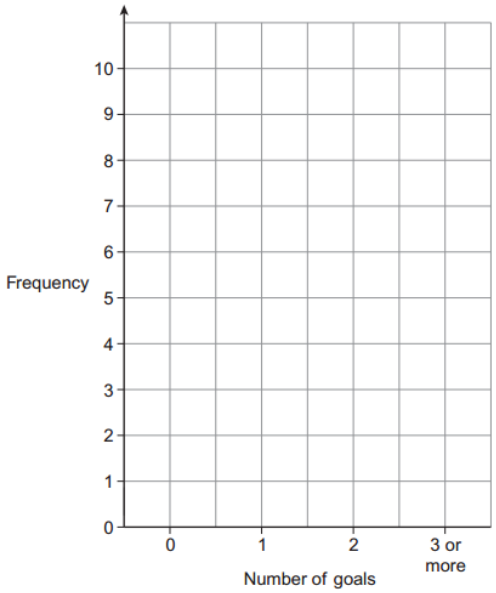
Number of goals	Tally	Frequency
0		
1		
2		
3 or more		

Write down the mode.

[1 mark]

Draw a vertical line graph to show the information in the table.

[2 marks]



Jane is planning her summer holiday.

She finds the price **per person**, in pounds, of holidays in Athens.

784	950	1027	943	969	880
1084	989	1000	900	826	

Work out the median price.

[1 mark]

.....

.....

£ .....

Work out the range of the prices.

[1 mark]

.....

£ .....

Jane works out the following information for the price per person for holidays in Rhodes.

Median	£ 905
Range	£ 276

Compare the price of holidays in Athens and Rhodes.

[2 marks]

Five children are each asked 10 questions.

One mark is given for each correct answer.

Each child scores 7 or more marks.

Only one child scores 10 marks.

The mean of their five scores is one mark higher than the median of their five scores.

Work out the other four scores.

[2 marks]

Homework Sheet 23

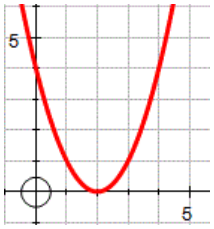
1: The coordinate (*a*, *b*) is enlarged by scale factor ½ centre (1, 2) to give the image (4, 1). Write down the values of *a* and *b*.

2: Simplify $3x^3 \times 4x^{5\frac{1}{2}}$

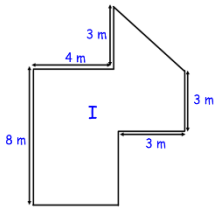
3: Calculate $1.8 \times 10^{-7} \div 2 \times 10^{4}$ giving your answer in standard form.

4: Lori is conducting a survey of spending money among teenagers. She includes the question "How much money do you get?" Give a criticism of this question.

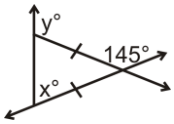
5: Write down the root of the graph below.



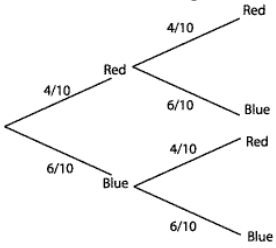
C6: Find the area of this shape.



C7: Find the size of angle *x*



C8: The tree diagram shows the probability of taking red or blue counters from a bag. Find the probability of getting red and blue.

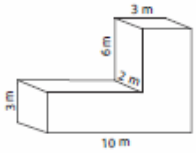


C9: Sam is 4 times older than his daughter. In 4 years time he will be 3 times older than his daughter. Work out Sam's age.

10: Draw the side elevation of this shape:

Mark:

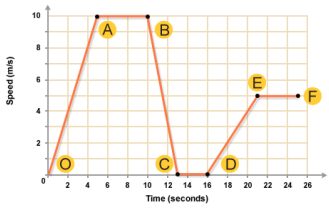
C11: Find the volume of this prism.



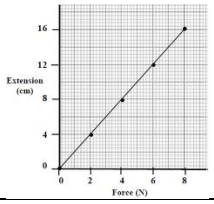
C12: The height of a tree increases by $\frac{1}{20}$ every 4 months. If the tree is originally planted when it is a metre tall, work out how tall it would be eight months later.

C13: A fridge freezer has its price reduced by 15%. If its new price is £76.49, what was the original price.

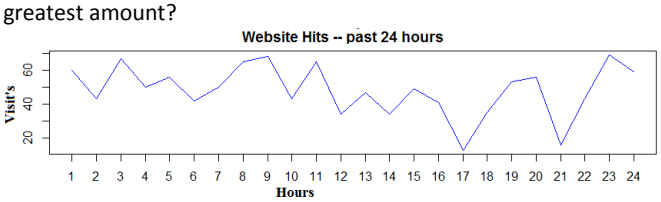
14: What is happening between C and D?



15: Explain how this graph shows that Force is proportional to Extension



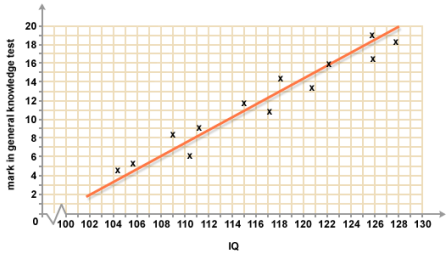
16: During which times did the number of hits increase by the greatest amount?



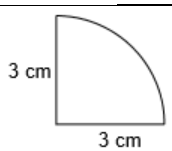
C17: Find an estimate for the total time taken for each class.

Time, T (seconds)	Frequency, f
13 < T ≤ 14	12
14 < T ≤ 15	21
15 < T ≤ 16	39
16 < T ≤ 17	20
17 < T ≤ 18	8

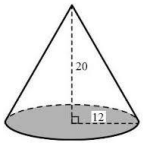
18: Work out the mean score on the general knowledge test.



C19: Find the area of this shape.



C20: Find the volume of this cone.



Effort:

Exam Question Homework: Tables and Scattergraphs

Here are three scatter diagrams.

Diagram 1

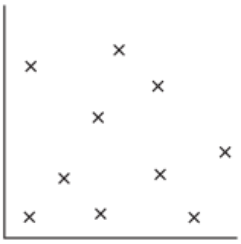


Diagram 2

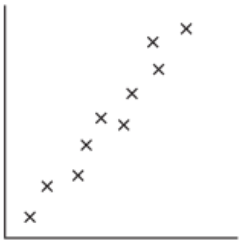
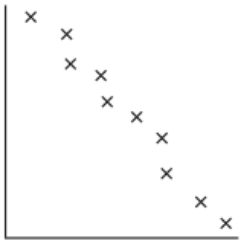


Diagram 3



Here are three pairs of variables.

A The age of children and the shoe size of children.

B The number of hours of sunshine and the number of umbrellas sold.

C The marks of students in a maths test and the distance each student travels to school.

Match each scatter diagram to a pair of variables.

[2 marks]

A Diagram .....

B Diagram .....

C Diagram .....

The speeds of 100 vehicles driving through a housing estate were recorded one day.

Speed, s (mph)	Frequency		
$10 < s \leqslant 15$	17		
$15 < s \leqslant 20$	46		
$20 < s \leqslant 25$	22		
$25 < s \leqslant 30$	10		
$30 < s \leqslant 35$	5		

Work out an estimate for the mean speed.

[4 marks]

.....

.....

.....

.....

.....

Answer ..... mph

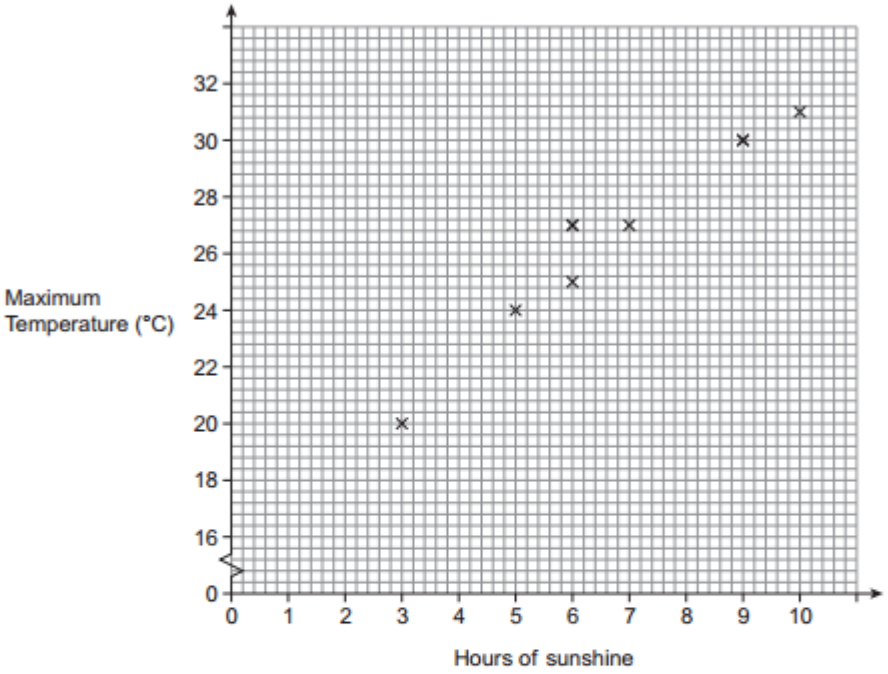
The speed limit on roads through the housing estate is 20 miles per hour.

Did vehicles on this estate usually drive within the speed limit?
Give a reason for your answer.

[1 mark]

The number of hours of sunshine and the maximum temperature in London were measured on seven days in July.

The information is shown in the scatter diagram.



Use a line of best fit to estimate the maximum temperature on a day in July when there are 8 hours of sunshine.

[2 marks]

Answer ..... °C

Can this graph be used to predict the maximum temperature for a day in **December** when there are 4 hours of sunshine?

Tick a box ☐ Yes ☐ No

Give a reason for your answer.

[1 mark]

.....

Homework Sheet 24

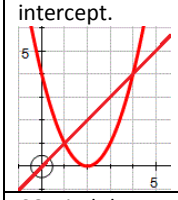
1: The vector **a** is $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$. Write down the vector 3**a**.

2: Simplify $3x^3 \times 4x^{5\frac{1}{2}} \div 2x^{-2}$

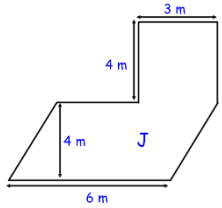
3: Calculate $\frac{1.2\times10^{-3}}{8.4\times10^{5}}$ giving your answer in standard form to 3 significant figures.

4: Lori is conducting a survey of spending money among teenagers. She asks the question "What do you spend most of your money on?" Design a suitable response section for the question.

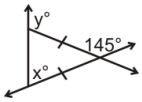
5: Write down the coordinates where the two graphs below intercept.



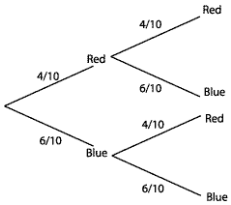
C6: Find the area of this shape.



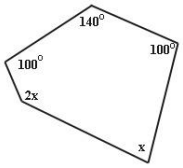
C7: Find the size of angle *y*.



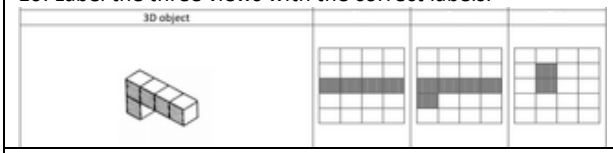
C8: The tree diagram shows the probability of taking red or blue counters from a bag. Find the probability of getting two counters the same colour.



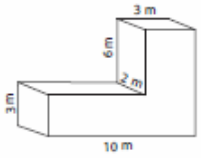
C9: Find the size of *x*.



10: Label the three views with the correct labels.



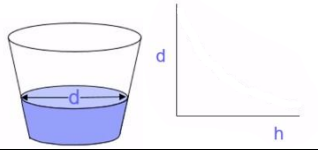
C11: Find the surface area of this prism.



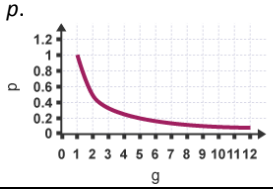
C12: The height of a tree increases by $\frac{1}{20}$ every 4 months. If the tree is originally planted when it is a metre tall, work out how tall it would be two years later.

C13: The price of a car depreciates by 6% every year. After 6 years the car is worth £8964.86. Work out its price when new.

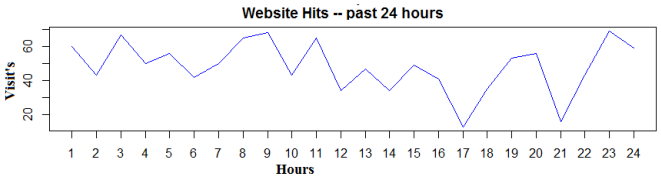
14: Sketch the graph of water surface diameter (d) against time as the vessel fills.



15: Explain how the graph shows that *g* is inversely proportional to *p*.



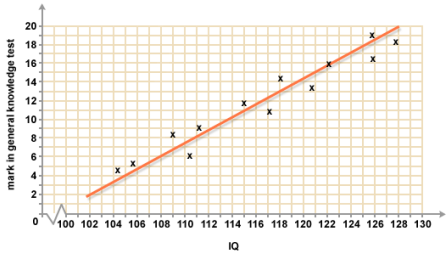
16: Approximately how many hits did the website have over 24 hours?



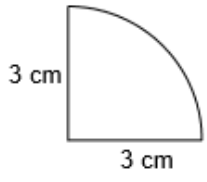
C17: Find an estimate for the mean time taken.

Time, T (seconds)	Frequency, f
13 < T ≤ 14	12
14 < T ≤ 15	21
15 < T ≤ 16	39
16 < T ≤ 17	20
17 < T ≤ 18	8

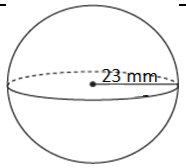
18: Work out the mean average IQ.



C19: Find the perimeter of this shape.



C20: Find the volume of this sphere.



Mark:

Effort:

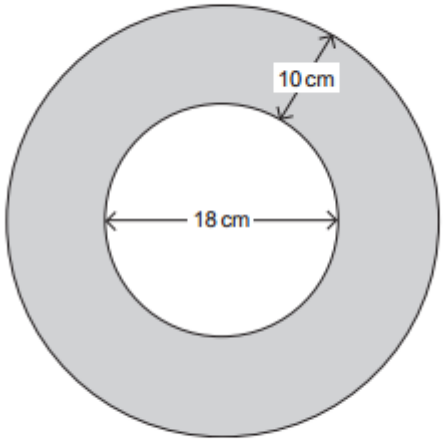
Exam Question Homework: Curved shapes.

A square and a circle have the same area.
The radius of the circle is 10 cm

Work out the length of the side of the square.
Give your answer to 1 decimal place.

[3 marks]

The diagram shows the rim of a hat which is made from felt.
The rim is made by cutting a circle of diameter 18 cm from the centre of a larger circle.

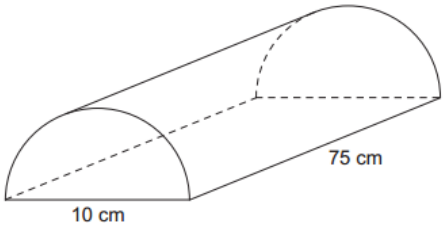


Not drawn accurately

Show that the area of the rim, to the nearest 10 cm^2, is 880 cm^2

[3 marks]

A prism has a semicircular cross section with a diameter of 10 centimetres.
The prism is 75 centimetres long.



Work out the volume of the prism.
State the units of your answer.

[5 marks]

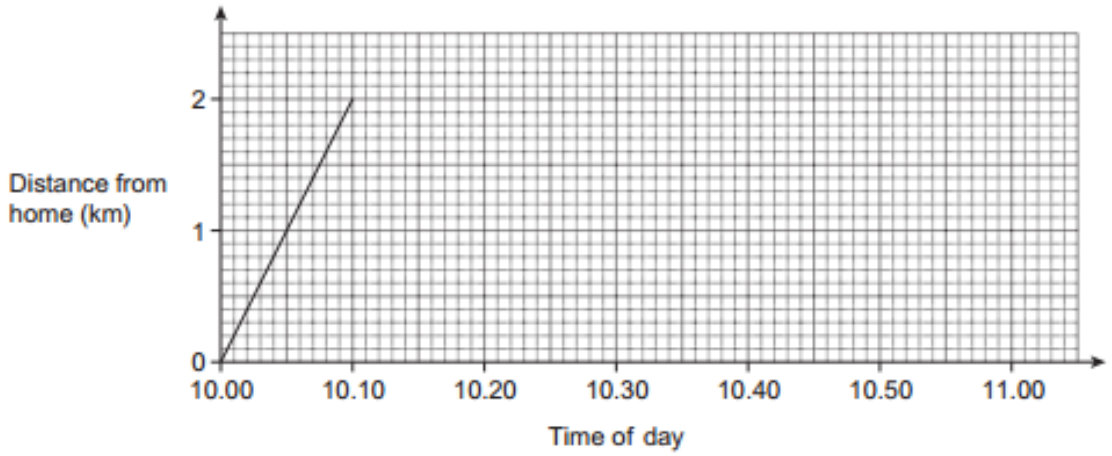
Sheet	15	16	17	18	19	20	21	22	23	24
Mark										

Question		Homework 15	Homework 16	Homework 17	Homework 18	Homework 19	Homework 20	Homework 21	Homework 22	Homework 23	Homework 24
1	Transformations										
2	Factors and Indices										
3	Standard Form										
4	Sampling and Questionnaires										
5	Non-linear graphs										
6	Area										
7	Angles & Polygons										
8	Probability										
9	Forming Equations										
10	3D Shapes										
11	Volume and Surface Area										
12	Growth and Decay										
13	Percentage problems										
14	Travel & Real Life Graphs										
15	Proportion Graphs										
16	Graphs & Averages										
17	Grouping and Tables										
18	Scatter graphs										
19	Circles and Part Circles										
20	Volume and Surface area of curved shapes										

Homework 15 Target	
Homework 16 Target	
Homework 17 Target	
Homework 18 Target	
Homework 19 Target	
Homework 20 Target	
Homework 21 Target	
Homework 22 Target	
Homework 23 Target	
Homework 24 Target	

Exam Question Holiday Homework:

Amy cycles to the gym.
The graph shows her journey from her home to the gym.



Work out the speed for her journey to the gym.
Give your answer in kilometres per hour.

[2 marks]

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Answer ..... km/h

Amy stays at the gym for 30 minutes.
She cycles back home at a constant speed.
She arrives home at 10.55

Show this information on the graph above.

[2 marks]

Mike buys lunch at work.
The amount he spends each day for ten days is shown.

£4.20	£3.95	£6.30	£2.80	£3.50
£4.00	£3.75	£4.90	£5.10	£4.30

Calculate the mean amount he spends each day.

[3 marks]

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£ .....

Mike wants to reduce the amount he spends.

He says,

"I will spend a maximum of £4 each day for the next ten days.
This means I will spend less than I did in the first ten days."

Is he correct?
Give a reason for your answer.

[1 mark]

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Seb investigates whether members of an athletics club perform better than non-members in a 10 kilometre race.

The table summarises the finishing times of the members.

Finishing time, *t* (minutes)	**Frequency**		
$30 \leq t < 40$	10		
$40 \leq t < 50$	12		
$50 \leq t < 60$	6		
$60 \leq t < 70$	2		

Calculate an estimate of the mean finishing time of the members.

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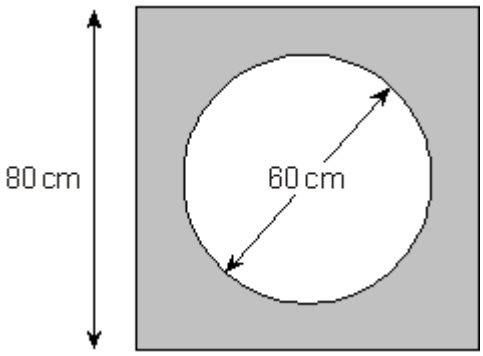
Answer ..... minutes

(4)

A circle of diameter 60 cm is cut out of a square of side 80 cm.



Not drawn accurately

Calculate the shaded area.

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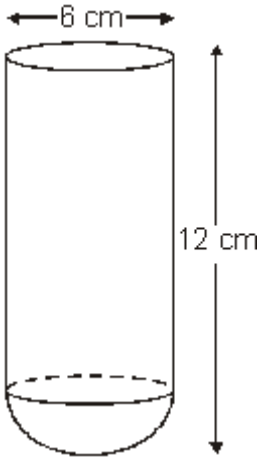
Answer .....cm^2

(Total 3 marks)

A test tube is formed from a cylinder and a hemisphere as shown.



Work out the total volume of the test tube.

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Answer ..... cm^3

(4)