

# FOUNDATION

*Predicted Answers*

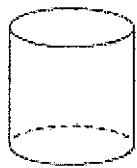
<b>Paper 2</b>	<b>Practice Paper</b>
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Question	Marks	TOPIC
1	4	Identify 3D shapes
2	4	Ordering/Place Value
3	4	Fractions/Percentages
4	2	Area/ Perimeter
5	2	Substitution
6	4	Pie Charts
7	3	Travel Graphs
8	4	Ratio/Proportion
9	3	Fractions/Percentages
10	3	Construction
11	6	Money problems
12	3	Enlargement
13	4	Derive equation and solve
14	6	Simplify expressions
15	3	Multiples & factors
16	2	Calculator
17	4	Stem & Leaf
18	5	Questionnaires
19	6	Conversion Graphs
20	4	Loci
21	5	Problem Solving
22	6	Frequency Tables
23	6	Area/Perimeter Problem
24	4	Trial & Improvement
25	4	Pythagoras

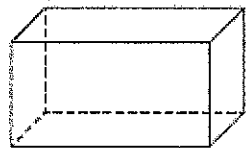
## Questions

Q1.

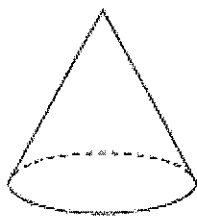
Here are some solid 3-D shapes.



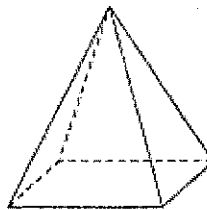
A



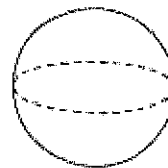
B



C



D



E

(a) Write down the letter of the shape that is a sphere.

E

(1)

(b) Write down the mathematical name of shape A.

Cylinder

(1)

(c) How many faces does shape B have?

6

(1)

(d) How many edges does shape D have?

8

(1)

(Total for Question is 4 marks)

Q2.

(a) Write these numbers in order of size.  
Start with the smallest number.

3007    4435    399    4011    3333

399    3007    3333    4011    4435

(1)

(b) Write these numbers in order of size.  
Start with the smallest number.

3.7    5.62    0.7    14.3

0.7    3.7    5.62    14.3

(1)

(c) Write  $\frac{9}{10}$  as a decimal.

0.9

(1)

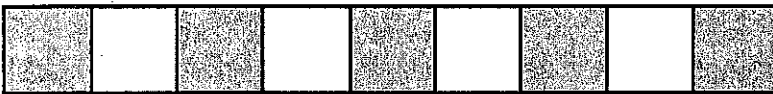
(d) Write  $\frac{11}{8}$  as a mixed number.

$1\frac{3}{8}$

(1)

(Total for question = 4 marks)

Q3.

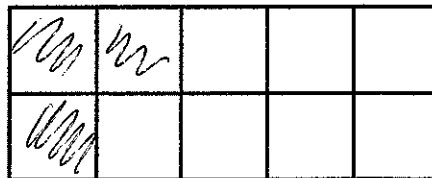


(a) Write down the fraction of this shape that is shaded.

$\frac{5}{9}$

(1)

(b) Shade 30% of this shape.



(1)

(c) Work out  $\frac{2}{3}$  of 120 kg.

$$\frac{2}{3} \text{ of } 120 \Rightarrow \frac{120}{3} = 40 \times 2 = 80 \text{ kg}$$

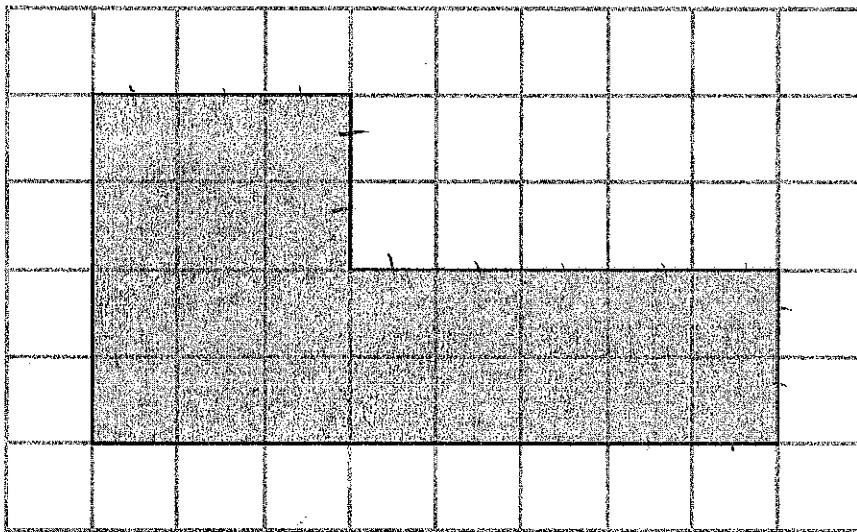
or  $3 \overline{) 120} \Rightarrow 40 \times 2 = 80 \text{ kg}$

80 kg ..... kg  
(2)

(Total for Question is 4 marks)

Q4.

The shaded shape is drawn on a grid of centimetre squares.



(a) Find the perimeter of the shaded shape.

24 ..... cm  
(1)

(b) Find the area of the shaded shape.

22 ..... cm<sup>2</sup>  
(1)

(Total for Question is 2 marks)

Q5.

$$a = 5$$

$$b = 3$$

Work out the value of  $4a + 2b$

$$4a + 2b$$

$$4 \times 5 + 2 \times 3$$

✓

✓

$$20 + 6 = 26$$

26

(Total for Question is 2 marks)

Q6.

Mike asked 60 students to name their favourite fruit.

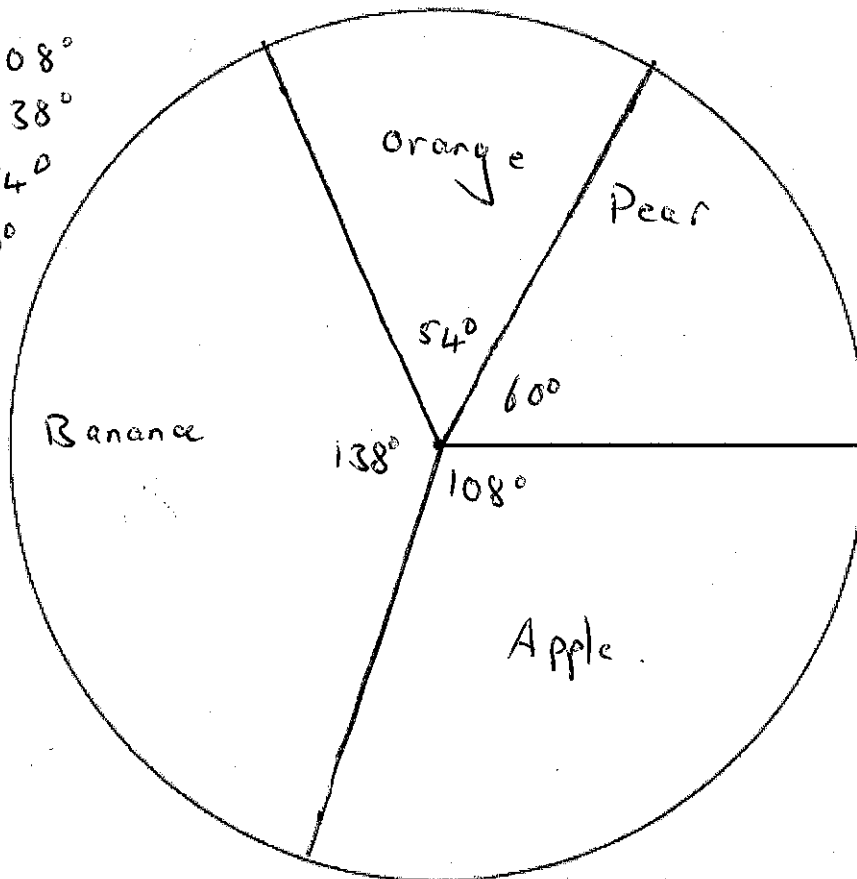
Here are his results.

Favourite Fruit	Frequency
Apple	18
Banana	23
Orange	9
Pear	10

Draw an accurate pie chart for his results.

$$\frac{360}{60} = 6$$

$$\begin{aligned} 18 \times 6 &= 108^\circ \\ 23 \times 6 &= 138^\circ \\ 9 \times 6 &= 54^\circ \\ 10 \times 6 &= 60^\circ \end{aligned}$$

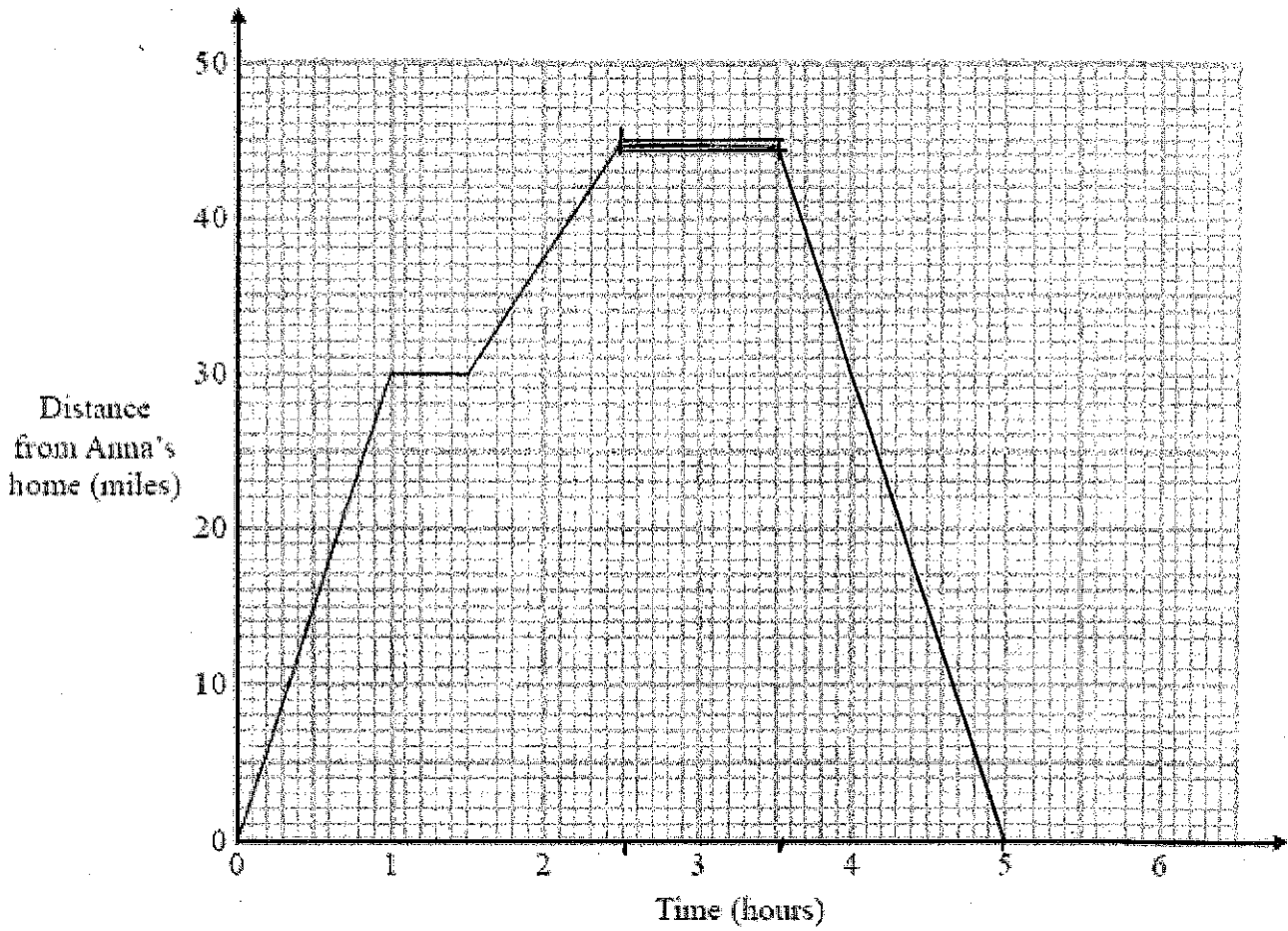


(Total for Question is 4 marks)

Q7.

Anna drives 45 miles from her home to a meeting.

Here is the travel graph for Anna's journey to the meeting.



Anna's meeting lasts for 1 hour.

She then drives home at a steady speed of 30 miles per hour with no stops.

Complete the travel graph to show this information.

$$\text{Journey home} = \frac{45}{30} = 1.5 \text{ hrs.}$$

(Total for Question is 3 marks)

Q8.

Here are the ingredients needed to make 10 pancakes.

Pancakes	
Ingredients to make 10 pancakes	
300 ml	of milk
120 g	of flour
2	eggs

Matthew makes 30 pancakes.

(a) Work out how much flour he uses.

$$\begin{aligned} 10 \text{ pancakes} &= \frac{120 \text{ g}}{10} \\ \therefore 30 \text{ pancakes} &= \frac{120 \text{ g}}{10} \times 3 = 360 \text{ g} \end{aligned}$$

..... 360 ..... g  
(2)

Tara makes some pancakes.  
She uses 750 ml of milk.

(b) Work out how many pancakes she makes.

$$\begin{aligned} 300 \text{ mL} &= 10 \text{ pancakes} \\ \therefore \frac{300}{10} &= 30 \text{ mL} = 1 \text{ pancake} \\ \frac{750}{30} &= \underline{\underline{25 \text{ pancakes}}} \end{aligned}$$

..... 25 .....  
(2)

(Total for Question is 4 marks)

$$\begin{aligned} \text{or } \frac{750 \text{ mL}}{300 \text{ mL}} &= 2.5 \\ 2.5 \times 10 &= \underline{\underline{25}} \end{aligned}$$



Q9.

There are 200 students in Year 11

75 of the students are girls.

(a) Write down the fraction of the students that are girls.

$$\frac{75}{200} \Rightarrow \frac{3}{8}$$

$$\frac{3}{8}$$

(1)

There is a total of 1350 students in the school.

One day, 81 of the 1350 students are absent.

(b) Work out the percentage of the students who are absent.

$$\frac{81}{1350} \times 100 = \underline{\underline{6\%}}$$

or

$$\frac{81}{1350} = 0.06 \times 100 = \underline{\underline{6\%}}$$

$$\text{or } \frac{100}{1350} = 0.074 \times 81 = \underline{\underline{6\%}}$$

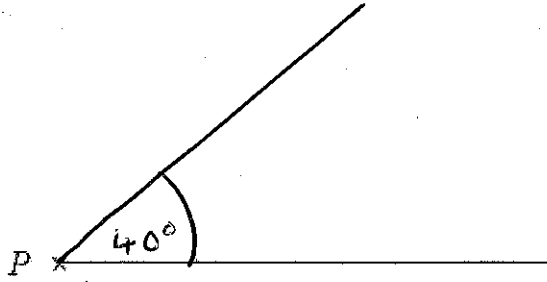
..... %

(2)

(Total for Question is 3 marks)

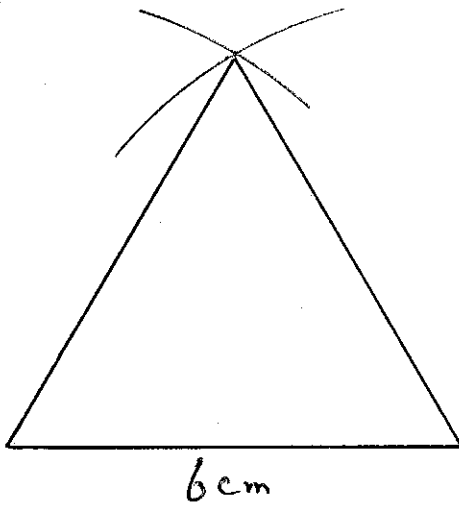
Q10.

(a) Draw an angle of  $40^\circ$  at the point  $P$ .



(1)

(b) Construct an equilateral triangle with sides of length 6cm.



(2)

(Total for question = 3 marks)

Q11.

Here is a shopping bill.

Item	Cost
apples	£1.69
orange juice	98p
3 tins of peas at 37p each	£1.11
1 packet of cheese	£4.52
salmon	£2.68
<b>Total cost</b>	<b>£10.98</b>

(a) Complete the shopping bill by writing in the missing costs.

(3)

Pat wants to buy a book.  
The book costs £5.50

Pat has a voucher for £1.70  
She also has 3 pound coins and 3 twenty pence coins.  
She wants to buy the book with the voucher and the coins.

(b) Is this enough for Pat to buy the book?  
You must show all your working.

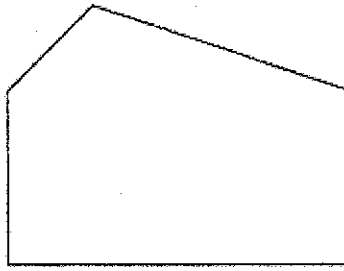
$$\begin{array}{r} 3 \times \pounds 1 = \pounds 3.00 + \\ 3 \times 20\text{p} = \underline{0.60} \\ + \text{voucher} = \underline{1.70} \\ \hline \underline{\pounds 5.30} \\ \hline \end{array}$$

not enough  
20p short.

(3)

(Total for question = 6 marks)

Q12. Here is a polygon with 5 sides.

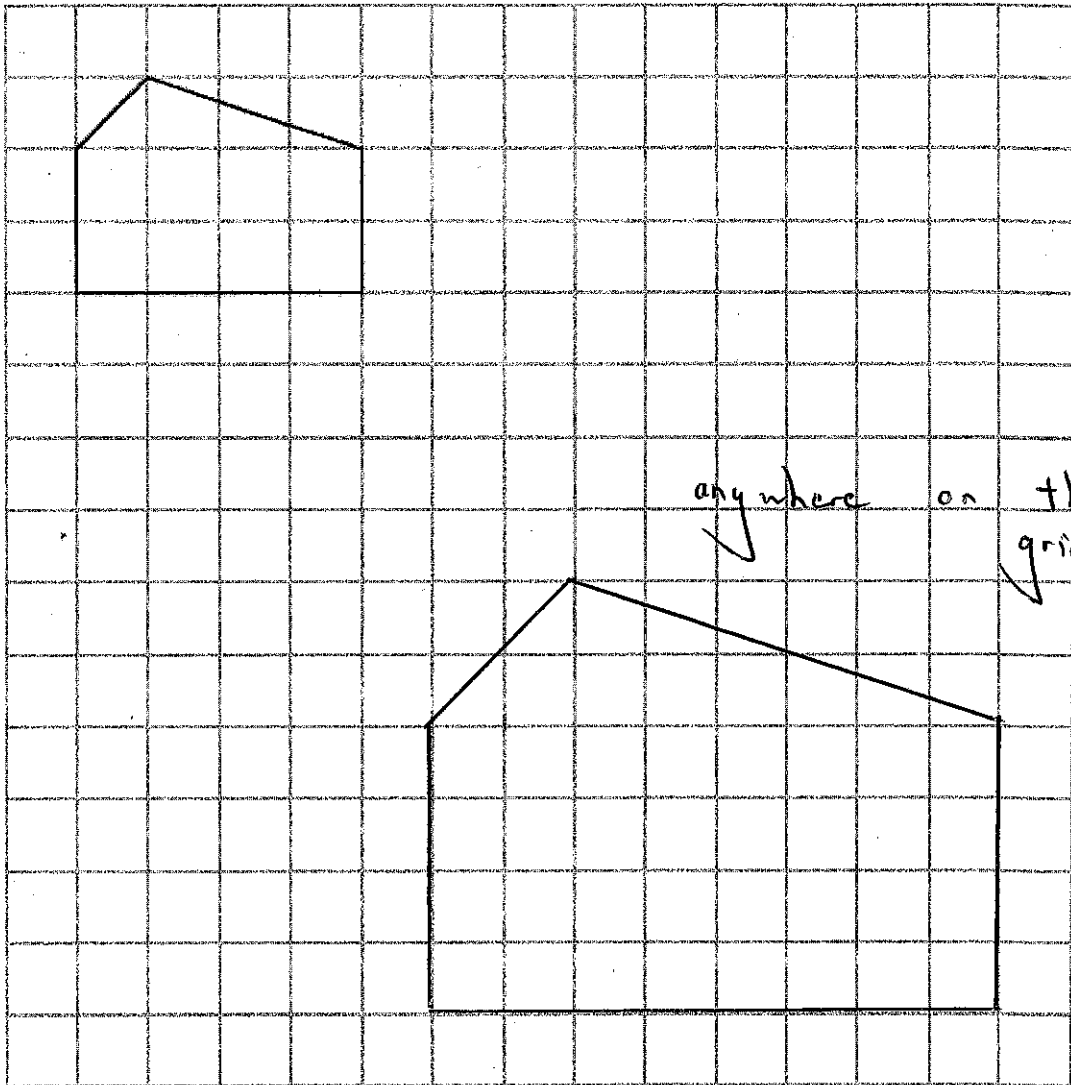


(a) Write down the mathematical name for this polygon.

Pentagon

(1)

(b) On the grid, draw an enlargement of the polygon with scale factor 2



(2)

(Total for question = 3 marks)

Q13.

The diagram shows the plan of a floor.

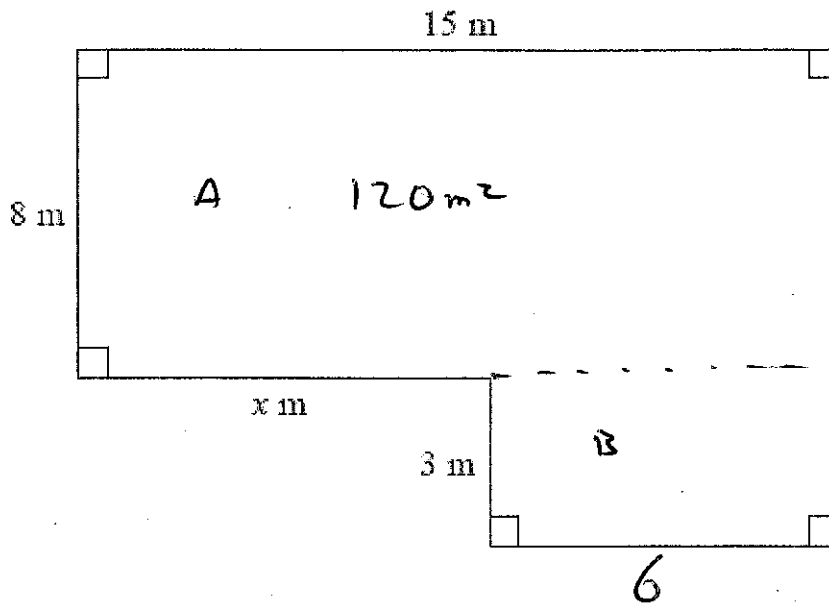


Diagram NOT  
accurately drawn

The area of the floor is  $138 \text{ m}^2$ .

Work out the value of  $x$ .

$$\text{Area } A = 120 \text{ m}^2$$

$$\text{Area } B = 138 - 120 = 18 \text{ m}^2$$

$$\therefore 18 \div 3 = 6 \text{ m}$$

$$\therefore x = 15 - 6 \Rightarrow \underline{9 \text{ m}}$$

01 m

.....  
(Total for Question is 4 marks)

Q14.

(a) Simplify  $a + a + a + a$

$$4a$$

(1)

(b) Simplify  $3 \times c \times d$

$$3cd$$

(1)

(c) Simplify  $3ef + 5ef - ef$

$$7ef$$

(1)

(d) Solve  $6g = 18$

$$\begin{aligned} 6g &= 18 \\ g &= \frac{18}{6} = 3 \end{aligned}$$

$$g = 3$$

(1)

(e) Solve  $5h + 7 = 17$

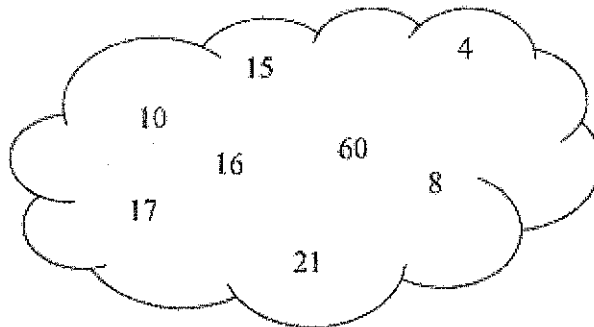
$$\begin{aligned} 5h + 7 &= 17 \\ 5h &= 10 \\ h &= \frac{10}{5} = 2 \end{aligned}$$

$$h = 2$$

(2)

(Total for Question is 6 marks)

Q15.



From the numbers in the cloud,

(a) write down a square number,

$$4 \text{ or } 16$$

(1)

(b) write down a multiple of 7,

$$21$$

(1)

(c) write down a factor of 30

$$10 \text{ or } 15$$

(1)

(Total for Question is 3 marks)

Q16. Use your calculator to work out

$$\sqrt{84.64} + 3.2^3$$

Write down all the figures on your calculator display.  
You must give your answer as a decimal.

$$\begin{array}{r} \sqrt{84.64} \\ \downarrow \\ 9.2 \end{array} + 3.2^3 = 41.968$$

(Total for Question is 2 marks)

Q17. Yan recorded the ages, in years, of a sample of people at a fairground.  
He drew this stem and leaf diagram for his results.

1	5 5 7 7 7 7 9
2	0 3 7 8 8
3	4 6 7 7
4	2 5 9
5	0 5

Key:

1|5 represents 15 years of age

(a) Write down the number of people in the sample.

21

(1)

(b) Write down the mode.

17

years

(1)

(c) Work out the range.

40

years

(2)

(Total for Question is 4 marks)

Q18.

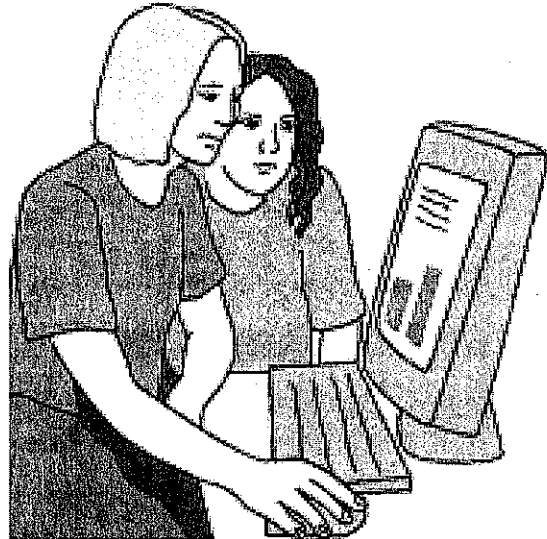
Visage is an internet site.

Jaz is going to carry out a survey on the lengths of time people spend using Visage.

He uses this question on a questionnaire.

How much time do you spend using Visage?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
none	a little	not much	a lot



(a) Write down **two** things that are wrong with this question.

~~no~~ - Time frame not included.  
- ambiguous tick boxes

(2)

(b) Design a better question that Jaz could use.

- time frame given (e.g. week / day / month)  
- tick boxes without overlapping values

(2)

Jaz is going to give his questionnaire to his friends.

(c) This may not produce a good sample.

Give one reason why.

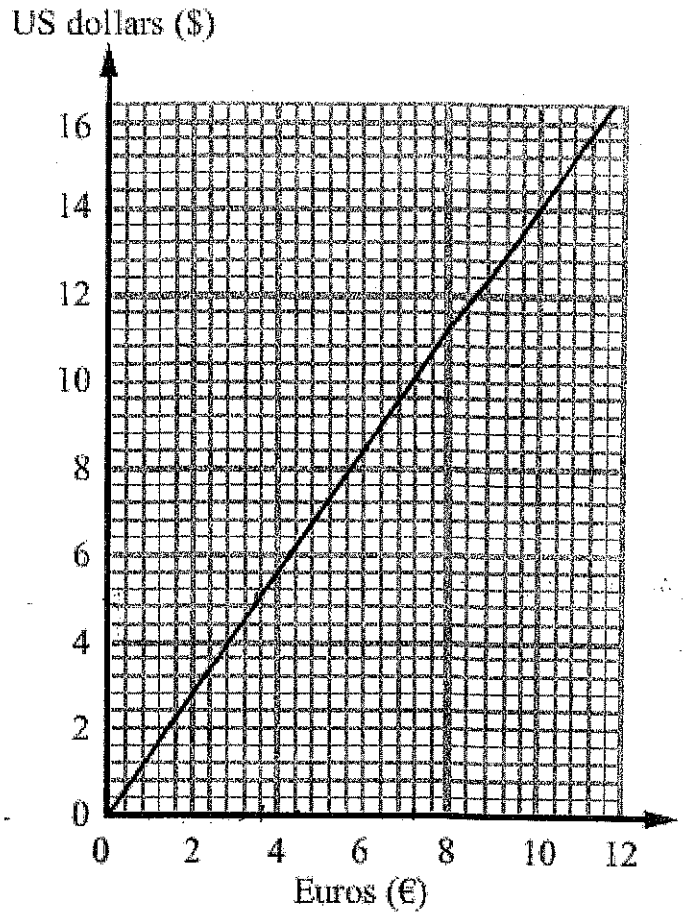
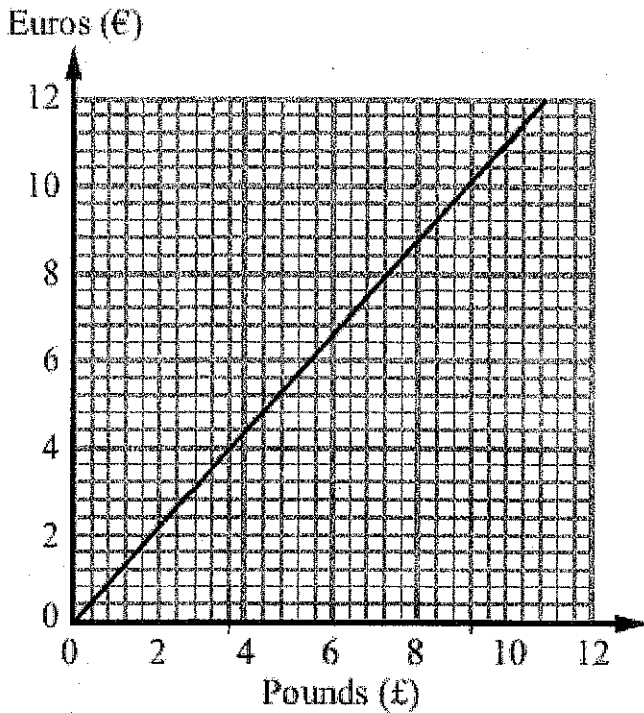
- they may already be using Visage  
- as friends they may answer to please them

(1)

(Total for Question is 5 marks)



Q19. These graphs can be used to convert between pounds (£), Euros (€) and US dollars (\$).



(a) Convert £6 to Euros (€).

€ 7.00 (1)

(b) Convert \$5 to Euros (€).

€ 3.60 (1)

On the internet, Amir sees a pair of trainers.  
The trainers cost \$65

(c) Work out the cost of the trainers in pounds (£).

if \$5 = €3.60  
\$65 = €46.80



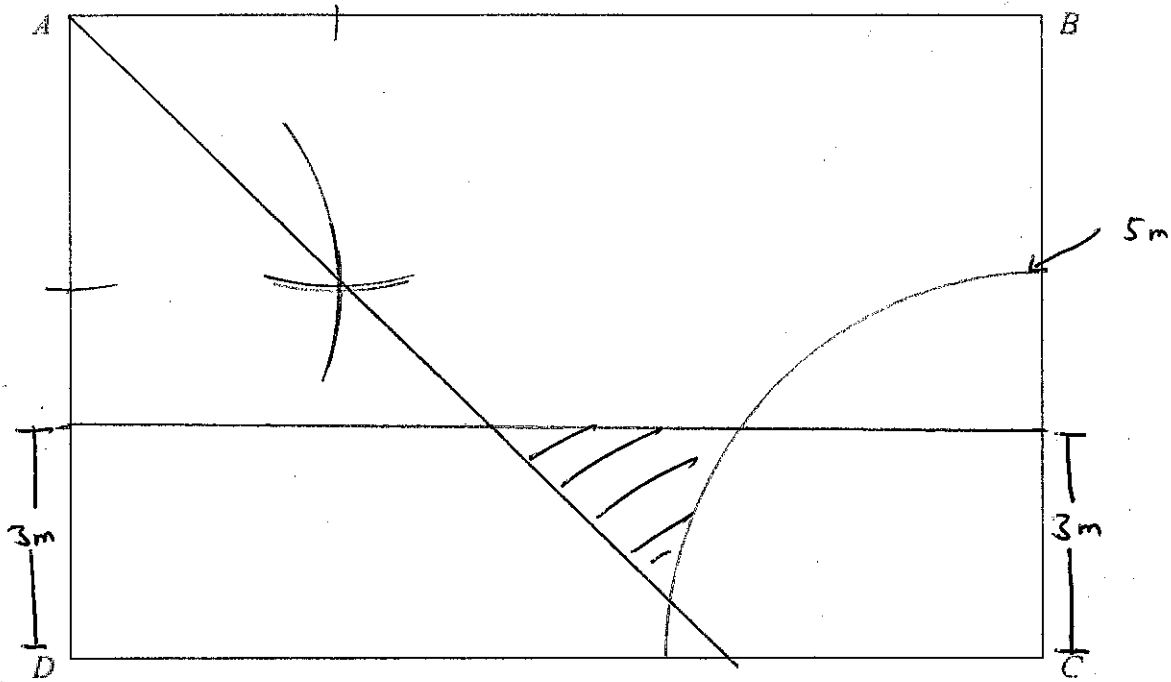
∴ = £43.60

£ 43 - £45 (4)

(Total for Question is 6 marks)

Q20.

Here is a scale drawing of a rectangular garden  $ABCD$ .



Scale: 1 cm represents 1 metre.

Jane wants to plant a tree in the garden

at least 5m from point C,  
nearer to  $AB$  than to  $AD$   
and less than 3m from  $DC$ .

On the diagram, shade the region where Jane can plant the tree.

(Total for Question is 4marks)

Q21. \* Redlands School sent  $x$  students to a revision day.  
St Samuel's School sent twice as many students as Redlands School.  
Francis Long School sent 7 fewer students than Redlands School.

Each student paid £15 for the revision day.  
The students paid a total of £1155

Work out how many students were sent by each school to the revision day.  
You must show all your working.

$$\left. \begin{array}{l} R = x \\ S = 2x \\ F = x - 7 \end{array} \right\} \quad \begin{array}{l} x + 2x + x - 7 = 4x - 7 = \\ 1155 \div 15 = 77 \\ 4x - 7 = 77 \end{array}$$

$$\begin{array}{l} 4x = 84 \\ x = 21 \end{array}$$

$$\begin{array}{l} \text{Redlands} = 21 \\ \text{St Samuel's} = 42 \\ \text{Francis} = 14 \\ \hline 77 \end{array}$$

(Total for question = 5 marks)

Q22. The table gives some information about the weights, in kg, of 50 suitcases at an airport check-in desk.

Weight ( $w$ kg)	Frequency
$0 < w \leq 10$	16
$10 < w \leq 15$	18
$15 < w \leq 20$	10
$20 < w \leq 35$	6

(a) Work out an estimate for the mean weight.

<del>midpoint</del>	$w$	<del>midpoint</del>	Freq	$m \times f$	
<del>5</del>	<del>0</del> <del>10</del>	<del>5</del>	<del>16</del>	<del>5 \times 16</del>	<del>= 80</del>
<del>12.5</del>	<del>10</del> <del>15</del>	<del>12.5</del>	<del>18</del>	<del>12.5 \times 18</del>	<del>= 225</del>
<del>17.5</del>	<del>15</del> <del>20</del>	<del>17.5</del>	<del>10</del>	<del>17.5 \times 10</del>	<del>= 175</del>
<del>27.5</del>	<del>20</del> <del>35</del>	<del>27.5</del>	<del>6</del>	<del>27.5 \times 6</del>	<del>= 165</del>
			<del>50</del>		Total <u>645</u>

$645 \div 50 = 12.9 \text{ kg}$

12.9  
..... kg  
(4)

Passengers have to pay extra money for any suitcase that weighs more than 20 kg. Two of the 50 suitcases are chosen at random.

(b) Work out the probability that both suitcases weigh more than 20 kg.

~~$\frac{6}{50} \times \frac{6}{50}$~~        $\frac{6}{50} \times \frac{6}{50} = \frac{36}{2500}$

.....  
(2)  
(Total for Question is 6 marks)

Q23.

Here is a right-angled triangle.

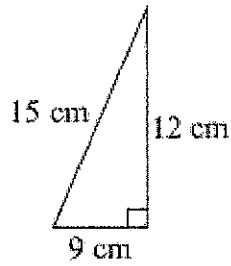


Diagram NOT accurately drawn

The shape below is made from 4 of these triangles.

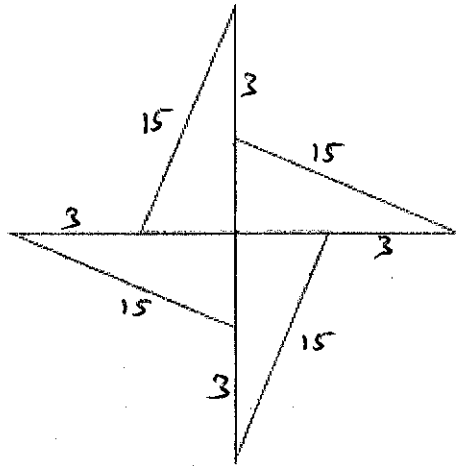


Diagram NOT accurately drawn

(a) Work out the area of the shape.

$$\triangle = \frac{12 \times 9}{2} = 54 \text{ cm}^2 \times 4 = 216 \text{ cm}^2$$

216

..... cm<sup>2</sup>  
(3)

(b) Work out the perimeter of the shape.

$$\begin{array}{r} 15 \times 4 = 60 \text{ cm} \\ 3 \times 4 = 12 \text{ cm} \\ \hline 72 \text{ cm} \end{array}$$

.....  
(3)

(Total for Question is 6 marks)

Q24.

The equation

$$x^3 + 2x = 110$$

has a solution between 4 and 5

Use a trial and improvement method to find this solution.

Give your answer correct to one decimal place.

You must show ALL your working.

$x$	$x^3 + 2x$	=	
4	$4^3 + 2 \times 4$	= 72	too small
5	$5^3 + 2 \times 5$	= 135	too big
4.5	$4.5^3 + 2 \times 4.5$	= 100.125	too small
4.7	$4.7^3 + 2 \times 4.7$	= 113.223	too big
4.6	$4.6^3 + 2 \times 4.6$	= 106.536	too small
4.65	$4.65^3 + 2 \times 4.65$	= 109.844	too small
4.66	$4.66^3 + 2 \times 4.66$	= 110.514	too big

$$x = \dots 4.7 \dots$$

(Total for Question is 4 marks)

Q25.

A frame is made from wire.

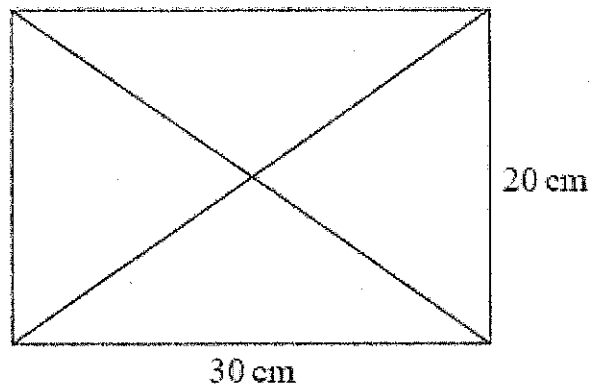
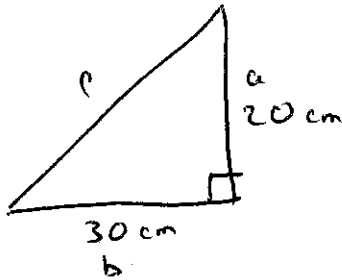


Diagram NOT  
accurately drawn

Mult

The frame is in the shape of a rectangle, 30 cm by 20 cm.  
The two diagonals of the rectangle are also made from wire.

Calculate the total length of wire needed to make the frame and the diagonals.  
Give your answer correct to 1 decimal place.



$$a^2 + b^2 = c^2$$
$$20^2 + 30^2 =$$
$$400 + 900 = 1300$$

$$\sqrt{1300} = 36.05 \times 2$$
$$72.111$$
$$= \underline{\underline{72.1 \text{ cm}}}$$

..... cm

(Total for question = 4 marks)