

Candidate Name	Centre Number	Candidate Number
		0



GCSE

185/11

**MATHEMATICS
WALES PILOT
FOUNDATION TIER
PAPER 1**

P.M. MONDAY, 6 June 2011

2 hours

GRADE G F E D C
Mark 20 30 45 55 70

**CALCULATORS ARE
NOT TO BE USED
FOR THIS PAPER**

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3.14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

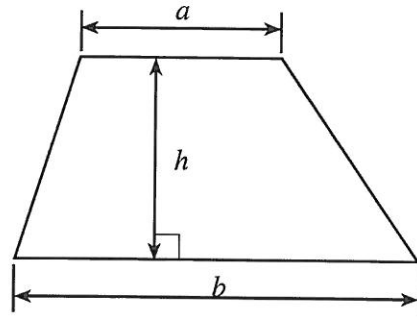
Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

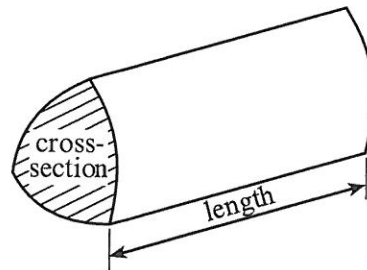
For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	10	10
2	5	15
3	4	19
4	4	23 \Rightarrow G
5	8	31 \Rightarrow F
6	6	37
7	5	42
8	4	46 \Rightarrow E
9	5	51
10	4	55 \Rightarrow D
11	5	60
12	3	63
13	6	69
14	8	77 \Rightarrow C
15	5	
16	5	
17	3	
18	2	
19	8	
TOTAL MARK		

Formula List

Area of trapezium = $\frac{1}{2}(a + b)h$



Volume of prism = area of cross-section \times length



1. (a) (i) Write down, in figures, the number thirty five thousand six hundred and two.

35602

- (ii) Write down, in words, the number 17025.

Seventeen thousand and twenty five

[2]

- (b) Using the following list of numbers

15 24 53 65 49 71 85 48 54

write down

- (i) two numbers that have a sum of 80,

15 + 65

- (ii) two numbers with a difference of 32,

85 - 53

- (iii) a multiple of 9,

54

- (iv) a square number.

49

[4]

- (c) Write down all the factors of 35.

1, 35 5, 7

[2]

- (d) How many books at £8.99 each can be bought with £40?

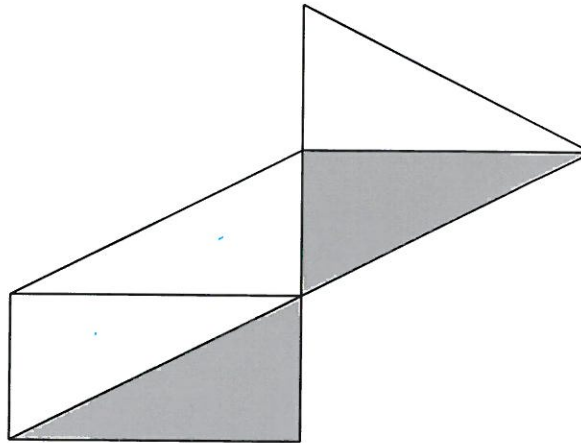
£9 9 x 4 = 36

↓

4 books

[2]

2. (a)

(i) What percentage of the shape is shaded?

$$\frac{2}{5} = 40\%$$

(ii) What percentage of the shape is unshaded?

$$60\%$$

[2]

(b) (i) Write $\frac{1}{4}$ as a decimal. 0.25(ii) Write 24% as a decimal. 0.24(iii) Write $\frac{1}{4}$, 24% and $\frac{3}{10}$ in order of size, with the smallest first.

$$\frac{11}{10} = 1.1$$

$$24\%, \frac{1}{4}, \frac{3}{10}$$

[3]

3. Which metric unit is best used to measure

the distance from Rome to Paris,

km

the volume of water used for a shower,

l

the area of a tennis court,

m²

the weight of a piece of toast?

g

[4]

4. (a) Write down the next term in **each** of the following sequences.

(i) 4, $+7$ 11, $+7$ 18, $+7$ 25, $+7$ 32

(ii) 80, -8 72, -8 64, -8 56, -8 48

[2]

- (b) Describe, **in words**, the rule for continuing **each** of the following sequences.

(i) 9, $+6$ 15, $+6$ 21, $+6$ 27, $+6$

Rule: add six to the previous number

(ii) 81, $\div 3$ 27, $\div 3$ 9, $\div 3$ 3,

Rule: dividing the previous number by three

[2]

G

5. (a) Choose the best word from those given below to describe the chance of each of the following events occurring.

impossible**unlikely****an even chance****likely****certain**

- (i) That it will rain in London on at least one day in the period April 1st 2012 to April 23rd 2012.

likely

- (ii) That the outside temperature in Wales will be over 25°C in October.

unlikely

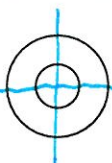
- (iii) To get a score of 8 when a fair dice is rolled once.

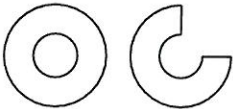
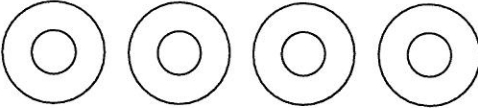
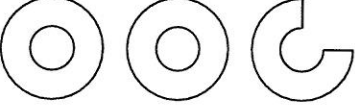

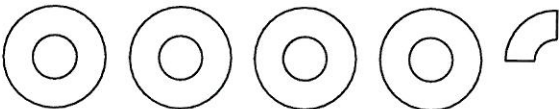
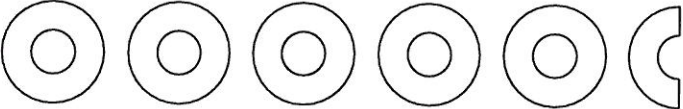
impossible

[3]

AA

- (b) A survey was carried out to find out how many DVDs were sold in a shop on each day of a week from Monday to Saturday. The pictogram shows the result of the survey.

The symbol  represents 4 DVDs.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

- (i) How many DVDs were sold on Tuesday? 16
- (ii) How many DVDs were sold on Wednesday? 11
- (iii) There were 10 DVDs sold on Thursday. Draw this on the pictogram.
- (iv) How many more DVDs were sold on Saturday compared with Monday?

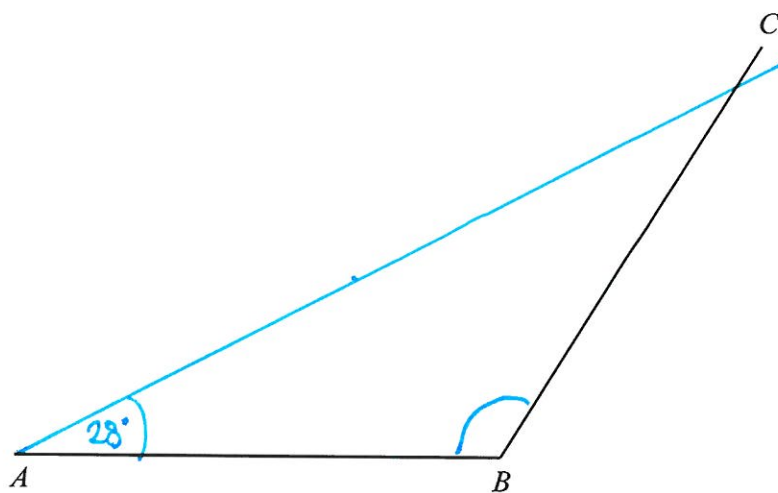
$$22 - 7 = 15 \text{ more}$$

[5]

(F)

6. (a) (i) Measure the size of \hat{ABC} .

$$\hat{ABC} = 123^\circ$$



- (ii) Draw a straight line from the point A which makes an angle of 28° with AB.

[2]

- (b) Draw an accurate net for the closed box sketched below.

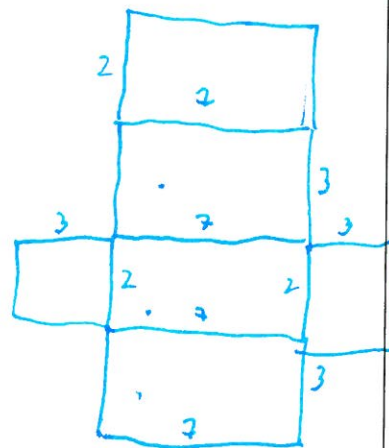
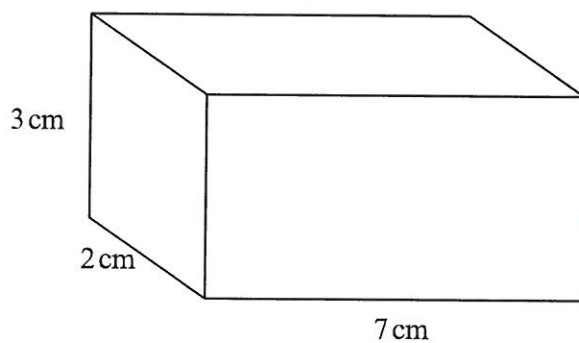
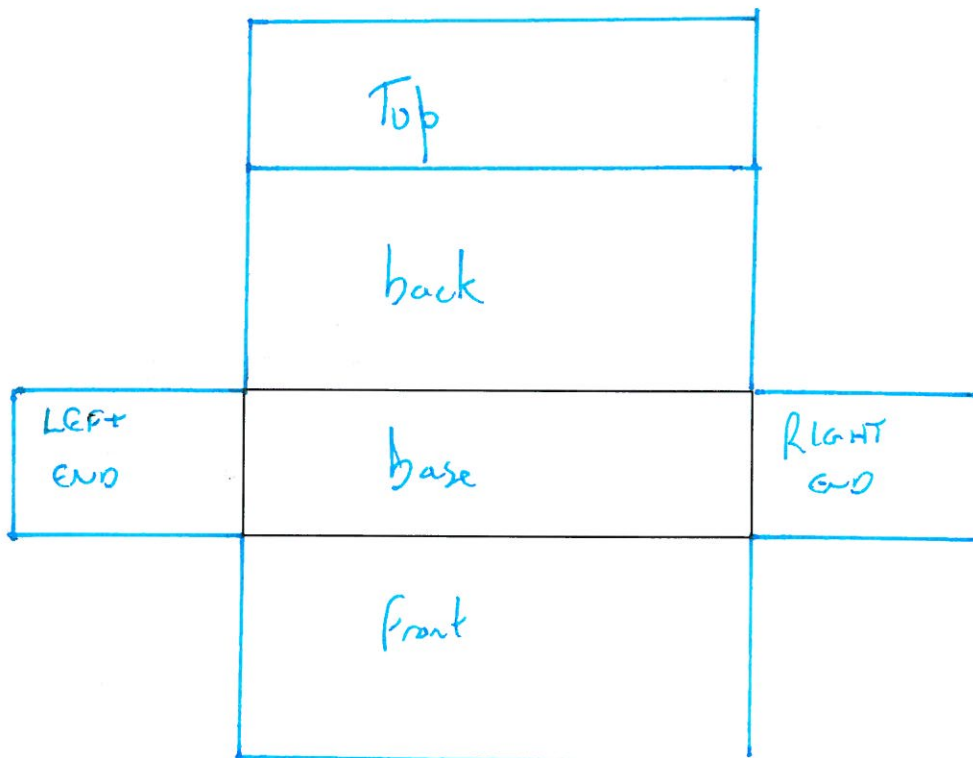


Diagram not drawn to scale

The base, measuring 7 cm by 2 cm, has been drawn for you on the page opposite.

[4]

For use with question 6(b)



7. Two rectangles, each 10 cm by 4 cm, are placed as shown in the diagram.

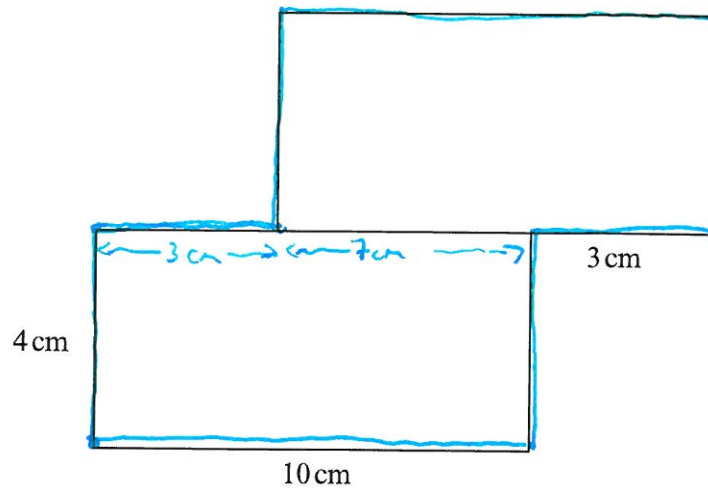


Diagram not drawn to scale

- (a) Find the perimeter of the complete shape shown in the diagram.

$$4 + 3 + 4 + 10 + 4 + 3 + 4 + 10 = 42 \text{ cm}$$

[2]

- (b) Find the area of the complete shape, stating the units of your answer.

$$4 \times 10 = 40 \text{ cm}^2$$

$$4 \times 10 = 40 \text{ cm}^2$$

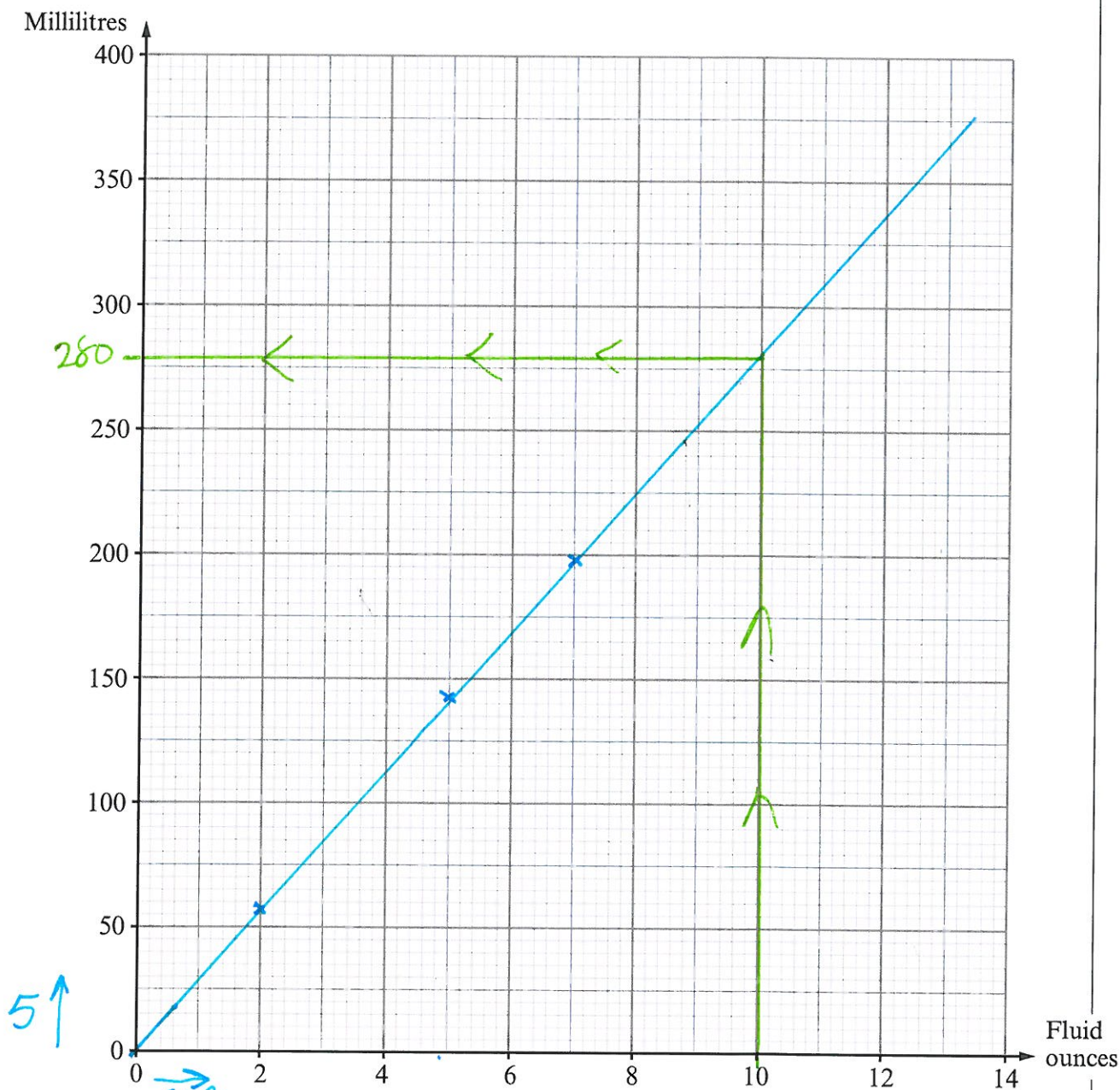
$$\underline{80 \text{ cm}^2}$$

[3]

8. (a) The **fluid ounce** is a unit of volume. A metric unit of volume is the **millilitre (ml)**. The table shows the number of fluid ounces and the number of millilitres in each of three volumes.

Fluid ounces	2	5	7
Millilitres	57	142	199

Use the data in the table to draw a conversion graph between fluid ounces and millilitres. [2]



- (b) Use your graph to show how you can find an estimate for the number of millilitres in 30 fluid ounces.

$$\begin{aligned}
 &10 \text{ fluid ounces} = 280 \text{ ml} \\
 &\text{so } 30 \text{ fluid ounces} = 280 \times 3 = 840 \text{ ml.} \\
 &\quad \quad \quad \times 3 \\
 &\quad \quad \quad \hline
 &\quad \quad \quad 840
 \end{aligned}$$

9. (a) Simplify $3x + x + 4x$.

$$8x$$

[1]

- (b) Solve $7x = 28$.

$$x = \frac{28}{7} = 4$$

[1]

- (c) Use the formula $C = 5F + 3H$ to find H , when $C = 35$ and $F = 4$.

$$35 = 5 \times 4 + 3H$$

$$35 = 20 + 3H$$

$$35 - 20 = 3H$$

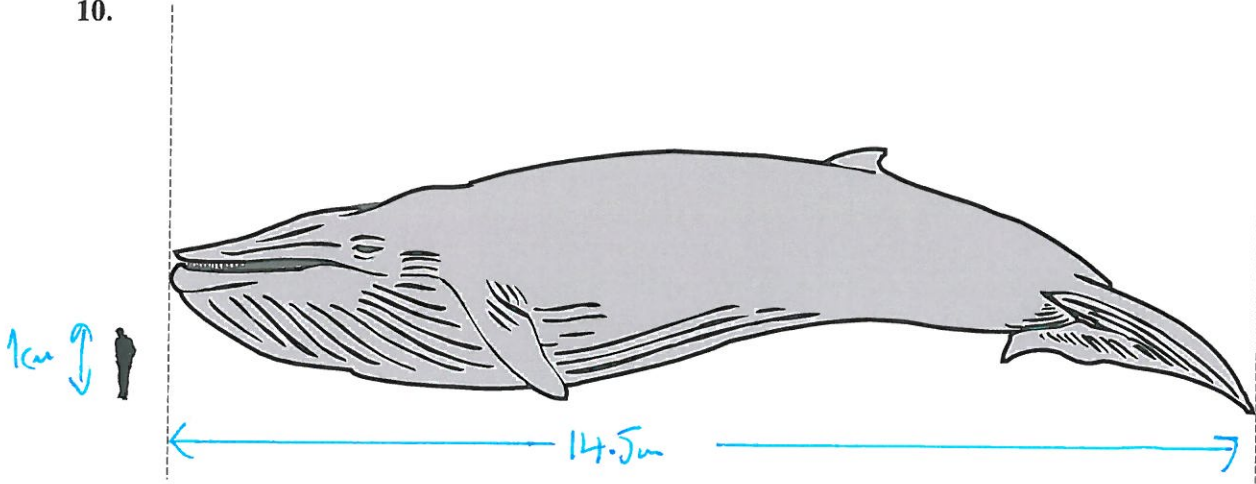
$$15 = 3H$$

$$\frac{15}{3} = H$$

$$H = 5$$

[3]

10.



The above picture shows a man standing next to a whale.

Write down an **estimate** for the **actual height** of the man. 2m

Using this estimate for the height of the man, estimate the **actual length** of the whale.

$$14.5 \times 2m = 29m$$

[4]

(D)

11. (a) Janet has many rods of length 3 cm and 4 cm.

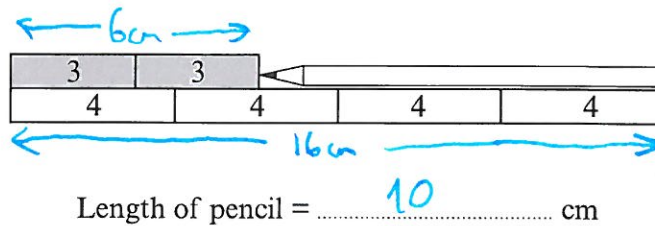


Diagram not drawn to scale

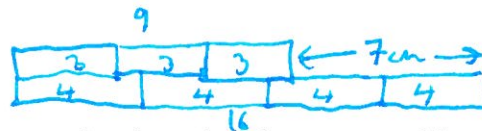
By placing the rods as shown below, she can see that one pencil is 5 cm long and the other is 7 cm long.



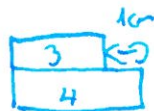
- (i) How long is this pencil?



- (ii) Draw a sketch to show how you could measure a length of 7 cm in a different way to the one shown in the example above.



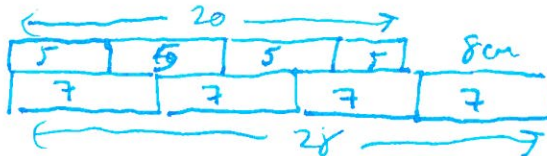
- (iii) Draw a sketch to show how you could measure a length of 1 cm.



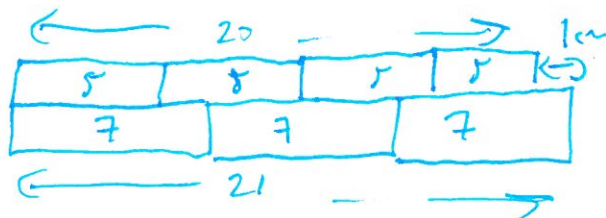
[3]

- (b) Using rods of length 5 cm and 7 cm

- (i) draw a sketch to show how you could measure a length of 8 cm,



- (ii) draw a sketch to show how you could measure a length of 1 cm.



[2]

12. A cylinder is labelled P.
 A hexagon is labelled Q.
 A tetrahedron is labelled R.
 A cuboid is labelled S.

Complete the following table.



Property of the shape	Label on shape
It is not a 3D shape.	Q
It has 8 vertices.	S
It has 2 circular faces.	P
It has exactly 4 triangular faces.	R

[3]

13. In 2010 Michelle drove her car 11 890 miles.
 Overall the car travels 39 miles to the gallon.
 The cost of a gallon of petrol was £5.96.
 By using approximations to the above figures, estimate the cost per week of the petrol Michelle bought during 2010.

$$11,890 \Rightarrow 12,000 \text{ miles per year } 50 \text{ weeks.}$$

$$\text{So in one week Michelle drives } \frac{12000}{50} = 240$$

So drives 240 miles per week

$$39 \Rightarrow 40 \text{ miles to gallon}$$

$$\text{So in one week Michelle needs } \frac{240}{40} = 6 \text{ gallons.}$$

$$£5.96 \Rightarrow £6 \text{ per gallon} \times 6 = £36 \text{ per week.}$$

[6]

14. A box contains four discs numbered 1, 3, 5 and 6 respectively.
 A bag contains four cards coloured red, yellow, blue and green respectively.
 In a game, a player takes one disc at random from the box and takes one coloured card at random from the bag.
 The score for the game is calculated as follows:
 If the card is coloured red or yellow, the score is the number on the chosen disc.
 If the card is coloured blue, the score is double the number on the chosen disc.
 If the card is coloured green, the score is 3 times the number on the chosen disc.

(a) Complete the following table to show all the possible scores.

Bag	green	<u>3</u>	<u>9</u>	<u>15</u>	18
	blue	<u>2</u>	<u>6</u>	<u>10</u>	<u>12</u>
	yellow	<u>1</u>	<u>3</u>	5	6
	red	<u>1</u>	<u>3</u>	5	6
		1	3	5	6
		Box			

[2]

(b) Find the probability that the score is **less than 5**.

$$\frac{6}{16}$$

[2]

(c) A player wins if the score is **less than 5**.

If 160 people each play the game once, how many would you expect to win?

$$160 \div 16 = 10 \text{ groups.}$$

$$\times 6 = 60 \text{ winners.}$$

[2]

(d) It costs 50p to play the game once.

The prize for winning the game is £1.

If 160 people play the game once, how much profit would you expect to be made?

$$\text{Money In} = 160 \times 50p = £80$$

$$\text{Money Out} = 60 \times £1 = £60$$

$$£20 \text{ profit.}$$

[2]

15. (a) Find the value of $2^3 \times 5^2$.

$$2 \times 2 \times 2 = 8$$

$$5^2 = 5 \times 5 = 25$$

$$\begin{array}{r} 25 \\ \times 8 \\ \hline 200 \\ \hline 4 \end{array}$$

[2]

- (b) Find the value of $\frac{5}{8} - \frac{1}{4}$.

$$\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$$

[2]

- (c) Write down the cube root of 27.

$$1 \times 1 \times 1 = 1$$

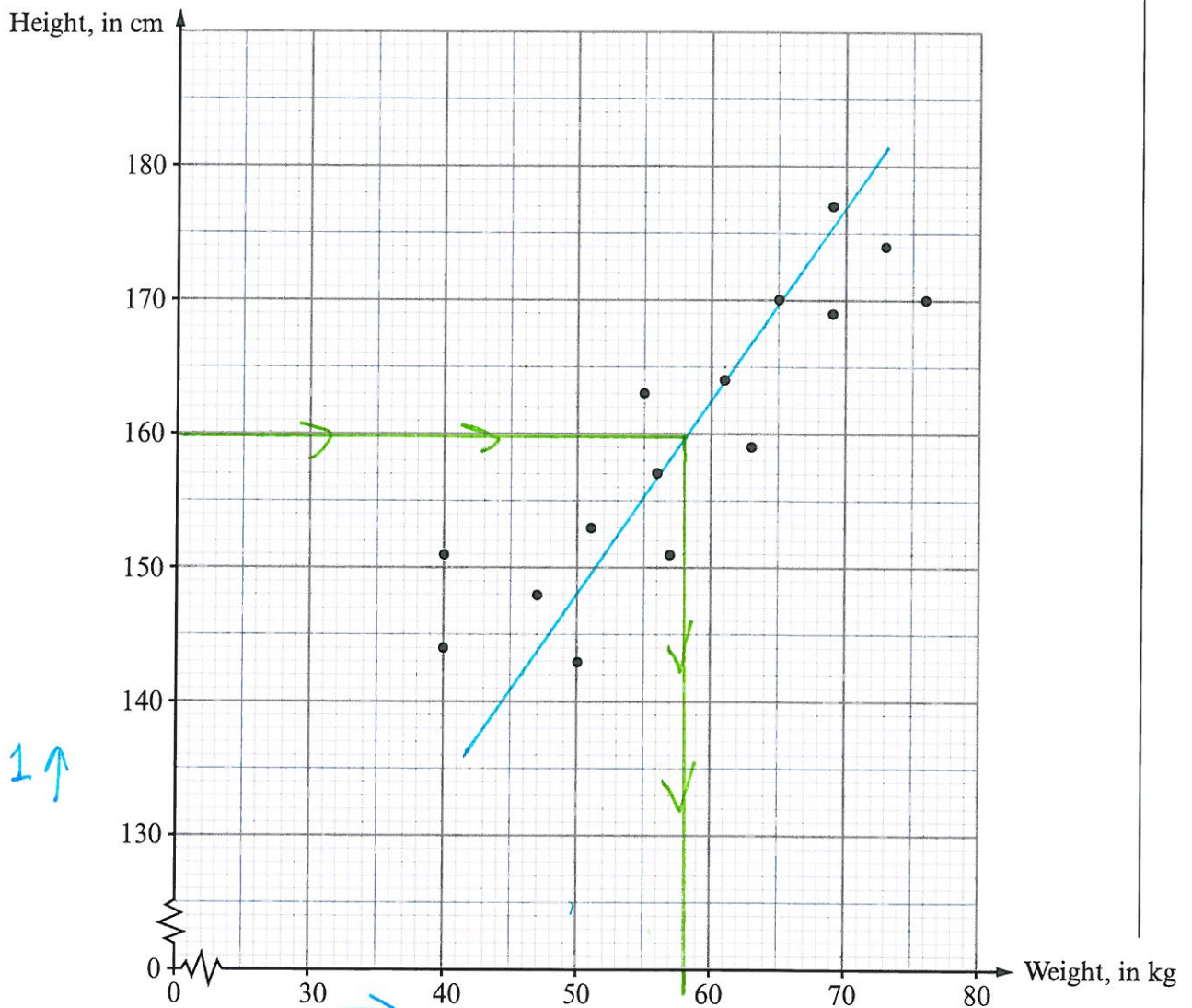
$$2 \times 2 \times 2 = 8$$

$$3 \times 3 \times 3 = 27$$

$$\text{cube root of } 27 = 3$$

[1]

16. The scatter diagram shows the height, in cm, and the weight, in kg, for each of 15 people.



(a) Write down the height of the heaviest of the 15 people.

Height 170 cm [1]

(b) Write down the weight of the shortest of the 15 people.

Weight 50 kg [1]

(c) Write down the type of correlation shown by the scatter diagram.

positive

[1]

(d) Draw, by eye, a line of best fit on the scatter diagram.

[1]

(e) Estimate the weight of a person of height 160 cm.

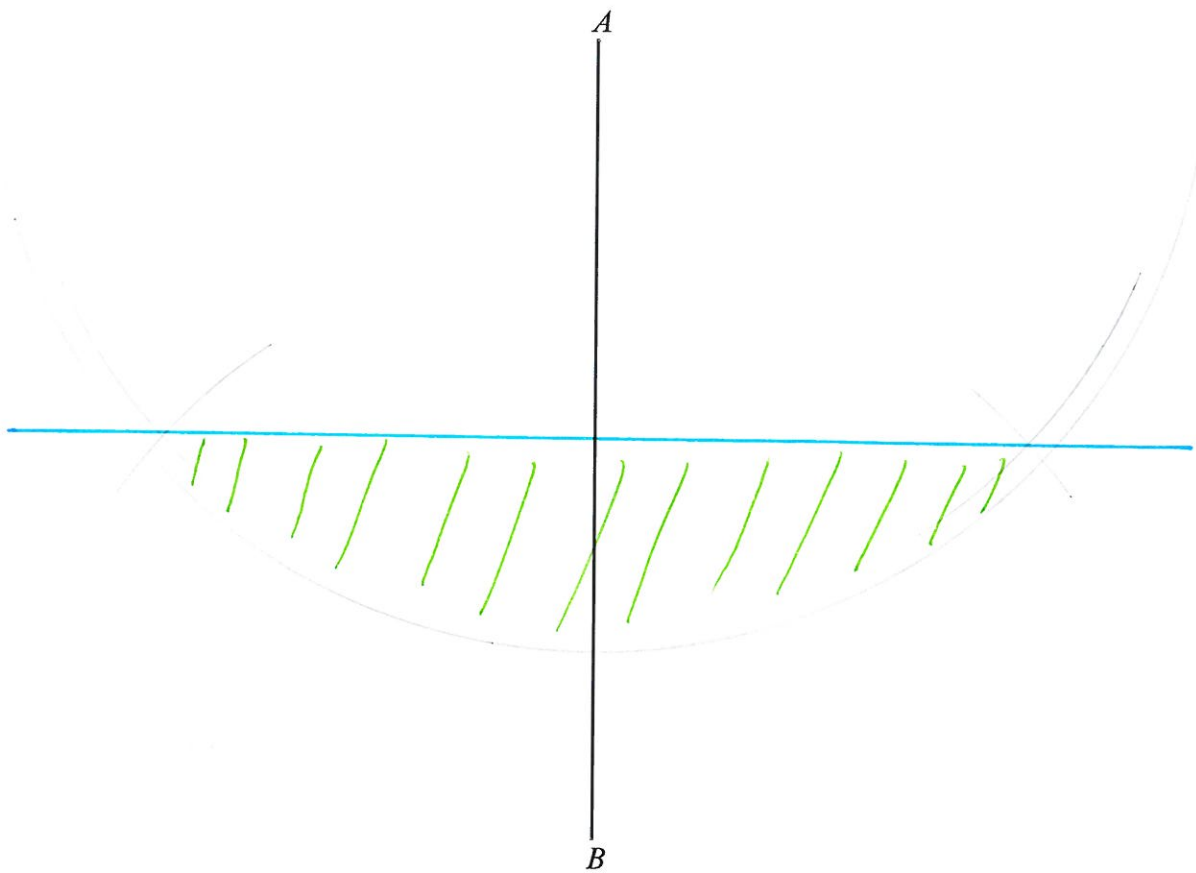
58 kg

[1]

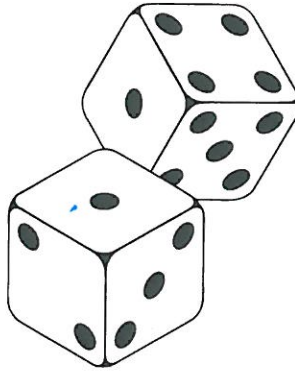
17. Find and shade the region of points that satisfy **both** of the following conditions.

- The points are nearer to B than to A .
- The points are less than 8 cm from A .

[3]



18.

*Multiply*

The picture shows two fair dice.

The number of dots on opposite faces of each of these dice add up to 7.

The top faces of the dice above have 1 dot and 4 dots.

What is the product of the number of dots on the bottom faces of these dice?

$$6 \times 3 = 18$$

[2]

19. (a) Simplify $4(2x + 3) + 3(3x - 8)$.

$$8x + 12 + 9x - 24$$

$$17x - 12$$

[2]

- (b) Expand $y(y^3 + 7)$.

$$y \times y \times y \times y = y^4$$

$$y^4 + 7y$$

[2]

- (c) Solve $\frac{x}{3} + 7 = 12$.

$$\frac{x}{3} = 12 - 7$$

$$\frac{x}{3} = 5$$

$$x = 5 \times 3 = 15$$

[2]

- (d) Solve $3(2y + 5) = 45$.

$$6y + 15 = 45$$

$$6y = 45 - 15$$

$$6y = 30$$

$$y = \frac{30}{6}$$

$$y = 5$$

[2]