

Write your name here

Surname

Other names

**Pearson Edexcel**  
Level 1/Level 2 GCSE (9-1)

Centre Number

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Candidate Number

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# Mathematics

## Paper 2 (Calculator)

**Foundation Tier**

Mr Coren 'Practice Paper 'we haven't seen this stuff yet'

**Time: 1 hour 30 minutes**

Paper Reference

**1MA1/2F**

**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.



### Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

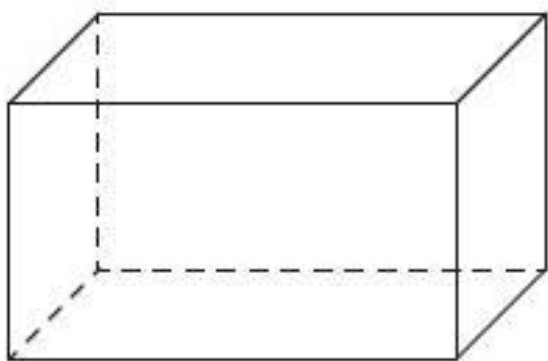
**Turn over** ►

**Q1.**

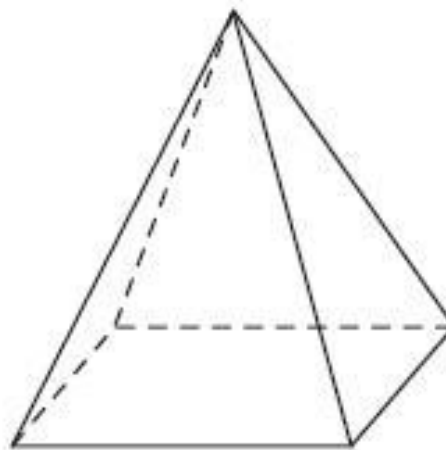
Write down a 6 digit number that has 4 as its thousands digit.  
You can only use the digit 4 once.

.....  
(Total for question = 1 mark)

**Q2.** Write down the name of each of these 3-D shapes.



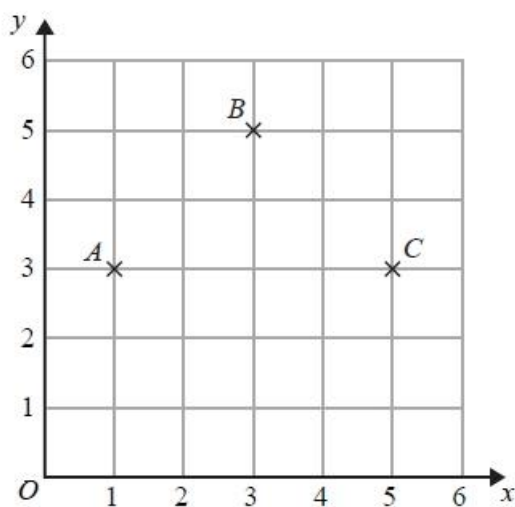
(i) .....



(ii) .....

(Total for Question is 2 marks)

**Q3.**



(a) Write down the coordinates of point C.

(..... , .....)  
(1)

(b) Write down the coordinates of the midpoint of AB.

(..... , .....)  
(1)

(c) On the grid, mark with a cross (x) the point D so that ABCD is a square.  
Label this point D.

(1)  
(Total for Question is 3 marks)

**Q4.** Write a number on the dotted line to make the statement correct.

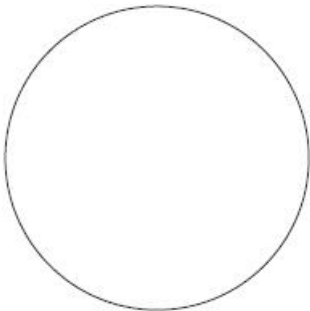
2.75 litres = ..... millilitres  
(Total for question = 1 mark)

**Q5.**  
At 5am the temperature was  $-5^{\circ}\text{C}$ .  
By midday, the temperature had risen by  $7^{\circ}\text{C}$ .  
(a) Work out the temperature at midday.

.....  $^{\circ}\text{C}$  (1)  
At 5pm the temperature was  $9^{\circ}\text{C}$ .  
(b) Work out the difference between the temperature at 5am and the temperature at 5pm.

.....  $^{\circ}\text{C}$  (1)  
(Total for question = 2 marks)

**Q6.**  
Draw a chord of this circle.



(Total for question = 1 mark)

**Q7.**  
Here is the value of each of 20 coins.

50p	10p	£1	20p	£1
20p	£1	20p	50p	10p
50p	20p	20p	£1	20p
£1	£1	20p	20p	£1

(a) Complete the table.

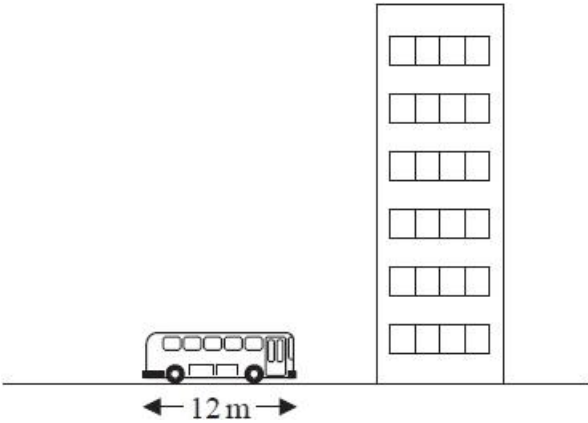
Value of coin	Tally	Frequency
10p		
20p		
50p		
£1		

(3)

(b) Work out the total value of the 20 coins.

£. ....  
(2)  
(Total for Question is 5 marks)

Q8.

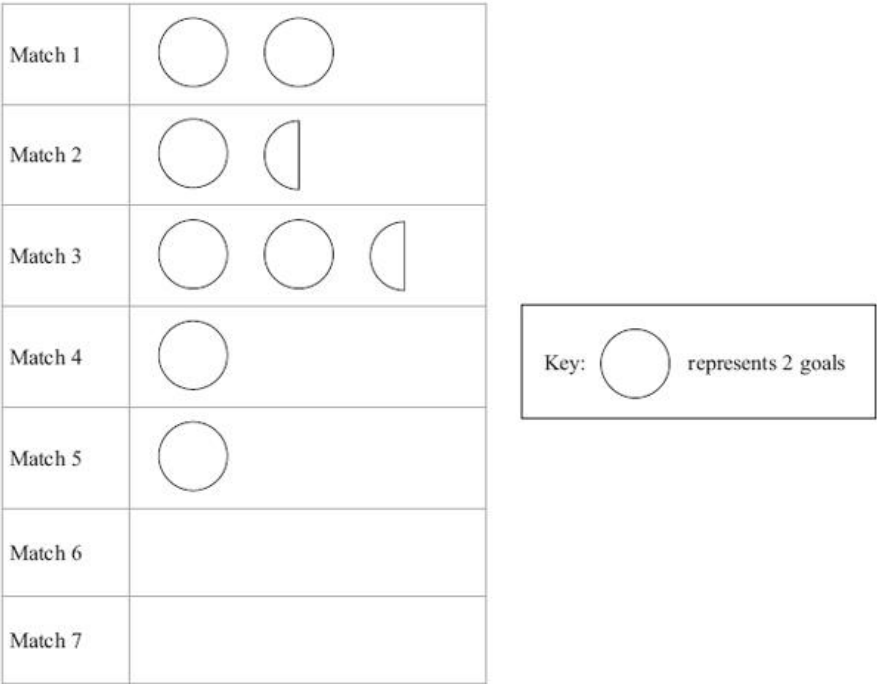


The picture shows a bus next to a building.  
The bus has a length of 12 m.  
The bus and the building are drawn to the same scale.  
Work out an estimate for the height, in metres, of the building.

..... m  
(Total for question = 2 marks)

Q9.

The pictogram shows the number of goals a hockey team scored in each of their first 5 matches.



(a) Write down the number of goals scored in Match 1  
..... (1)

(b) Write down the number of goals scored in Match 3  
..... (1)

6 goals were scored in Match 6    1 goal was scored in Match 7

(c) Show this information on the pictogram.

(2)  
(Total for Question is 4 marks)

**Q10.**

Here is a list of 12 numbers.

12      15      18      12      15      12      16      13      17      15      12      17

(a) Write down the mode.

.....  
(1)

(b) Work out the range.

.....  
(2)

(c) Work out the median.

.....  
(2)

(d) Work out the mean.

.....  
(2)

**(Total for question = 7 marks)**

**Q11.**

Find the value of  $(2.8 - 0.45)^2 + \sqrt[3]{5.832}$

.....

**(Total for question = 2 marks)**

**Q12.**

Here are the speeds, in kilometres per hour, of 15 cyclists.

16	22	34	18	24
22	33	28	19	41
23	25	31	40	23

Show this information in a stem and leaf diagram.

**(Total for question = 3 marks)**

**Q13.**

Here is part of an advert for a driving school.

8 out of 10 of the people we teach  
pass the driving test first time

Ali talked to 56 people who had been taught to drive by the driving school.  
43 of these people passed the driving test first time.  
Does this support what is said in the advert?  
You must show how you get your answer.

**(Total for question = 3 marks)**

**Q14.** Here are two schemes for investing £2500 for 3 years.

**Scheme A**

gives £5.35 interest each month.

**Scheme B**

gives 3% simple interest each year.

Which scheme gives the most total interest over the 3 year period?

You must show all your working.

(Total for Question is 4 marks)

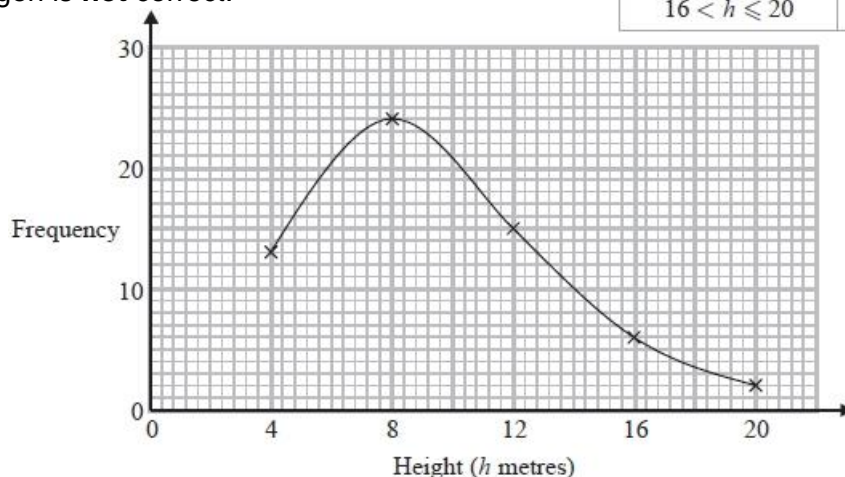
**Q15.**

The table shows information about the heights of 60 trees.

Height ( $h$ metres)	Frequency
$0 < h \leq 4$	13
$4 < h \leq 8$	24
$8 < h \leq 12$	15
$12 < h \leq 16$	6
$16 < h \leq 20$	2

Jacob drew this frequency polygon for the information in the table.

The frequency polygon is **not** correct.



Write down **two** things that are wrong with the frequency polygon.

1 .....

2 .....

(Total for question = 2 marks)

**Q16.** Here is a shape.



(a) Draw all the lines of symmetry on this shape.

(2)

Here is a regular hexagon.



(b) Write down the order of rotational symmetry of this regular hexagon.

.....

(1)

(Total for Question is 3 marks)

**Q17.**

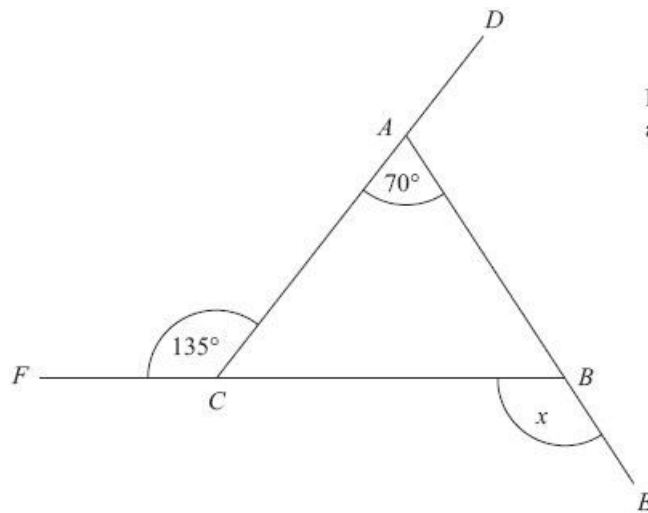


Diagram **NOT**  
accurately drawn

$DAC$ ,  $FCB$  and  $ABE$  are straight lines.  
Work out the size of the angle marked  $x$ .  
You must give reasons for your answer.

**(Total for Question is 5 marks)**

**Q18.**

$\frac{3}{8}$  of the people at a football match are men.

27% of the people at the match are women.

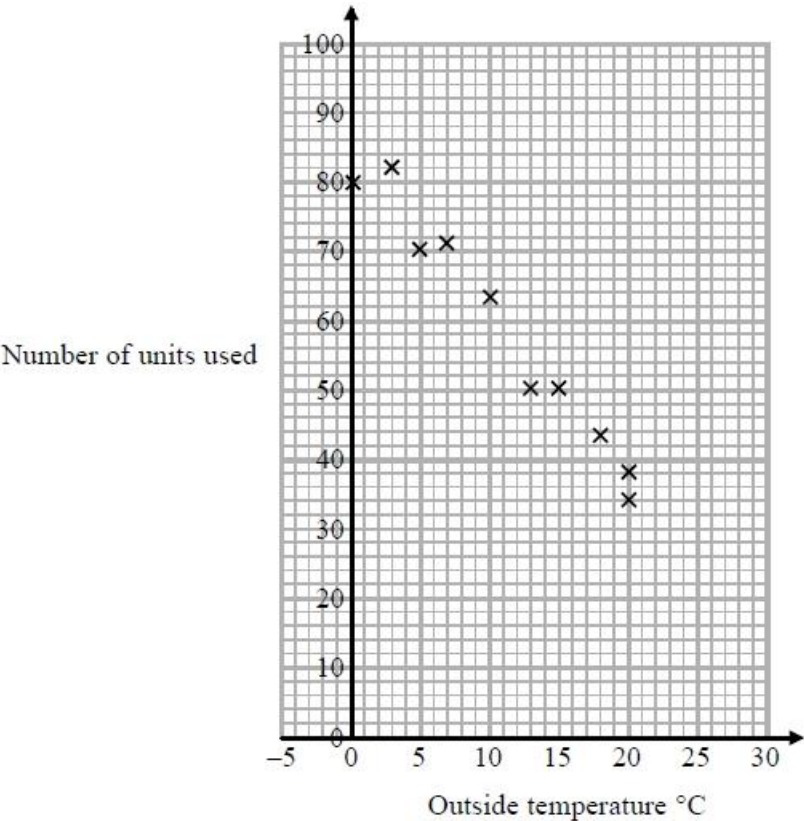
The rest of the people at the match are children.

Work out what percentage of the people at the match are children.

..... %

**(Total for question = 3 marks)**

**Q19.** In a survey, the outside temperature and the number of units of electricity used for heating were recorded for ten homes. The scatter diagram shows this information.



Molly says,  
 "On average the number of units of electricity used for heating decreases by 4 units for each °C increase in outside temperature."

(a) Is Molly right? Show how you get your answer.

.....  
 .....  
 (3)

(b) You should **not** use a line of best fit to predict the number of units of electricity used for heating when the outside temperature is 30°C.

Give one reason why.  
 .....  
 (1)  
**(Total for question = 4 marks)**

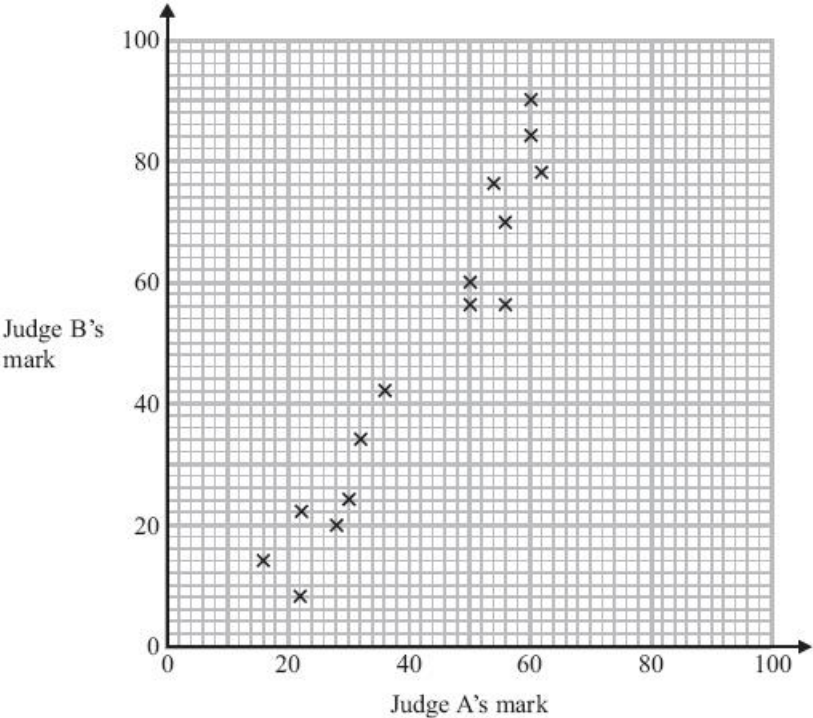
**Q20.**

(a) Expand and simplify  $3(y - 2) + 5(2y + 1)$

(b) Simplify  $5u^2w^4 \times 7uw^3$  ..... (2)

..... (2)  
**(Total for question = 4 marks)**

**Q21.** Some children took part in a piano competition. Each child was given a mark from Judge A and from Judge B. The scatter graph below shows some of this information.



(a) Describe the correlation.  
 ..... (1)

Judge A gives 44 marks to another child.

(b) Use the scatter graph to estimate Judge B's mark for this child.  
 .....marks (2)

(Total for Question is 3 marks)

**Q22.** Emma lives in Manchester. She is planning to travel from Manchester to Blackpool. The timetable shows information about the times of the trains Emma can catch from Manchester.

Manchester to Blackpool

Manchester	08 00	09 15	10 30
Bolton	08 20	09 30	10 57
Preston	08 45	09 55	11 25
Blackpool	09 30	10 40	11 52

Emma is going to meet her friend in Blackpool at 11 am.

(a) What is the time of the latest train she can catch?  
 ..... (1)

(b) Work out the least time one of these trains takes from Manchester to Blackpool.

..... minutes (3)

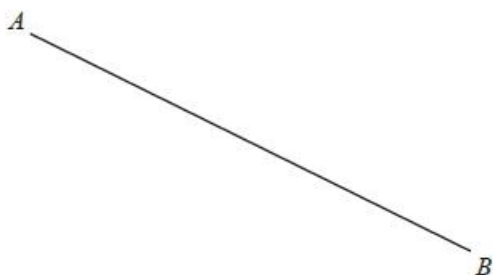
Emma and her friend spend  $\frac{3}{4}$  hour having lunch.

(c) Write  $\frac{3}{4}$  hour in minutes.  
 ..... minutes (1)

(Total for Question is 5 marks)

**Q23.**

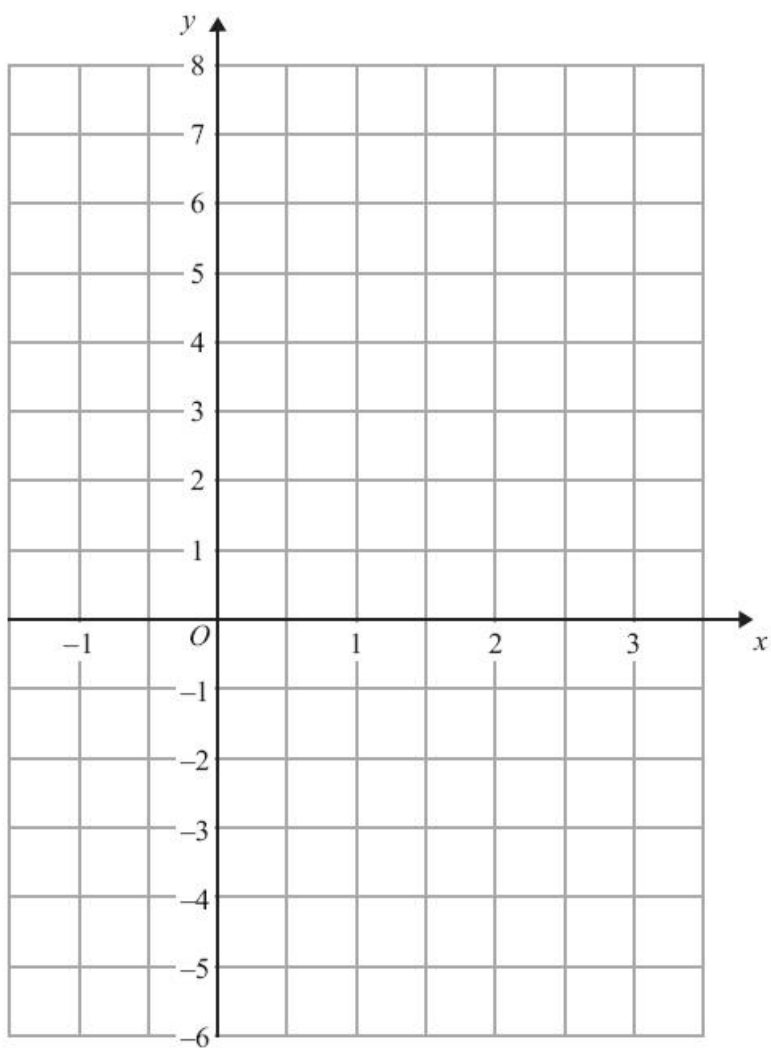
In the space below, use ruler and compasses to construct the perpendicular bisector of line  $AB$ .



**(Total for question = 2 marks)**

**Q24.**

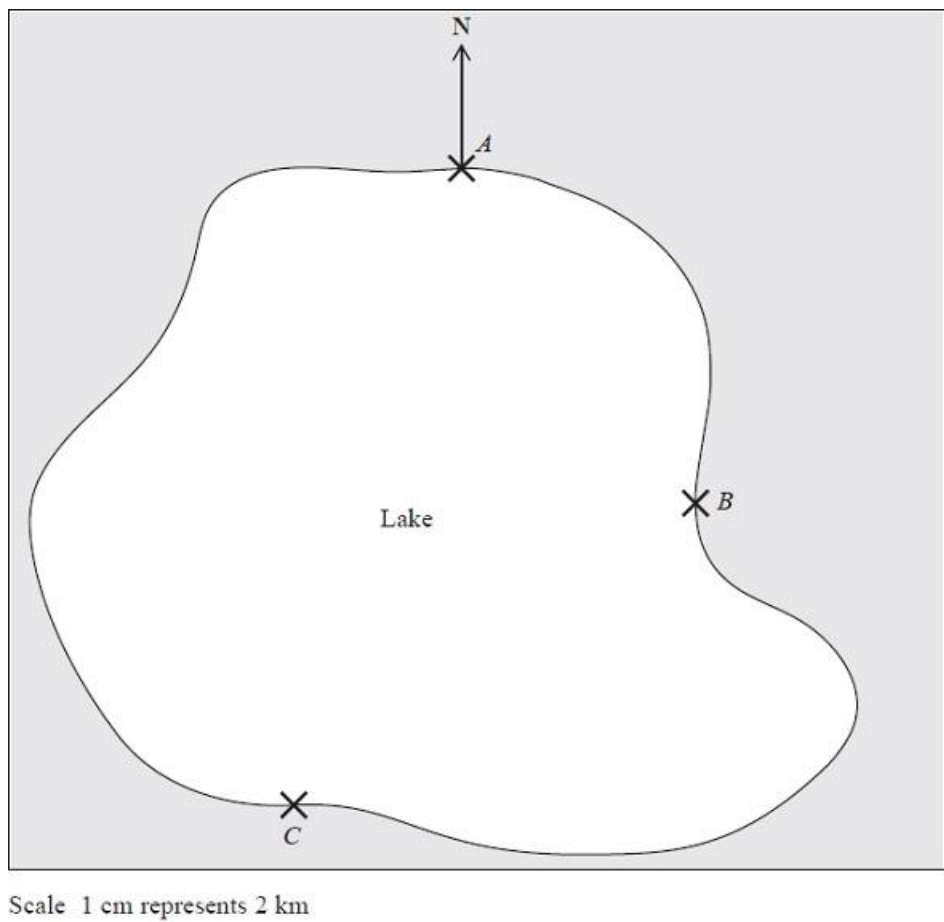
On the grid, draw the graph of  $y = 3x - 2$  for values of  $x$  from  $-1$  to  $3$



**(Total for Question is 3 marks)**

Q25.

The map shows the positions of three places *A*, *B* and *C* on the edge of a lake.



(a) Find the bearing of *B* from *A*.

..... ° (1)

A ferry travels in a straight line from *A* to *B*.  
It then travels in a straight line from *B* to *C*.

A speedboat travels in a straight line from *A* to *C*.

(b) How many more kilometres does the ferry travel than the speedboat?  
You must show your working.

..... km (4)

(Total for Question is 5 marks)

**Q26.**

Bhavin buys a car in a sale.

Before the sale, the cost of the car was £6720

In the sale, the cost of every car is reduced by 20%.

Bhavin pays a deposit of £1500

He will pay the rest of the cost in 24 equal monthly payments.

Work out the amount of each monthly payment.

You must show all your working.

£ .....  
(Total for question = 5 marks)

**Q27.**

Hayley is buying bottles of juice for a children's party.

She uses this rule to work out the number of bottles of juice she needs.

Number of bottles = Number of children $\div$ 4 + 5
---

There will be 24 children at the party.

(a) Work out the number of bottles of juice Hayley needs.

..... (2)

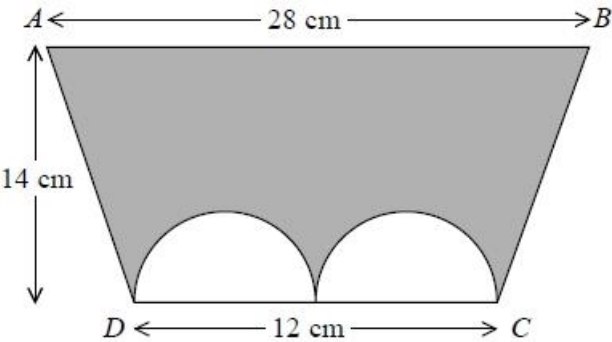
Hayley needs 13 bottles of juice for a different children's party.

She used the same rule.

(b) Work out the number of children at this party.

..... (3)  
(Total for Question is 5 marks)

**Q28.** The diagram shows a trapezium  $ABCD$  and two identical semicircles.



The centre of each semicircle is on  $DC$ .  
 Work out the area of the shaded region.  
 Give your answer correct to 3 significant figures.

..... cm<sup>2</sup>  
**(Total for question = 4 marks)**

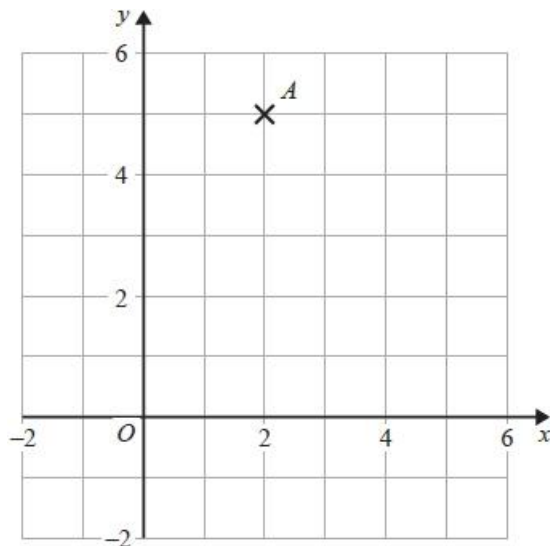
**Q29.**  
 (a) Find the value of the reciprocal of 1.6  
 Give your answer as a decimal.

.....  
 (1)

Jess rounds a number,  $x$ , to one decimal place.  
 The result is 9.8  
 (b) Write down the error interval for  $x$ .

.....  
 (2)  
**(Total for question = 3 marks)**

**Q30.** Find an equation of the straight line with gradient 3 that passes through point A.



.....  
(Total for question = 2 marks)

**Q31.**

Dan, Harry and Regan sell cars.

Dan sells  $x$  cars.

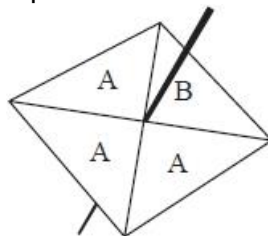
Harry sells 5 more cars than Dan.

Regan sells twice as many cars as Dan.

Write an expression, in terms of  $x$ , for the mean number of cars Dan, Harry and Regan sell.

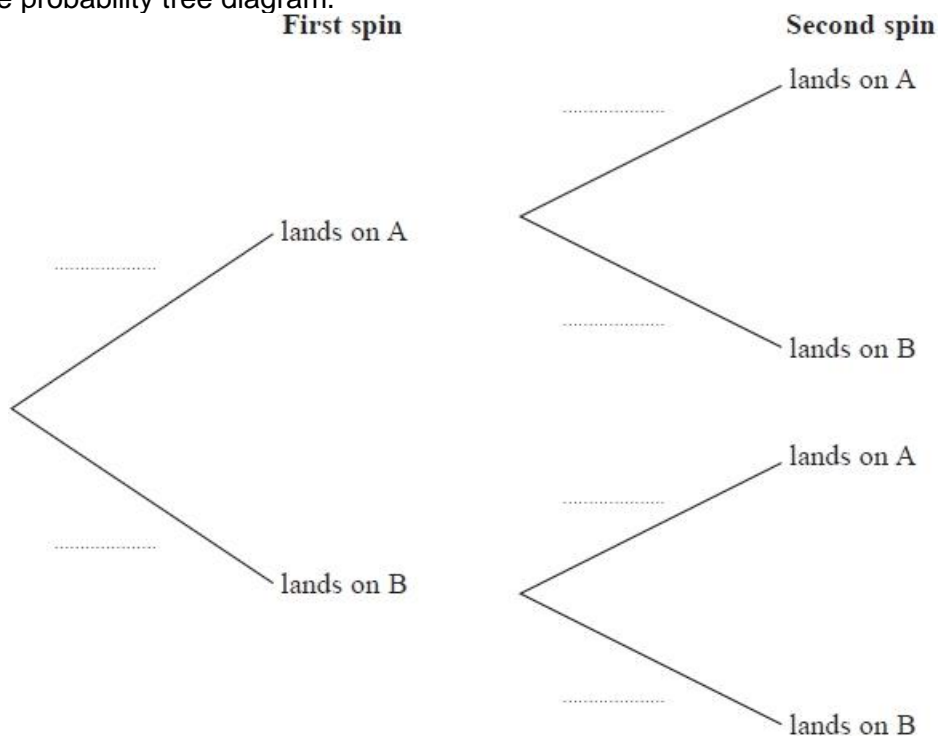
.....  
(Total for question = 2 marks)

**Q32.** The diagram shows a fair 4-sided spinner.



Hasmeet is going to spin the spinner twice.

(a) Complete the probability tree diagram.



(b) Work out the probability that the spinner will land on A on the first spin and will land on B on the second spin. (2)

..... (2)  
(Total for question = 4 marks)

**Q33.**

Make  $h$  the subject of the formula  $x = 5h + 8$

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

Q34.

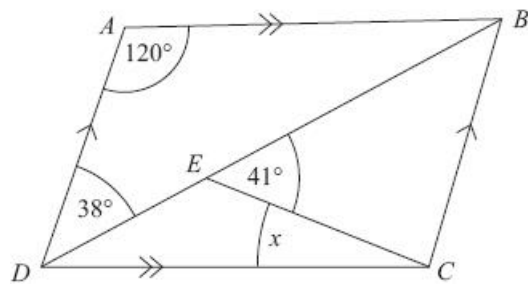
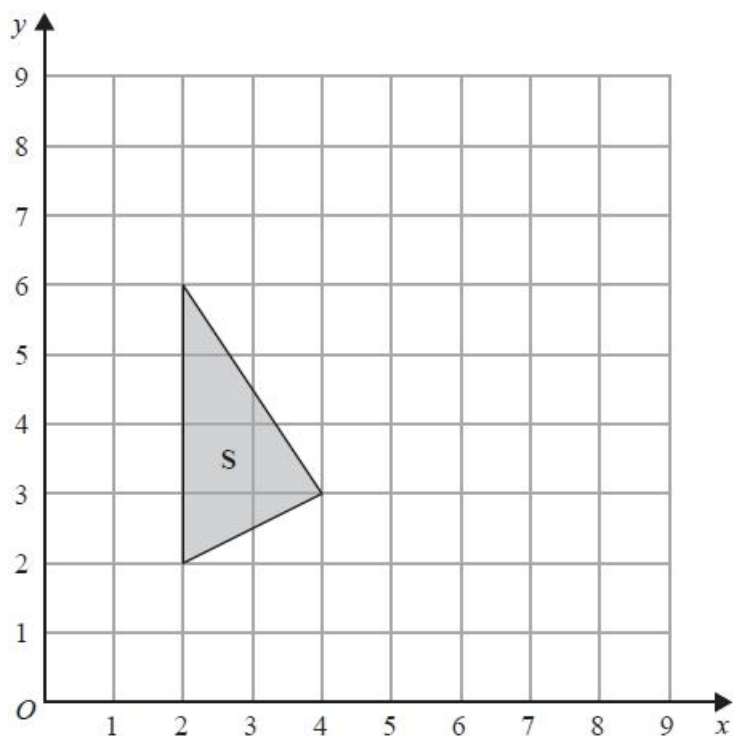


Diagram NOT  
accurately drawn

$ABCD$  is a parallelogram.  
Angle  $ADB = 38^\circ$ .  
Angle  $BEC = 41^\circ$ .  
Angle  $DAB = 120^\circ$ .  
Calculate the size of angle  $x$ .  
You must give reasons for your answer.

(Total for Question is 4 marks)

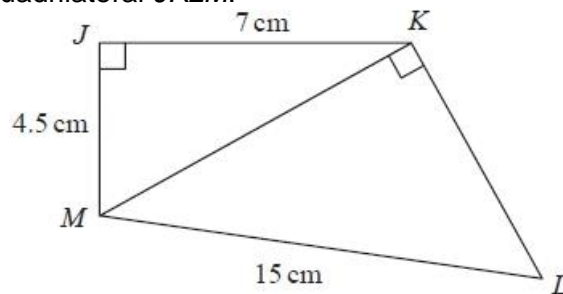
Q35.



- (a) Rotate shape **S**  $90^\circ$  clockwise, centre  $(5, 4)$   
Label your image **T**. (2)
- (b) Describe fully the single transformation that will map shape **T** onto shape **S**.  
..... (1)

(Total for question = 3 marks)

**Q36.** The diagram shows a quadrilateral  $JKLM$ .



Work out the size of angle  $KLM$ .

Give your answer correct to 3 significant figures.

.....°  
(Total for question = 4 marks)

**Q37.**

Harley's house has a value of £160 000 correct to 2 significant figures.

(a) (i) Write down the least possible value of the house.

£ ..... (1)

(ii) Write down the greatest possible value of the house.

£ ..... (1)

The value of Rita's house increased by 5%.

Her house then had a value of £210 000

(b) Work out the value of Rita's house before the increase.

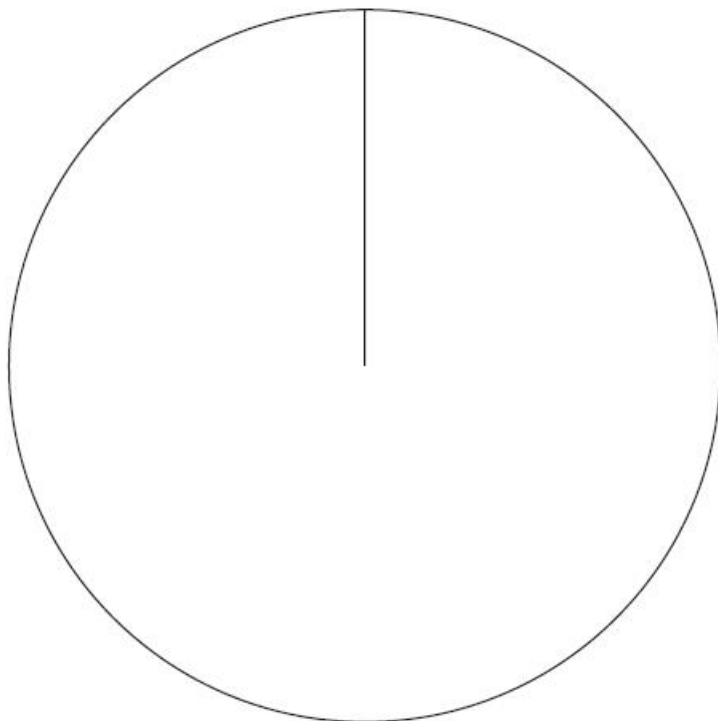
£ ..... (2)  
(Total for question = 4 marks)

**Q38.** Sharon asked each of her friends to name their favourite Olympic sport.

The table shows information about their answers.

Sport	Frequency
athletics	13
cycling	17
swimming	8
gymnastics	7

Draw an accurate pie chart for this information.



**(Total for question = 3 marks)**

**Q39.** Here are the first four terms of a number sequence.

3      7      11      15

(a) (i) Write down the next term in the sequence.

.....

(ii) Explain how you got your answer.

.....

**(2)**

(b) Work out the 11th term in the sequence.

..... **(1)**

(c) Is 79 a term in this sequence?  
Explain how you got your answer.

.....  
.....

**(1)**

**(Total for question = 4 marks)**

**Q40.** Linda recorded the temperature, in °C, at 9 am on each of 30 days.  
 The table shows information about her results.

Temperature ( $T^{\circ}\text{C}$ )	Number of days
$10 < T \leq 12$	3
$12 < T \leq 14$	8
$14 < T \leq 16$	14
$16 < T \leq 18$	4
$18 < T \leq 20$	1

Calculate an estimate for the mean temperature.  
 Give your answer correct to 1 decimal place.

..... °C  
 (Total for question = 3 marks)

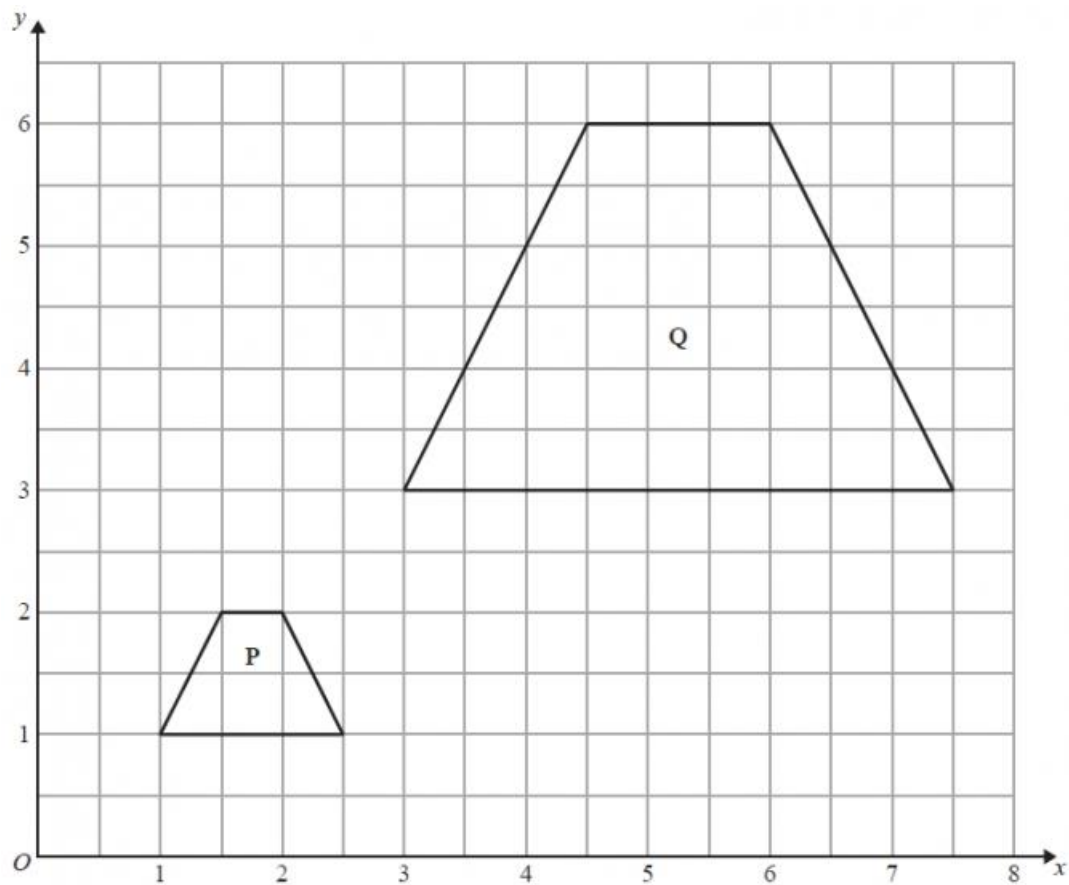
**Q41.**  
 A is the point with coordinates (2, 10)  
 B is the point with coordinates (5,  $d$ )  
 The gradient of the line  $AB$  is 4  
 Work out the value of  $d$ .

$d =$  .....  
 (Total for question = 3 marks)

**Q42.** Expand and simplify  $5(p + 3) - 2(1 - 2p)$

.....  
(Total for question = 2 marks)

**Q43.**



Describe fully the single transformation that maps shape **P** onto shape **Q**.

.....  
.....  
.....

(Total for Question is 3 marks)

**Q44.** The diagram shows two regular shapes.

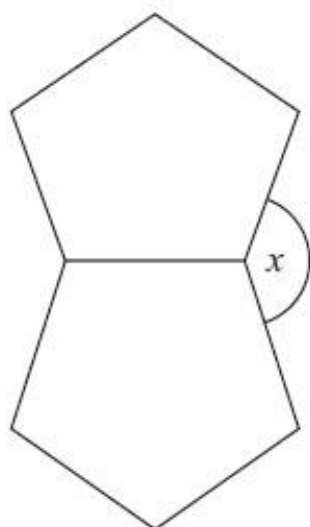
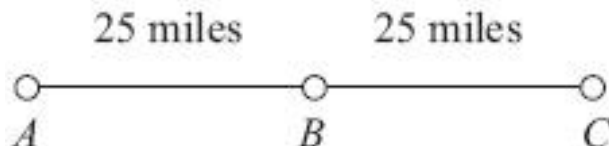


Diagram **NOT**  
accurately drawn

Work out the size of the angle marked  $x$ .

.....  
(Total for Question is 3 marks)

**Q45.**



$A$ ,  $B$  and  $C$  are 3 service stations on a motorway.

$AB = 25$  miles

$BC = 25$  miles

Aysha drives along the motorway from  $A$  to  $C$ .

Aysha drives at an average speed of 50 mph from  $A$  to  $B$ .

She drives at an average speed of 60 mph from  $B$  to  $C$ .

Work out the difference in the time Aysha takes to drive from  $A$  to  $B$  and the time Aysha takes to drive from  $B$  to  $C$ .

Give your answer in minutes.

.....  
(Total for Question is 3 marks)

**Q46.**

On a school trip the ratio of the number of teachers to the number of students is 1 : 15

The ratio of the number of male students to the number of female students is 7 : 5

Work out what percentage of all the people on the trip are female students.

Give your answer correct to the nearest whole number.

..... %  
(Total for question = 3 marks)

**Q47.**

Here is a solid prism.

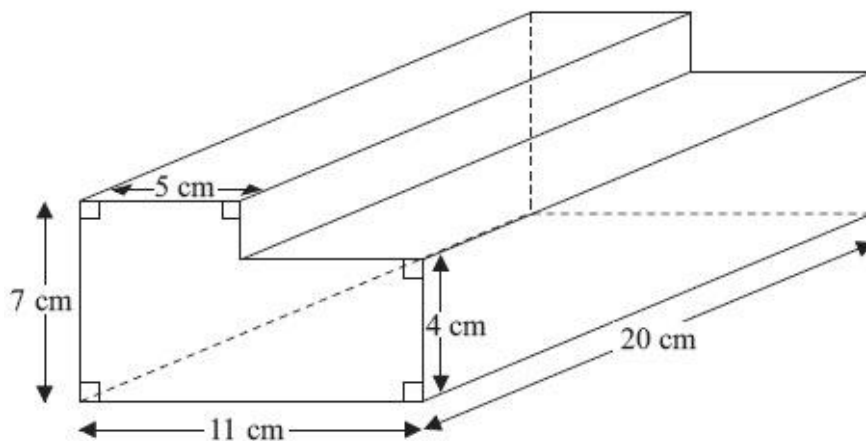


Diagram NOT  
accurately drawn

Work out the volume of the prism.

..... cm<sup>3</sup>  
(Total for Question is 3 marks)

**Q48.**  $\mathbf{a} = \begin{pmatrix} 1 \\ 4 \end{pmatrix}$  and  $\mathbf{b} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

(a) Write down as a column vector

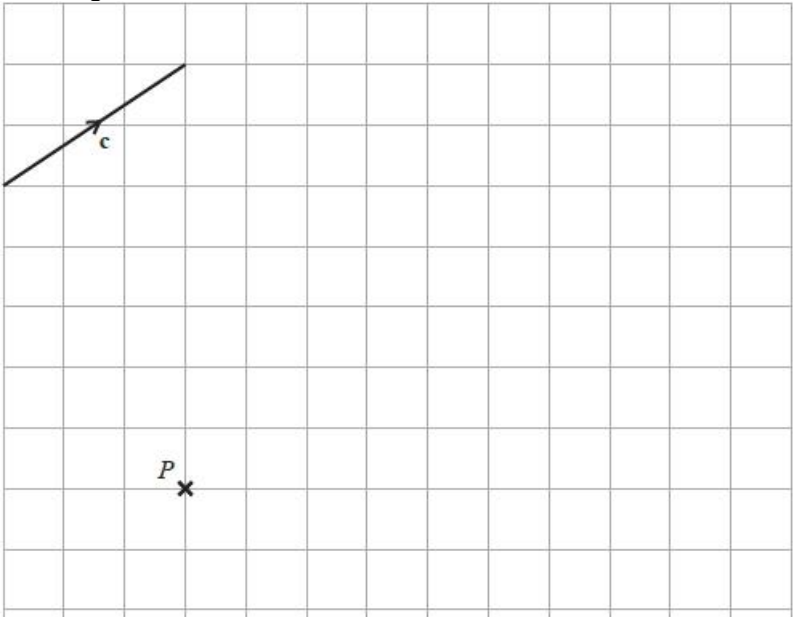
(i)  $\mathbf{a} + \mathbf{b}$

..... (1)

(ii)  $2\mathbf{a} + 3\mathbf{b}$

..... (2)

The vector  $\mathbf{c}$  is drawn on the grid.



(b) From the point  $P$ , draw the vector  $3\mathbf{c}$

(1)  
(Total for question = 4 marks)

**Q49.**  
 Daniel bakes 420 cakes.  
 He bakes only vanilla cakes, banana cakes, lemon cakes and chocolate cakes.  
 $\frac{2}{7}$  of the cakes are vanilla cakes.  
 35% of the cakes are banana cakes.  
 The ratio of the number of lemon cakes to the number of chocolate cakes is 4:5  
 Work out the number of lemon cakes Daniel bakes.

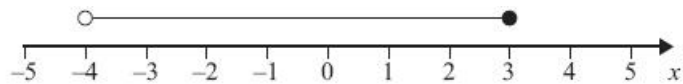
.....  
(Total for question = 5 marks)

Q50.

(a)  $n$  is an integer.  $-1 \leq n < 4$  List the possible values of  $n$ .

..... (2)

(b)



Write down the inequality shown in the diagram.

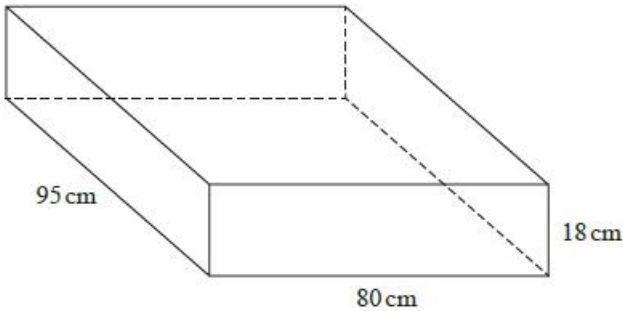
..... (2)

(c) Solve  $3y - 2 > 5$

..... (2)

(Total for Question is 6 marks)

Q51. A sofa has 6 identical cushions.  
Each cushion is a cuboid 18 cm by 80 cm by 95 cm.



The cushions are covered with a protective spray.  
The protective spray is in cans.  
The label on each can has this information.

Spray in this can covers 4 m<sup>2</sup>

(a) Work out how many cans are needed to cover the 6 cushions with protective spray.

..... (5)

The information on each label is inaccurate.  
The spray in each can covers 10% more than 4 m<sup>2</sup>.

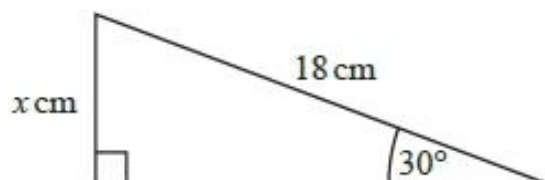
(b) How will this affect the number of cans needed for the 6 cushions?  
You must show how you get your answer.

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

(Total for question = 7 marks)

**Q52.**

Work out the value of  $x$ .



.....  
(Total for question = 2 marks)

**Q53.**

The diagram shows a container used to store oil.

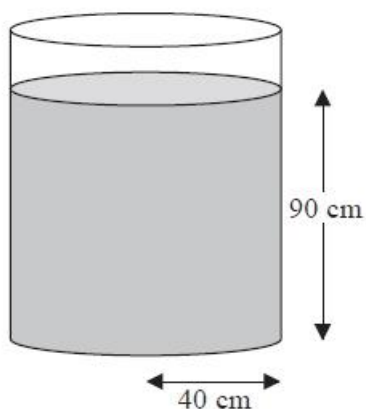


Diagram NOT  
accurately drawn

The container is in the shape of a cylinder of radius  $40 \text{ cm}$ .

The height of the oil in the container is  $90 \text{ cm}$ .

$65$  litres of oil are taken from the container.

$1 \text{ litre} = 1000 \text{ cm}^3$ .

Work out the new height of the oil in the container.

Give your answer correct to one decimal place.

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

**Q54.** Solve the simultaneous equations

$$2x + 3y = 10$$

$$4x - y = -1$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

**(Total for question = 3 marks)**

**Q55.**

$$\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$$

$$A = \{\text{multiples of 2}\}$$

$$A \cap B = \{2, 6\}$$

$$A \cup B = \{1, 2, 3, 4, 6, 8, 9, 10\}$$

Draw a Venn diagram for this information.

**(Total for question is 4 marks)**

**Q56.**

(a) Factorise  $x^2 - 169$

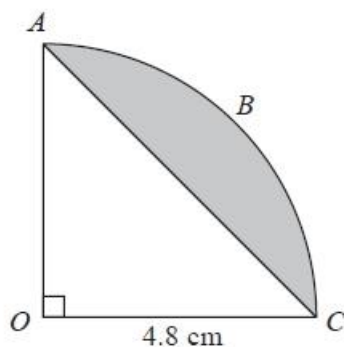
..... (1)

(b) Expand and simplify  $(3x + 2)(2x - 1)$

..... (2)

(Total for question = 3 marks)

**Q57.**



The arc  $ABC$  is a quarter of a circle with centre  $O$  and radius  $4.8 \text{ cm}$ .

$AC$  is a chord of the circle.

Work out the area of the shaded segment.

Give your answer correct to 3 significant figures.

.....  $\text{cm}^2$

(Total for question = 3 marks)

**Q58.**

Solve  $x^2 + 5x - 24 = 0$

.....

**(Total for question = 3 marks)**

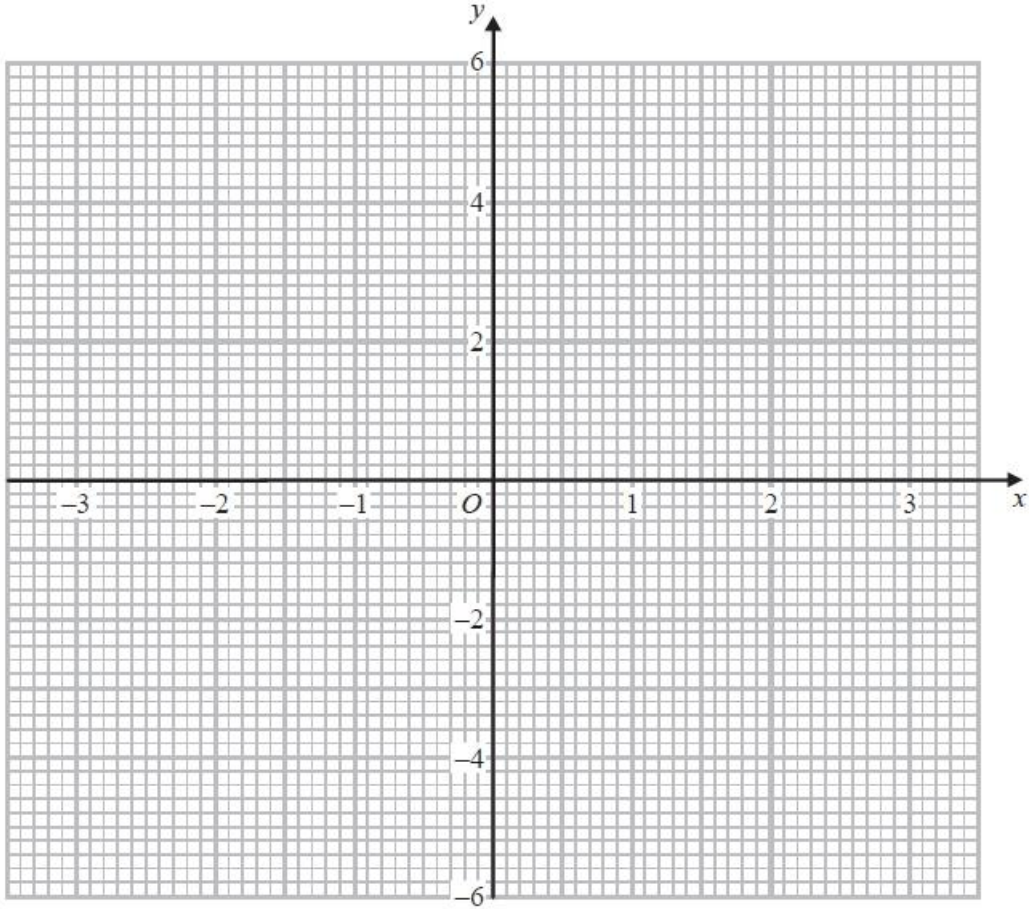
**Q59.**

(a) Complete the table of values for  $y = 4 - x^2$

$x$	-3	-2	-1	0	1	2	3
$y$	-5		3			0	

(2)

(b) On the grid, draw the graph of  $y = 4 - x^2$  for values of  $x$  from -3 to 3



(2)

**(Total for question = 4 marks)**

**Q60.**

In a sale normal prices are reduced by 20%.

A washing machine has a sale price of £464

By how much money is the normal price of the washing machine reduced?

£ .....

**(Total for Question is 3 marks)**