

Please check the examination details below before entering your candidate information

Candidate surname		Other names	
Centre Number		Candidate Number	
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Pearson Edexcel
Level 1/Level 2 GCSE (9–1)

Tuesday 21 May 2019

Morning (Time: 1 hour 30 minutes)	Paper Reference 1MA1/1F
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Mathematics
Paper 1 (Non-Calculator)
Foundation Tier

<p>You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.</p>	Total Marks
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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 not be used.**



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 ►

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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write 180 minutes in hours.

$$\text{min} \xrightarrow{\div 60} \text{hours}$$

$$180 \div 60 = 3$$

..... 3 hours

(Total for Question 1 is 1 mark)

- 2 Write 0.73 as a percentage.

$$\text{Decimal} \xrightarrow{\times 100} \text{percentage}$$

$$0.73 \times 100 = 73$$

..... 73 %

(Total for Question 2 is 1 mark)

- 3 Work out $10 \times (3 + 5)$

$$(3 + 5) = 8$$

$$10 \times 8 = 80$$

..... 80

(Total for Question 3 is 1 mark)

- 4 Write down a prime number that is between 20 and 30

Prime numbers \rightarrow numbers that are only divisible by 1 and itself

23, 29

..... 23 or 29

(Total for Question 4 is 1 mark)

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- 5 Find the number that is exactly halfway between 7 and 15

~~7~~, ~~8~~, ~~9~~, ~~10~~, 11, ~~12~~, ~~13~~, ~~14~~, ~~15~~

11

(Total for Question 5 is 1 mark)

- 6 Harry is planning a holiday for 4 people for 7 days.

Here are the costs for the holiday for **each person**.

Travel	£150
Hotel	£50 for each day
Spending money	£250

Work out the total cost of the holiday for 4 people for 7 days.

$$\begin{array}{rcl}
 \text{For 1 person: Travel} & : & 150 \\
 & & = £150 \\
 \text{Hotel} & : & 50 \times 7 \\
 & & = £350 \\
 \text{spending} & : & 250 \\
 & & = £250 \\
 & & \hline
 & & £750
 \end{array}$$

Total cost for 1 person is £750 for 7 days

$$4 \text{ people: } 750 \times 4 = £3000$$

$$\begin{array}{r}
 750 \\
 \times 4 \\
 \hline
 3000
 \end{array}$$

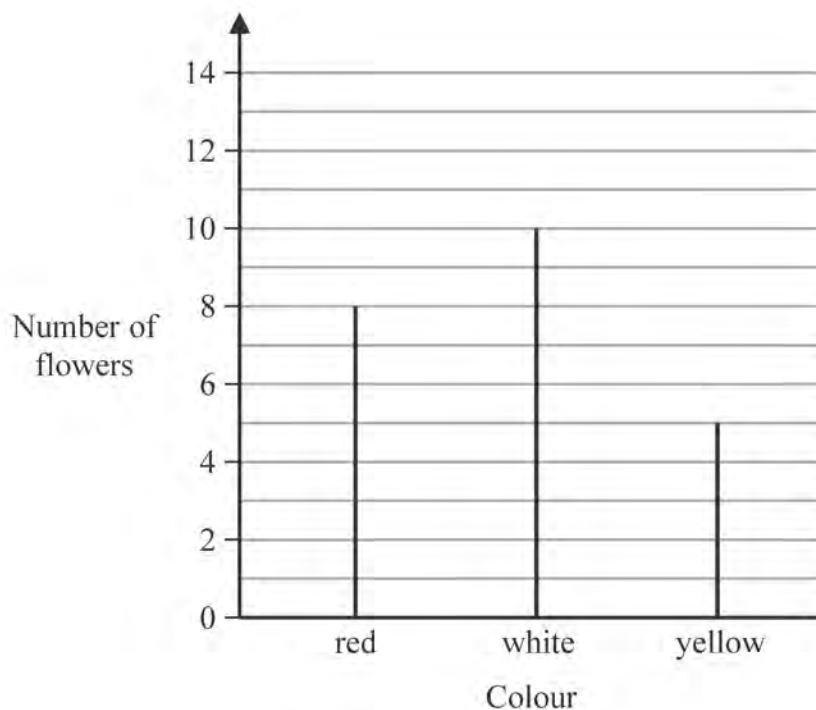
£ 3000

(Total for Question 6 is 4 marks)



- 7 In Adam's garden, the flowers are only red or white or yellow or blue.

The chart shows the number of red flowers, the number of white flowers and the number of yellow flowers.



The total number of flowers is 30

- (a) Work out the number of blue flowers.

$$\begin{array}{r}
 \text{Red} = 8 \\
 \text{White} = 10 \\
 \text{Yellow} = 5 \\
 \hline
 23
 \end{array}$$

Total excluding blue

$$\begin{array}{r}
 30 \\
 \hline
 \text{Total}
 \end{array}
 - 23 = 7$$

7

(2)

- (b) Write down the mode.

most occurring

10 is the highest number

White

(1)

(Total for Question 7 is 3 marks)

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- 8 Write the following fractions in order of size.
Start with the smallest fraction.

$$\frac{1}{3} \times \frac{4}{4} \quad \frac{3}{4} \times \frac{3}{3} \quad \frac{1}{4} \times \frac{3}{3} \quad \frac{7}{12} \times \frac{1}{1} \quad \frac{1}{2} \times \frac{6}{6}$$

Common denominator = 12

$$\frac{4}{12}, \frac{9}{12}, \frac{3}{12}, \frac{7}{12}, \frac{6}{12}$$

② ⑤ ① ④ ③

write in original form

$$\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{7}{12}, \frac{3}{4}$$

(Total for Question 8 is 2 marks)

- 9 Ruth left her home at 9 am and walked to the library.
She got to the library at 10 30 am.
Ruth walked at a speed of 4 mph.

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

- (a) Work out the distance Ruth walked.

$$\text{Time: } 9 \text{ am} \rightarrow 10.30 \text{ am} = 1 \text{ h } 30 \text{ min} = 1.5 \text{ hours}$$

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$= 4 \times 1.5 = 6$$

$$\begin{array}{r} 1.5 \\ \times 4 \\ \hline 6.0 \end{array}$$

$$6 \text{ miles}$$

(2)

Ruth got to the library at 10 30 am.
She stayed at the library for 50 minutes.
Then she walked home.

Ruth took $1\frac{1}{4}$ hours to walk home.

- (b) At what time did Ruth get home?

$$\text{Ruth leaves the library at: } 10:30 + 50 \text{ min} \\ = 11:20 \text{ am}$$

$$11:20 + 1 \text{ hour } 15 \text{ min} = 12:35 \text{ pm}$$

$$12:35 \text{ pm}$$

(2)

(Total for Question 9 is 4 marks)



10 (a) Solve $t + t + t = 12$

Collect like terms: $3t = 12$
 $\div 3$

$$t = 4$$

$$t = \underline{4} \quad (1)$$

(b) Solve $x - 2 = 6$

$$x - 2 = 6$$

$$+ 2$$

$$x = 8$$

$$x = \underline{8} \quad (1)$$

(c) Solve $6w + 2 = 20$

$$6w + 2 = 20$$

$$- 2$$

$$6w = 18$$

$$\div 6$$

$$w = 3$$

$$w = \underline{3} \quad (2)$$

(Total for Question 10 is 4 marks)

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11 Work out 74×58

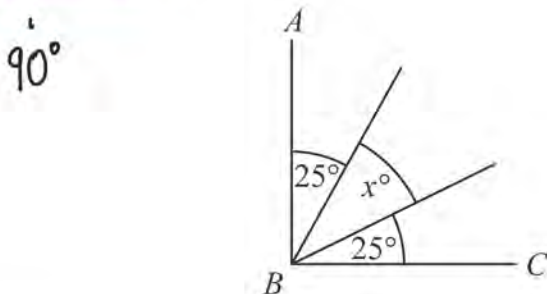
$$\begin{array}{r}
 \begin{array}{r}
 ^2 74 \\
 \times 58 \\
 \hline
 \end{array} \\
 \begin{array}{r}
 592 \\
 3,700^+ \\
 \hline
 4292
 \end{array}
 \end{array}
 \begin{array}{l}
 (74 \times 8) \\
 (74 \times 50)
 \end{array}$$

4292

(Total for Question 11 is 2 marks)



12 AB and BC are perpendicular lines.



(a) Find the value of x .

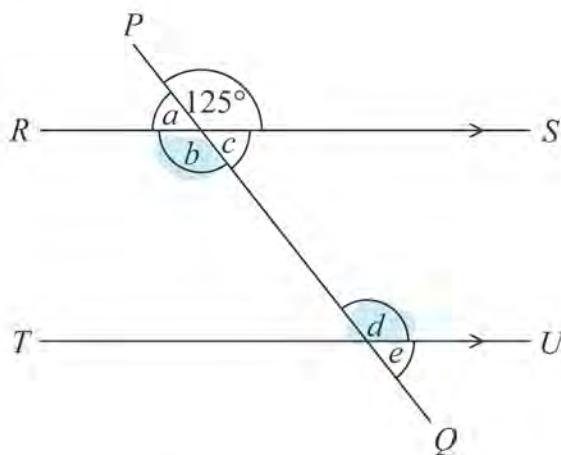
$$25 + 25 + x = 90$$

$$x + 50 = 90$$

$$x = 40$$

$$x = 40 \quad (2)$$

RS and TU are parallel lines.
 PQ is a straight line.



An angle of size 125° is shown on the diagram.

(b) (i) Write down the letter of one other angle of size 125°
Give a reason for your answer.

$$d = 125^\circ - \text{corresponding angles are equal}$$

$$b = 125^\circ - \text{vertical opposite angles are equal}$$

(2)

(ii) Explain why $a + b + c = 235^\circ$

Angles around a point add up to 360° . Therefore, $a + b + c + 125 = 360$

$$\text{Rearranging: } a + b + c + 125 = 360$$

$$a + b + c = 235$$

(1)

(Total for Question 12 is 5 marks)

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- 13 The length of a line is x centimetres.

Write down an expression, in terms of x , for the length of the line in millimetres.

$$\text{cm} \xrightarrow{\times 10} \text{mm}$$

$$x \times 10 = 10x$$

$$10x$$

(Total for Question 13 is 1 mark)

- 14 (a) Work out $\frac{1}{5}$ of 70

$$= 70 \div 5$$

$$\begin{array}{r} 14 \\ 5 \overline{) 70} \end{array}$$

$$14$$

(1)

Fiona has to work out the exact value of $48 \div \frac{1}{2}$
She writes

$$48 \div \frac{1}{2} = 24$$

Fiona's reason is,

"There are 2 halves in 1, so there will be 24 halves in 48"

- (b) Explain what is wrong with Fiona's reason.

She divided by 2, instead of a $\frac{1}{2}$. $48 \div 2 = 24$, instead she should've multiplied by 2

(1)

(Total for Question 14 is 2 marks)



15 (a) Write down the value of $\sqrt{64}$

a number multiplied by itself = 64

$$8 \times 8 = 64 \quad \underline{\quad 8 \quad}$$

(1)

(b) Work out the value of 5^3

$$= 5 \times 5 \times 5$$

$$= 25 \times 5$$

$$\begin{array}{r} 25 \\ \times 5 \\ \hline 125 \end{array}$$

$$\underline{\quad 125 \quad}$$

(1)

(Total for Question 15 is 2 marks)

16 (a) Expand $5(2m - 3)$

$$10m - 15$$

$$\underline{\quad 10m - 15 \quad}$$

(1)

(b) Factorise $3n + 12$

factor of $3n$ and 12 is 3

$$3(n + 4)$$

$$3n \div 3$$

$$12 \div 3$$

$$\underline{\quad 3(n + 4) \quad}$$

(1)

(Total for Question 16 is 2 marks)

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- 17 Stuart throws a biased coin 10 times.
He gets 7 Tails.

Maxine throws the same coin 50 times.
She gets 30 Tails.

Prasha is going to throw the coin once.

- (i) Whose results will give the better estimate for the probability that she will get Tails, Stuart's or Maxine's?

You must give a reason for your answer.

Maxine's because she has more trials, she threw
and tested more times than Stuart

(1)

- (ii) Use Stuart's and Maxine's results to work out an estimate for the probability that Prasha will get Tails.

Out of 60 trials : 37 tails

Stuart + Maxine

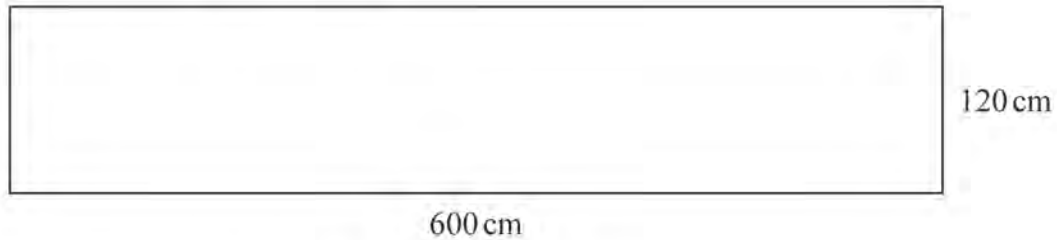
$$\frac{37}{60}$$

(1)

(Total for Question 17 is 2 marks)



18 The diagram shows a rectangular garden path.



Wasim is going to cover the path with paving stones.

Each paving stone is a square of side 30 cm.

Each paving stone costs £2.50

Wasim has £220 to spend on paving stones.

Show that he has enough money to buy all the paving stones he needs.

$$\text{Area of Path : } 120 \times 600 = 72000 \text{ cm}^2$$

$$\text{Area of stone : } 30 \times 30 = 900 \text{ cm}^2$$

$$\frac{72000}{900} = 80 \text{ paving stones needed}$$

$$\begin{array}{r} \text{This will cost : } 80 \times 2.50 = £200 \\ \begin{array}{r} ^f 25 \\ \times 8 \\ \hline 200 \end{array} \end{array}$$

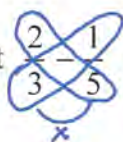
$$£200 < £220,$$

Wasim has enough money

(Total for Question 18 is 4 marks)



19 (a) Work out



$$\frac{10 - 3}{15} = \frac{7}{15}$$

$$\frac{7}{15}$$

(2)

(b) Work out $\frac{2}{3} \times \frac{3}{4}$

Give your answer as a fraction in its simplest form.

$$\frac{2 \times 3}{3 \times 4} = \frac{6}{12} \div 6 = \frac{1}{2}$$

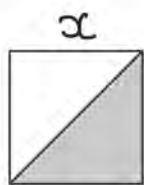
$$\frac{1}{2}$$

(2)

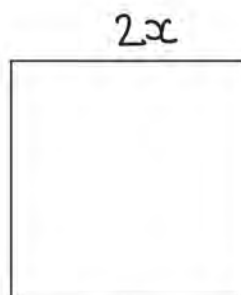
(Total for Question 19 is 4 marks)



20 Here are two squares, A and B.



A



B

The length of the side of square A is 50% of the length of the side of square B.

Express the area of the shaded region of square A as a percentage of the area of square B.

$$\text{Area of A : } x \times x = x^2$$

$$\text{Area shaded : } \frac{x^2}{2}$$

$$\text{Area of B : } 2x \times 2x = 4x^2$$

$$\text{Percentage : } \frac{\frac{x^2}{2}}{4x^2} \times 100$$

$$= \frac{1}{8} \times 100 = 0.125 \times 100 = 12.5\%$$

(Total for Question 20 is 3 marks)

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- 21 There are 40 students in a class.
Each student walks to school or cycles to school or gets the bus to school.

There are 22 girls in the class.

9 of the girls walk to school.

7 of the boys cycle to school.

6 of the 10 students who get the bus to school are boys.

Find the number of these students who walk to school.

	Walk	Cycle	Bus	Total
Boy	$18 - 7 - 6$ $= 5$	7	6	$40 - 22$ $= 18$
Girls	9			22
Total	$5 + 9 = 14$		10	40

14 students
walk to
school

14

(Total for Question 21 is 4 marks)



22 There are only blue cubes, red cubes and yellow cubes in a box.

The table shows the probability of taking at random a blue cube from the box.

Colour	blue	red	yellow
Probability	0.2	0.4	0.4

The number of red cubes in the box is the same as the number of yellow cubes in the box.

(a) Complete the table.

probability is equal

$$\begin{aligned}
 0.2 + x + x &= 1 \\
 2x &= 0.8 \\
 x &= 0.4
 \end{aligned}$$

(2)

There are 12 blue cubes in the box.

(b) Work out the total number of cubes in the box.

$$\begin{aligned}
 12 \text{ cubes} &= 0.2 \text{ total} \\
 \times 5 & \quad \times 5 \\
 60 &= 1 \text{ total}
 \end{aligned}$$

60

(2)

(Total for Question 22 is 4 marks)

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23 Deon needs 50g of sugar to make 15 biscuits.

She also needs

three times as much flour as sugar

two times as much butter as sugar

$$= 50 \times 3 = 150\text{g flour}$$

$$= 50 \times 2 = 100\text{g butter}$$

Deon is going to make 60 biscuits.

(a) Work out the amount of flour she needs.

$$60 \div 15 = 4 \text{ batches}$$

$$\begin{array}{l} \text{1 batch : 150g of flour} \\ \text{4 batches : 600g} \end{array}$$

$$\begin{array}{r} 600 \\ \hline (3) \end{array} \text{ g}$$

Deon has to buy all the butter she needs to make 60 biscuits.

She buys the butter in 250g packs.

(b) How many packs of butter does Deon need to buy?

$$\begin{array}{l} \text{1 batch : 100g butter} \\ \text{4 : 400g butter} \end{array}$$

$$\begin{array}{r} 250 \\ \hline (1) \end{array} + \begin{array}{r} 250 \\ \hline (2) \end{array} = 500\text{g}$$

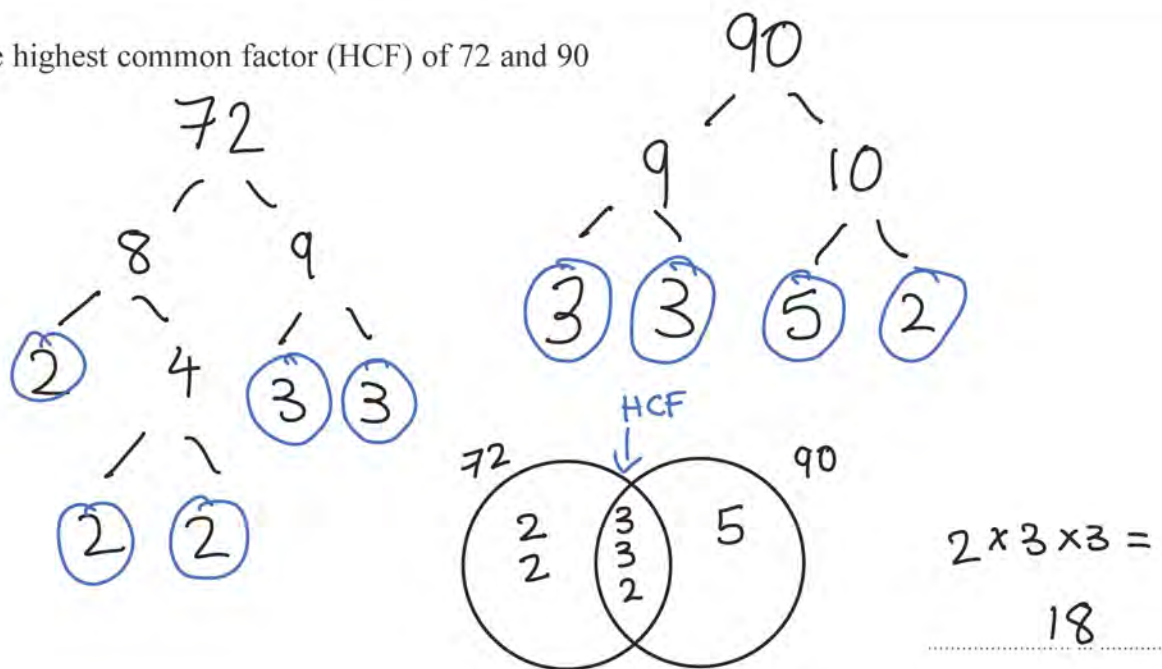
more than butter needed

$$\begin{array}{r} 2 \text{ packs} \\ \hline (2) \end{array}$$

(Total for Question 23 is 5 marks)



24 Find the highest common factor (HCF) of 72 and 90



(Total for Question 24 is 2 marks)

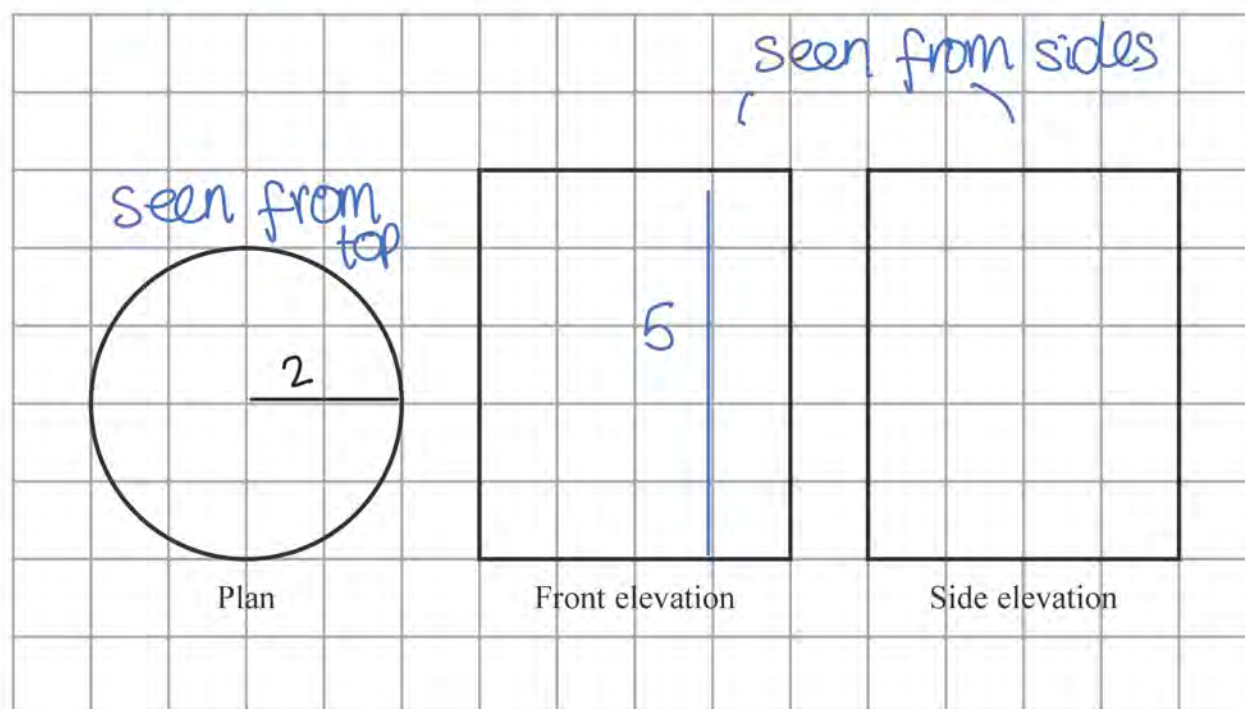
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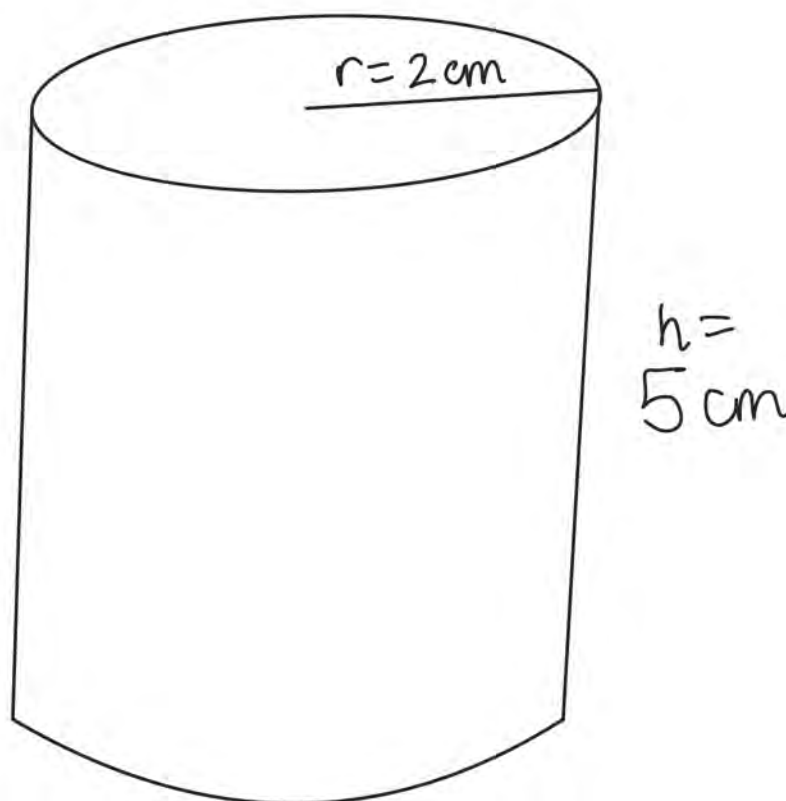


- 25 The diagram shows the plan, front elevation and side elevation of a solid shape, drawn on a centimetre grid.



= cylinder

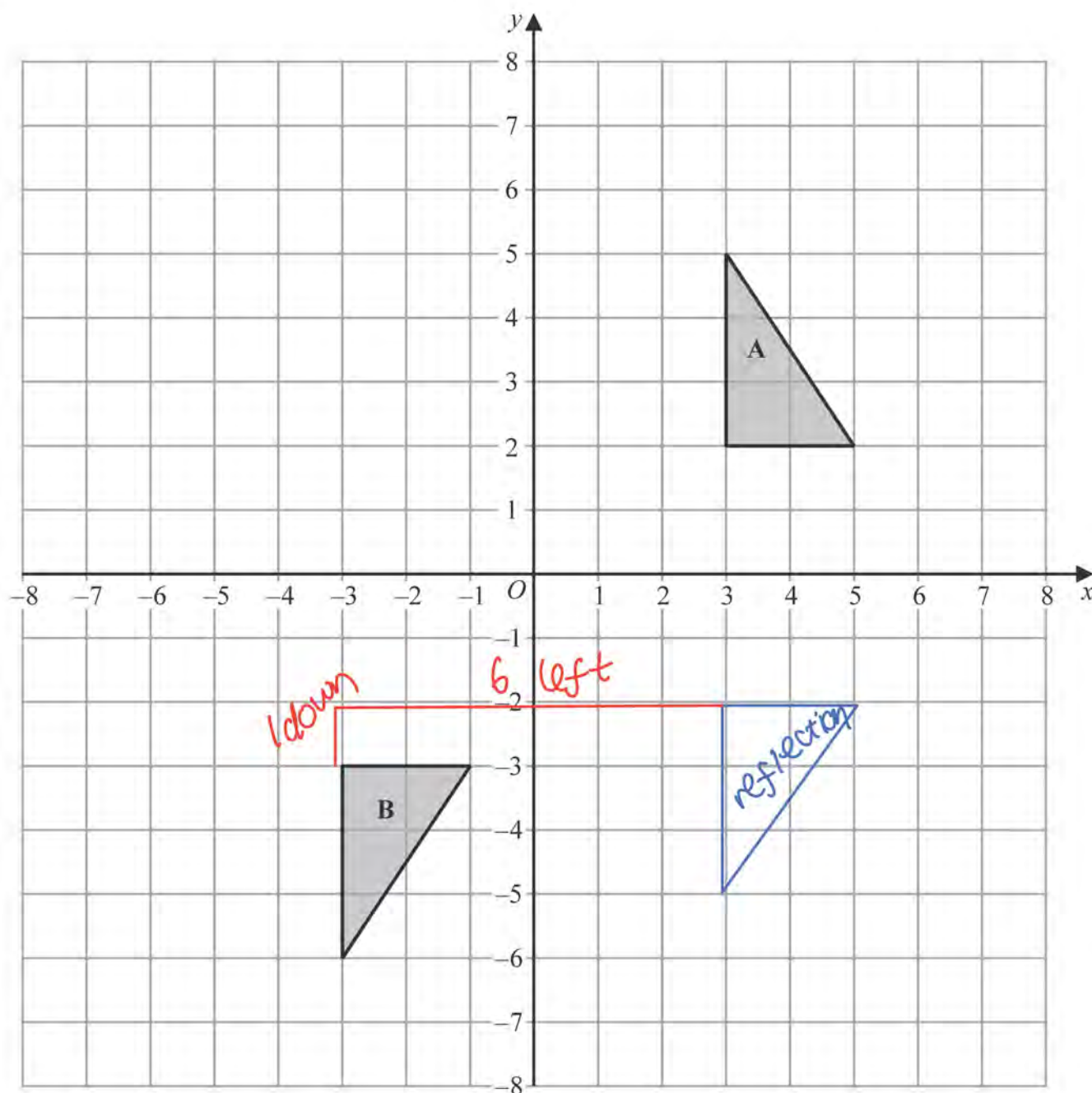
In the space below, draw a sketch of the solid shape.
Give the dimensions of the solid on your sketch.



(Total for Question 25 is 2 marks)



26



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Shape **A** can be transformed to shape **B** by a reflection in the x -axis followed by a translation $\begin{pmatrix} c \\ d \end{pmatrix}$

Find the value of c and the value of d .

left and down =
negative
values

$$c = -6$$

$$d = -1$$

(Total for Question 26 is 3 marks)



27 A shop sells packs of black pens, packs of red pens and packs of green pens.

There are

2 pens in each pack of black pens

5 pens in each pack of red pens

6 pens in each pack of green pens

On Monday,

number of packs of black pens sold : number of packs of red pens sold : number of packs of green pens sold = 7:3:4

A total of 212 pens were sold.

Work out the number of green pens sold.

$\begin{matrix} B \\ 2 \times 7 \\ 14 \end{matrix}$:	$\begin{matrix} R \\ 3 \times 5 \\ 15 \end{matrix}$:	$\begin{matrix} G \\ 4 \times 6 \\ 24 \end{matrix}$		$\begin{matrix} \text{Total} \\ 14+15+24 \\ 53 \end{matrix}$
$\times 4$:	:	:	96		212

↶ ÷ 4

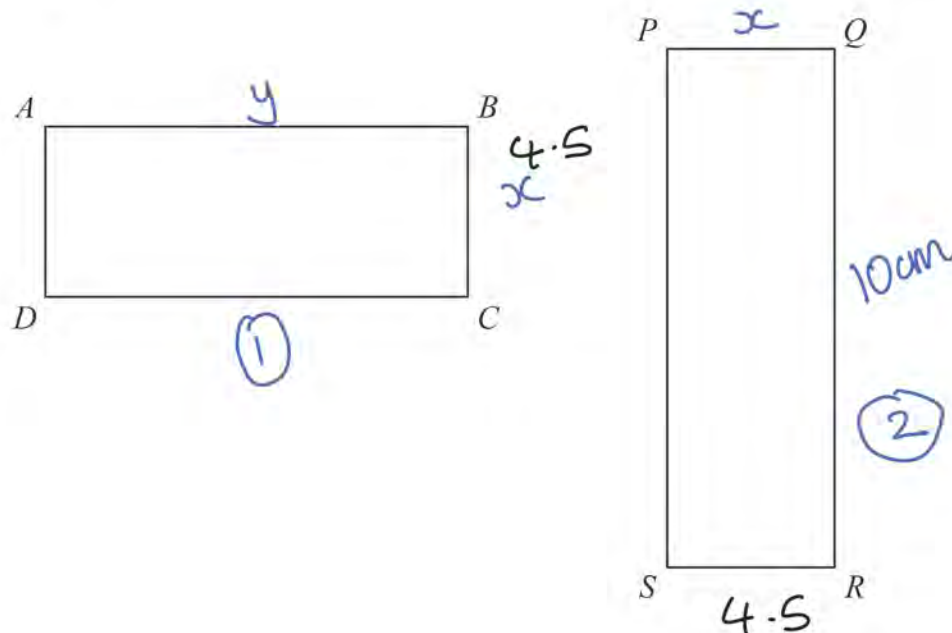
$$24 \times 4 = 80 + 16 = 96$$

96 green

(Total for Question 27 is 4 marks)



28 Here are two rectangles.



$$QR = 10 \text{ cm}$$

$$BC = PQ$$

The perimeter of $ABCD$ is 26 cm

The area of $PQRS$ is 45 cm^2

Find the length of AB .

$$\textcircled{2} \quad 10x = 45 \text{ cm}^2$$

$$x = \frac{45}{10} = 4.5$$

$\textcircled{1}$ Perimeter:

$$4.5 + 4.5 + y + y = 26$$

$$9 + 2y = 26$$

$$2y = 17$$

$$y = \frac{17}{2} = 8.5$$

8.5 cm

(Total for Question 28 is 4 marks)

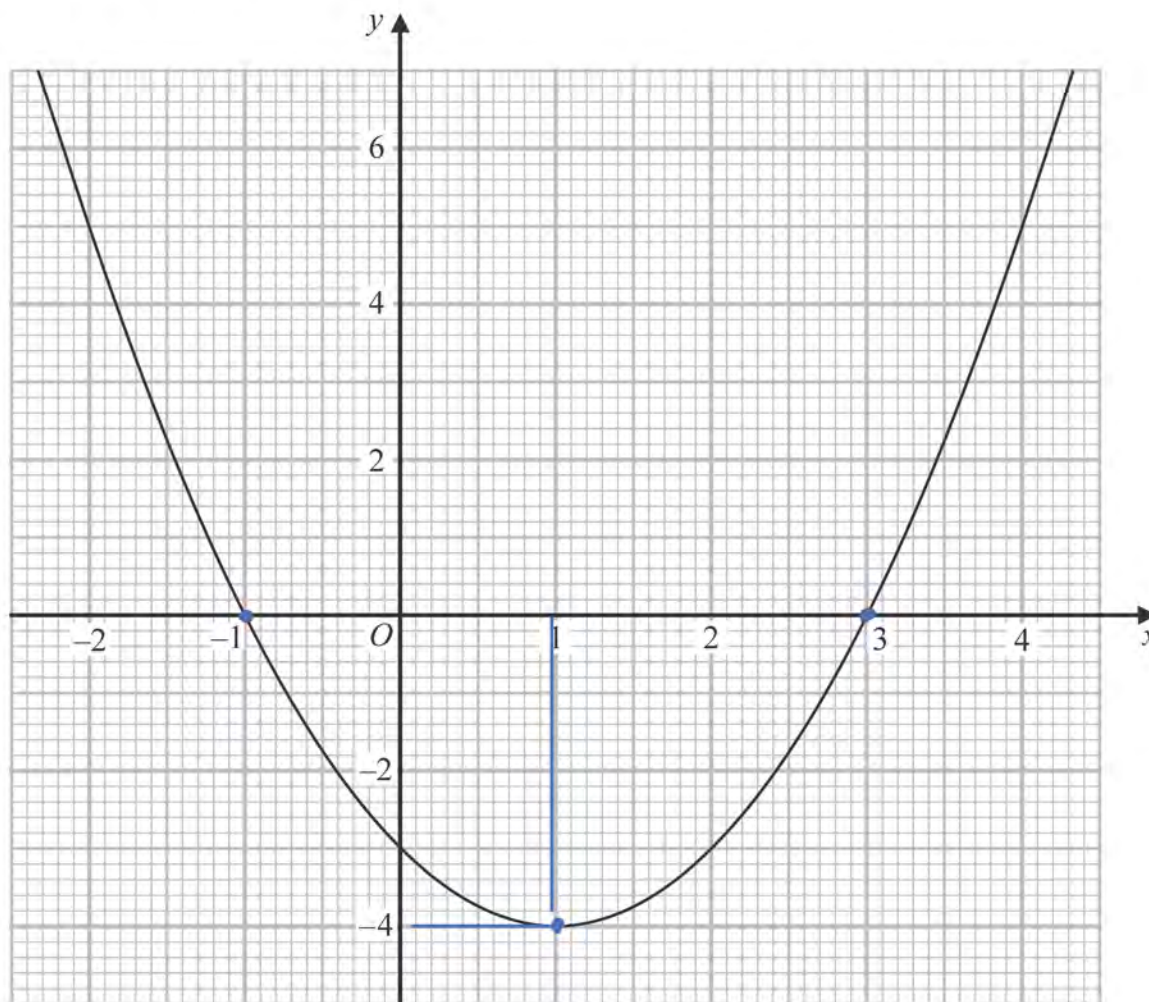
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29 Here is the graph of $y = x^2 - 2x - 3$



(a) Write down the coordinates of the turning point on the graph of $y = x^2 - 2x - 3$

(1, -4)
(1)

(b) Use the graph to find the roots of the equation $x^2 - 2x - 3 = 0$

crosses x axis

$x = -1, x = 3$
(2)

(Total for Question 29 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS



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