

Please check the examination details below before entering your candidate information

Candidate surname					Other names				
Centre Number					Candidate Number				

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Wednesday 7 June 2023

Morning (Time: 1 hour 30 minutes)

Paper reference **1MA1/2F**

Mathematics

PAPER 2 (Calculator)

Foundation Tier



You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator, Formulae Sheet (enclosed). 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 π button, take the value of π 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.
- 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 6184 correct to the nearest hundred.

← since 8 > 5, round up 1 to 2.

6100 (1)

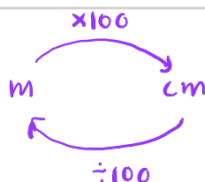
(Total for Question 1 is 1 mark)

- 2 Write 0.7 as a fraction.

 $\frac{7}{10}$ (1) $\frac{7}{10}$

(Total for Question 2 is 1 mark)

- 3 Change 9 metres into centimetres.

 $(9 \times 100) \text{ cm}$ $= 900 \text{ cm}$ (1)

900

centimetres

(Total for Question 3 is 1 mark)

- 4 Simplify
- $3 \times 4t$

 $(3 \times 4) t$ $= 12t$ (1)

12t

(Total for Question 4 is 1 mark)

- 5 Here is a list of numbers.

20

40

60

80

100

One of these numbers is a multiple of 25

Which number?

$25 \times 2 = 50$

$25 \times 3 = 75$

$25 \times 4 = 100$ (1)

100

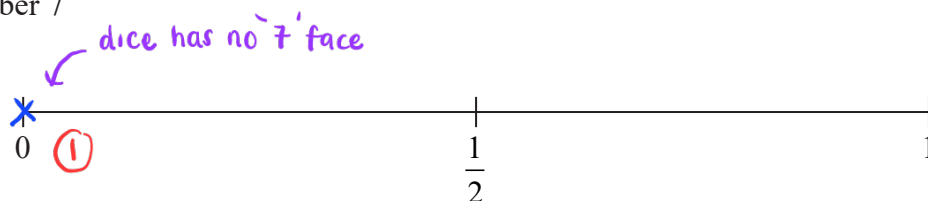
(Total for Question 5 is 1 mark)



6 Shari has a fair ordinary dice.

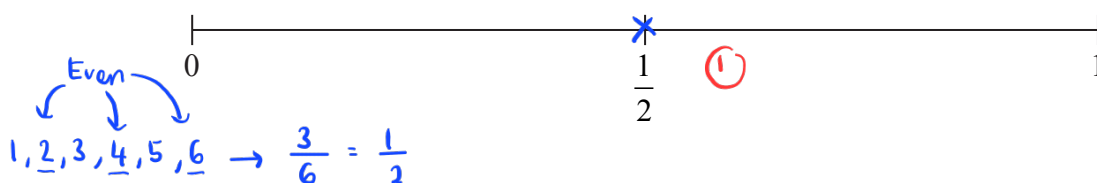
She rolls the dice once.

- (a) On the probability scale, mark with a cross (×) the probability that Shari gets the number 7



(1)

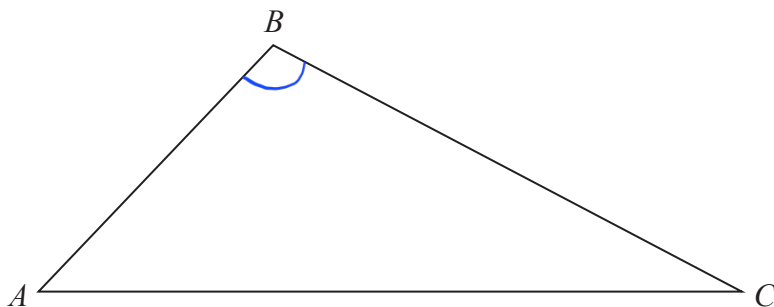
- (b) On the probability scale, mark with a cross (×) the probability that Shari gets an even number.



(1)

(Total for Question 6 is 2 marks)

- 7 Here is a triangle.
The triangle is accurately drawn.



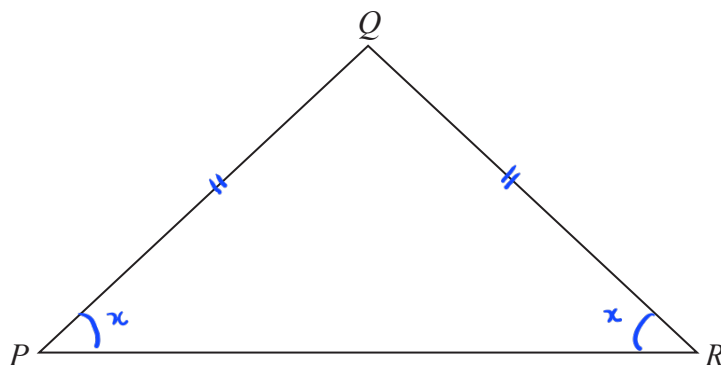
- (a) Measure the length of AC .

9.3 (1)
..... cm
(1)

- (b) Measure the size of angle B .

106 (1)
..... °
(1)

Here is a different triangle.



$$QP = QR$$

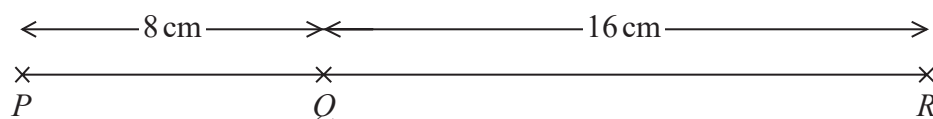
- (c) Write down the mathematical name of this triangle.

isosceles (1)
.....
(1)

(Total for Question 7 is 3 marks)



- 8 The diagram shows three motorway service stations P , Q and R on a map.



The map has a scale of $1 \text{ cm} = 4 \text{ km}$.

Work out the real distance from P to R .

$$\text{distance PR on map : } 8 + 16 = 24 \text{ cm} \quad (1)$$

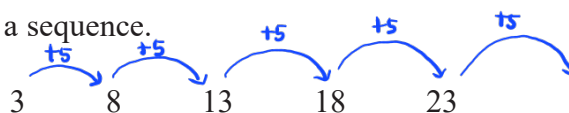
$$\text{real distance : } 24 \text{ cm} \times \frac{4 \text{ km}}{1 \text{ cm}} \quad (1)$$

$$= 96 \text{ km} \quad (1)$$

96 km

(Total for Question 8 is 3 marks)

- 9 Here are the first five terms of a sequence.



- (a) Write down the next term of this sequence.

$$23 + 5 = 28$$

28 (1)

(1)

- (b) Write down the ratio of the second term to the fourth term.
Give your ratio in its simplest form.

$$\text{2nd term} = 8$$

$$\text{4th term} = 18$$

$$\therefore \text{2nd term} : \text{4th term} = 8 : 18 \quad (1)$$

$$\frac{\text{2nd}}{\text{4th}} = \frac{8 \div 2}{18 \div 2} \quad (1)$$

$$= \frac{4}{9}$$

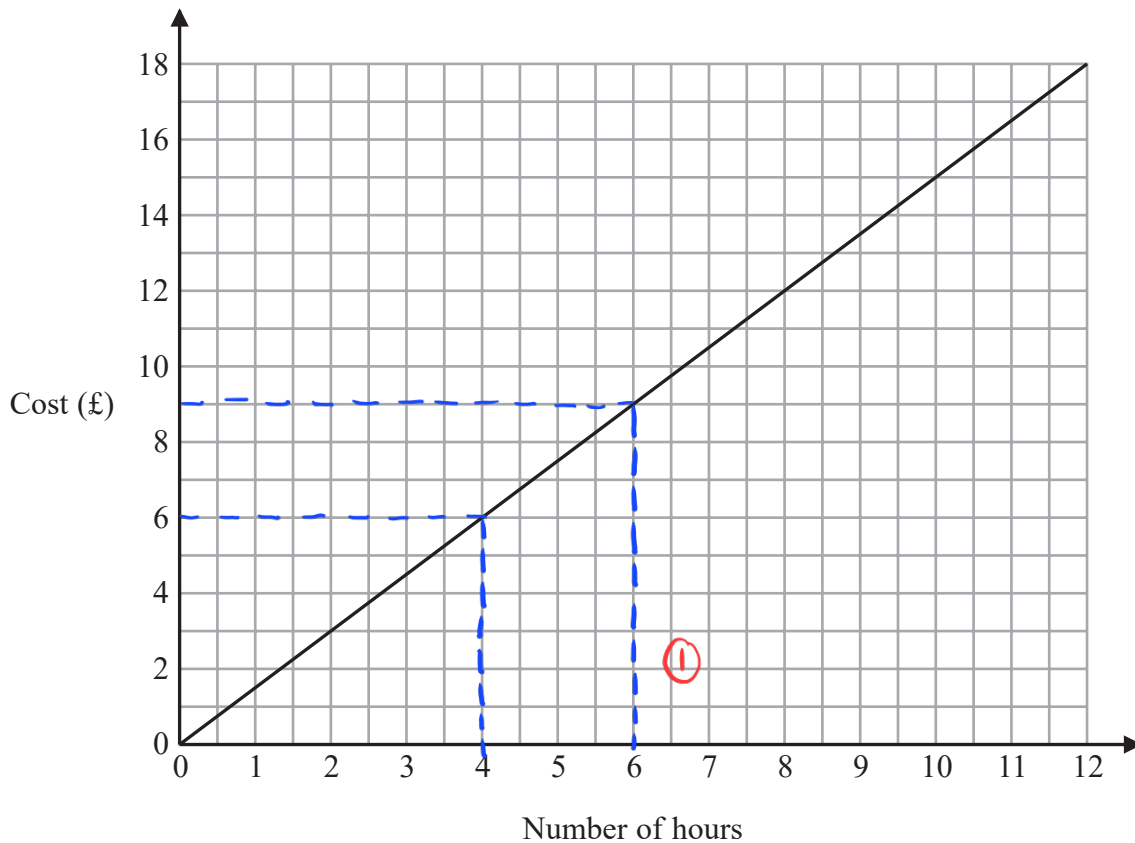
4 : 9

(2)

(Total for Question 9 is 3 marks)



10 This graph can be used to find the cost of parking a car in a car park for up to 12 hours.



(a) Use the graph to find the cost of parking a car for 4 hours.

£ 6 (1)

Justin drives into the car park at 08 00 in the morning.
When he drives out of the car park he has to pay £9

(b) At what time does Justin drive out of the car park?

∴ Justin parked for 6 hours .

∴ He drive out of the car park at: 0800 + 6 hours (1)
= 14:00 or 2pm (1)

2 pm
(3)

(Total for Question 10 is 4 marks)



11 The table shows information about the weights of the people in a hotel lift.

Weight	Number of people
40 kg	1
50 kg	2
60 kg	4
70 kg	5
80 kg	3
90 kg	1

Show that the total weight of the people in the lift is less than 1200 kg.

$$\text{Total weight} = (40 \text{ kg} \times 1) + (50 \text{ kg} \times 2) + (60 \text{ kg} \times 4) + (70 \text{ kg} \times 5) \\ + (80 \text{ kg} \times 3) + (90 \text{ kg} \times 1) \quad \textcircled{1}$$

$$= 40 \text{ kg} + 100 \text{ kg} + 240 \text{ kg} + 350 \text{ kg} + 240 \text{ kg} + 90 \text{ kg} \quad \textcircled{1}$$

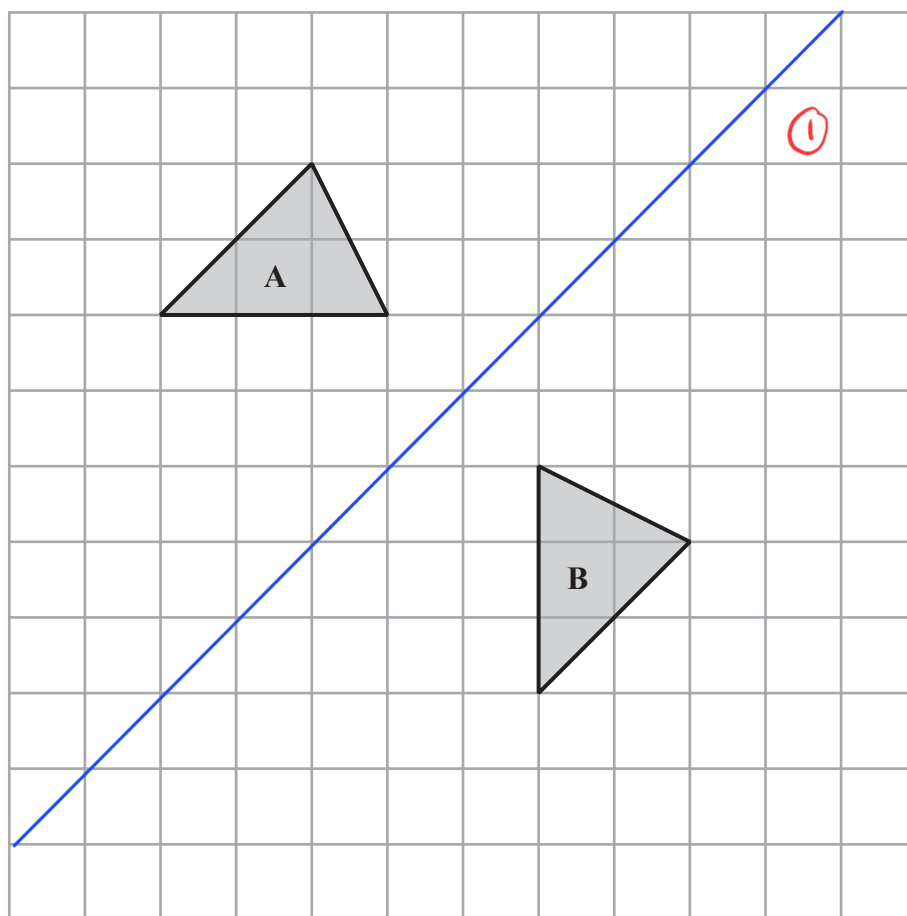
$$= 1060 \text{ kg} < 1200 \text{ kg} \quad (\text{shown})$$

$\textcircled{1}$

(Total for Question 11 is 3 marks)



12 Shape A is reflected in a mirror line to give shape B.



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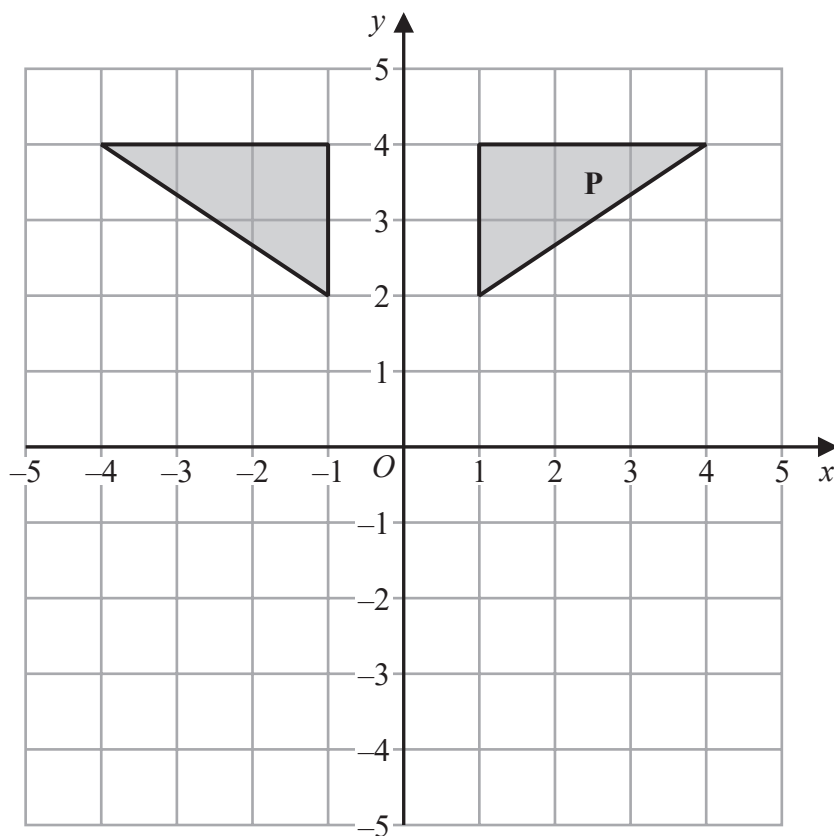
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(a) On the grid, draw the mirror line.

(1)



- (b) Alex is asked to reflect shape **P** in the x -axis.
Here is the diagram Alex draws.



Explain the mistake Alex has made.

Alex reflected shape P in the y -axis instead of x -axis. (1)

(1)

(Total for Question 12 is 2 marks)



13 There are 50 teachers in a school.

This is $\frac{1}{16}$ of the total number of people in the school.

Work out the total number of people in the school.

Let x = total number of people in school

$$\frac{1}{16} \times x = 50$$

$$x = 50 \times 16 \quad (1)$$

$$= 800 \quad (1)$$

800

(Total for Question 13 is 2 marks)

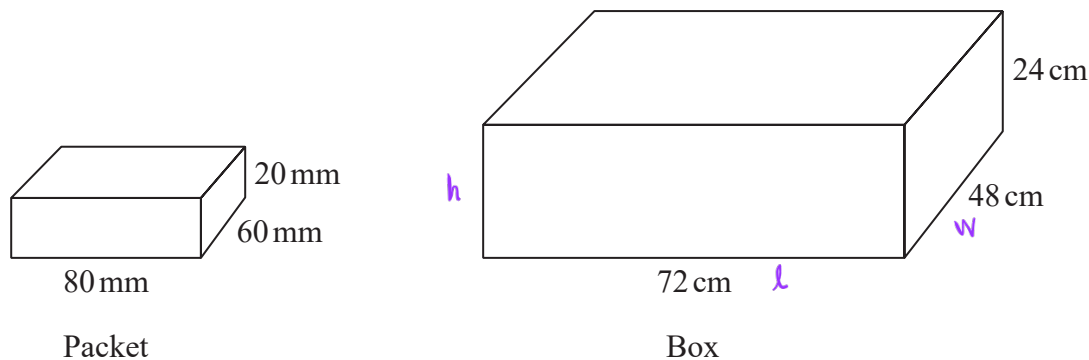
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14 Packets of sweets are put into boxes.



$$\text{Volume of cuboid} = l \times w \times h$$

Each packet is a cuboid, 80 mm by 60 mm by 20 mm.

Each box is a cuboid, 72 cm by 48 cm by 24 cm.

Work out the greatest number of packets that can be put into each box.

Calculate volume of box :

$$\begin{aligned} V_B &= (72 \times 48 \times 24) \\ &= 82\,944 \text{ cm}^3 \quad (1) \end{aligned}$$

Calculate volume of packet :

$$\begin{aligned} V_P &= 80 \times 60 \times 20 \\ &= 96\,000 \text{ mm}^3 \end{aligned}$$

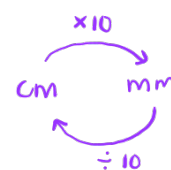
$$\begin{aligned} \text{convert to } \text{cm}^3 &= 96\,000 \text{ mm}^3 \times \frac{1 \text{ cm}^3}{1000 \text{ mm}^3} \quad (1) \\ &= 96 \text{ cm}^3 \end{aligned}$$

Calculate number of packets can fit in the box :

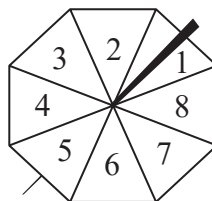
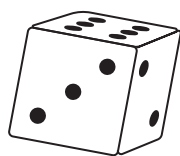
$$N = \frac{V_B}{V_P} = \frac{82\,944 \text{ cm}^3}{96 \text{ cm}^3} = 864 \quad (1)$$

864

(Total for Question 14 is 4 marks)



15 Here is a fair ordinary dice and a fair 8-sided spinner.



Charlie throws the dice once and spins the spinner once.

Is Charlie more likely to get

a number less than 3 on the dice
or a number greater than 5 on the spinner?

You must show all your working.

- Numbers on dice : 1, 2, 3, 4, 5, 6

Numbers less than 3 : 1, 2

Probability of getting number less than 3 : $\frac{2}{6}$ ①

- Numbers on spinner : 1, 2, 3, 4, 5, 6, 7, 8

Numbers greater than 5 : 6, 7, 8

Probability of getting number greater than 5 : $\frac{3}{8}$ ①

Comparing probability :

$\frac{2 \times 4}{6 \times 4} : \frac{3 \times 3}{8 \times 3} \rightarrow \frac{8}{24} : \frac{9}{24}$. $\therefore$ Charlie is more likely to get
number greater than 5 on
the spinner. ①

(Total for Question 15 is 3 marks)

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- 16 Paulo drives at an average speed of 56 km/h for 1 hour 45 minutes. $\text{Speed} = \frac{\text{distance}}{\text{time}}$

Work out the distance Paulo drives.

$$\text{speed} = 56 \text{ km/h}$$

$$\text{time} = 1 \text{ hour } 45 \text{ minutes}$$

$$= 1 \text{ hour} + \left(\frac{45}{60} \right) \text{ hour} \quad \textcircled{1}$$

Convert minute to hour

$$1 \text{ hour} = 60 \text{ minutes}$$

$$= 1.75 \text{ hour}$$

$$\text{distance} = \text{speed} \times \text{time}$$

$$= 56 \text{ km/h} \times 1.75 \text{ h} \quad \textcircled{1}$$

$$= 98 \text{ km} \quad \textcircled{1}$$

98 km

(Total for Question 16 is 3 marks)

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17 There are 3 cinemas A, B and C.

The mean number of seats per cinema is 380

There are 350 seats in cinema A.

There are 250 seats in cinema B.

Work out the number of seats in cinema C.

Finding total number of seats in all cinemas :

$$380 \times 3 = 1140 \text{ seats } \textcircled{1}$$

Finding total of seats in cinema A and B :

$$350 + 250 = 600 \text{ seats } \textcircled{1}$$

Finding number of seats in Cinema C :

$$1140 - 600 = 540 \text{ seats } \textcircled{1}$$

540

(Total for Question 17 is 4 marks)

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18 Asha buys 180 cans of cola.

The cans are sold in packs.

There are 12 cans in each pack.

Each pack costs £3

(a) Work out the total cost of the cola Asha buys.

Finding number of packs Asha buys :

$$\frac{180}{12} = 15 \text{ packs } \textcircled{1}$$

∴ If 1 pack costs £3, 15 packs cost :

$$15 \times £3 = £45 \textcircled{1}$$

£ 45
(3)

Ethan buys a box of 24 cans of lemonade for £7

There are 330 ml of lemonade in each can.

(b) Work out the cost of 100 ml of lemonade.

Give your answer correct to the nearest penny.

Finding price of each can :

$$\frac{£7}{24} = £0.2916... \text{ (per can)} \textcircled{1}$$

∴ 330 ml of lemonade (1 can) costs £0.2916...

100 ml of lemonade costs :

$$\frac{100}{330} \times £0.2916... = £0.08838... \textcircled{1}$$

Convert to penny :

$$0.08838 \times 100 = 8.838...$$

9
= 9 (nearest penny) (3)

(Total for Question 18 is 6 marks)

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P 7 5 1 4 9 A 0 1 5 2 4

19 240 people work at a factory.

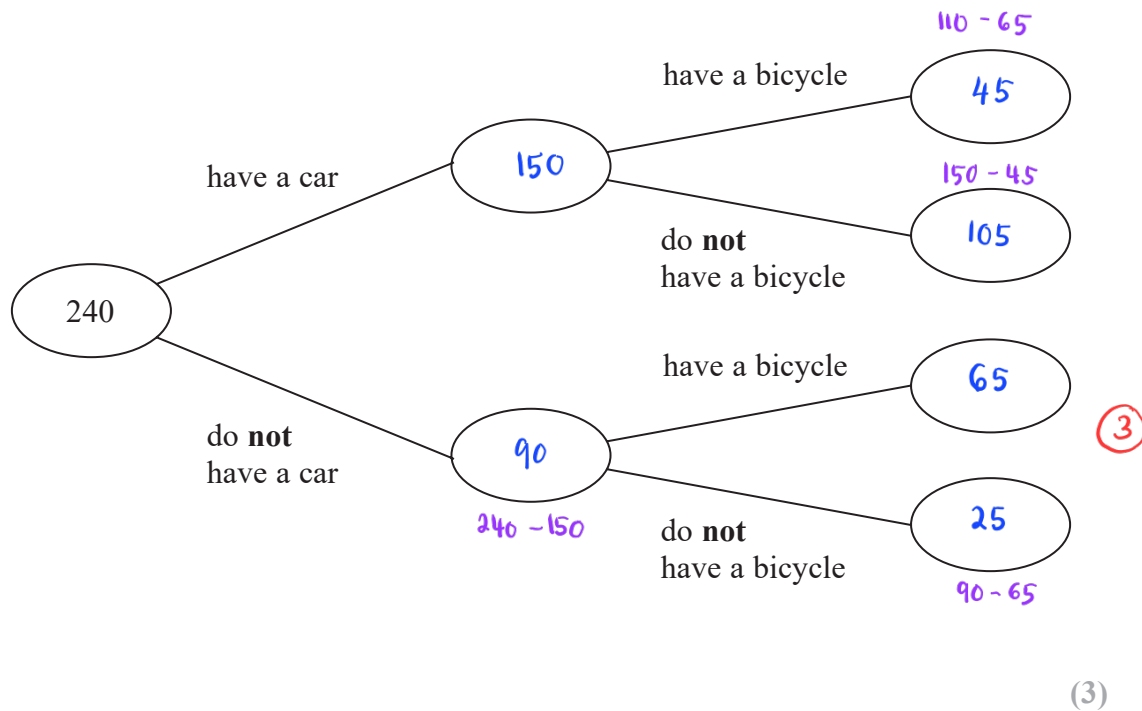
Of these people

150 have a car

110 have a bicycle

65 of the people who have a bicycle do **not** have a car.

(a) Use this information to complete the frequency tree.



(b) What percentage of the 150 people who have a car also have a bicycle?

People who have a car and also have a bicycle = 45

$$\frac{45}{150} \times 100\% = 30\%$$

30 %
(2)

(Total for Question 19 is 5 marks)



20 (a) Work out the value of $\frac{25 - \sqrt{43.87}}{6 + 2.1^2}$

Write down all the figures on your calculator display.

$$= \frac{18.3765 \dots}{10.41} \quad (1)$$

$$= 1.765 \dots \quad (1)$$

$$1.765$$

(2)

(b) Work out the value of the reciprocal of 0.625

$$\frac{1}{x} = \frac{1}{0.625}$$

$$1.6 \quad (1)$$

(1)

(Total for Question 20 is 3 marks)

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21 Write 60 as a product of its prime factors.

$$\begin{array}{l}
 1 \times 60 \\
 \boxed{2 \times 30} \rightarrow 2 \times 3 \times 2 \times 5 \\
 \boxed{3 \times 20} \rightarrow 3 \times 2 \times 2 \times 5 \\
 4 \times 15 \\
 \boxed{5 \times 12} \rightarrow 5 \times 2 \times 2 \times 3 \\
 6 \times 10
 \end{array}
 \left. \vphantom{\begin{array}{l} 1 \times 60 \\ \boxed{2 \times 30} \rightarrow 2 \times 3 \times 2 \times 5 \\ \boxed{3 \times 20} \rightarrow 3 \times 2 \times 2 \times 5 \\ 4 \times 15 \\ \boxed{5 \times 12} \rightarrow 5 \times 2 \times 2 \times 3 \\ 6 \times 10 \end{array}} \right\} \text{answers are the same} \\
 \text{either choice}$$

$$2 \times 2 \times 3 \times 5 \quad (1)$$

(Total for Question 21 is 2 marks)

22 There are 48 counters in a bag.
There are only red counters and blue counters in the bag.

$$\text{number of red counters : number of blue counters} = 1 : 2$$

Helen has to work out how many red counters are in the bag.

She says,

“There are 24 red counters in the bag because 1 is half of 2 and 24 is half of 48”

Is Helen correct?

You must give a reason for your answer.

$$48 \div 3 = 16$$

Helen is incorrect because there are 16 red counters. (1)

(Total for Question 22 is 1 mark)



23 $-2 \leq n < 5$

n is an integer.

(a) Write down the greatest possible value of n .

n can only be less than 5, the greatest value below 5 is 4.

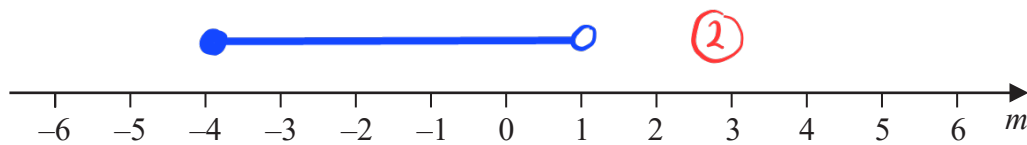
4 (1)

(1)

(b) On the number line below, show the inequality $-4 \leq m < 1$

● = $\leq$ or $\geq$

○ = $<$ or $>$



(2)

(c) Solve $\frac{2}{5}g - 4 < 6$

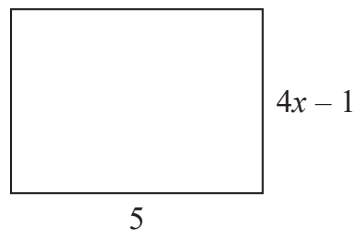
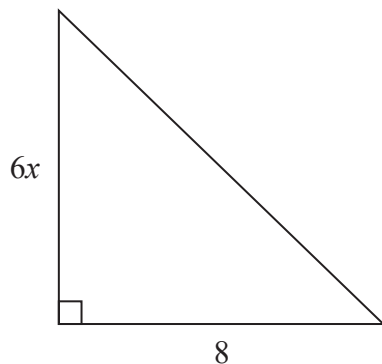
$$\begin{aligned} \frac{2}{5}g - 4 &< 6 \\ \frac{2}{5}g &< 6 + 4 \quad (1) \\ \frac{2}{5}g &< 10 \quad (1) \\ \times 5 \quad \left(\frac{2}{5}g < 10 \right) &\times 5 \\ 2g &< 50 \\ \div 2 \quad \left(2g < 50 \right) &\div 2 \\ g &< 25 \quad (1) \end{aligned}$$

$g < 25$

(3)

(Total for Question 23 is 6 marks)

24 Here is a triangle and a rectangle.



All measurements are in centimetres.

The area of the triangle is 10 cm^2 greater than the area of the rectangle.

Work out the value of x .

$$\text{Area of triangle} = \frac{1}{2} \times h \times l$$

$$\begin{aligned} \text{Area of triangle} &= \frac{1}{2} \times 6x \times 8 \\ &= 24x \quad (1) \end{aligned}$$

$$\text{Area of rectangle} = h \times l$$

$$\begin{aligned} \text{Area of rectangle} &= 5(4x - 1) \\ &= 20x - 5 \quad (1) \end{aligned}$$

$$\text{Area of triangle} = \text{Area of rectangle} + 10$$

$$24x = 20x - 5 + 10 \quad (1)$$

$$24x - 20x = 5$$

$$4x = 5$$

$$x = \frac{5}{4} = 1.25 \quad (1)$$

$$x = 1.25$$

(Total for Question 24 is 4 marks)

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- 25 Last year a family recycled 800 kg of household waste.
57% of this waste was paper and glass.

weight of paper recycled : weight of glass recycled = 12 : 7

Calculate the weight of glass the family recycled.

$$\frac{57}{100} \times 800 = 456 \text{ kg} \text{ (1)}$$

weight of glass recycled : $\frac{456}{19} \times 7 = 168 \text{ kg} \text{ (1)}$

ratio of glass

total ratio : $12 + 7 = 19$

168 kg

(Total for Question 25 is 3 marks)



- 26 A number, d , is rounded to 1 decimal place.
The result is 12.7

Complete the error interval for d .

$$\text{upper bound} = 12.7 + 0.05 = 12.75$$

$$\text{lower bound} = 12.7 - 0.05 = 12.65$$

$$12.65 \leq d < 12.75$$

(Total for Question 26 is 2 marks)

- 27 Tamsin buys a house with a value of £150 000
The value of Tamsin's house increases by 4% each year.

Rachel buys a house with a value of £160 000
The value of Rachel's house increases by 1.5% each year.

At the end of 2 years, whose house has the greater value?
You must show how you get your answer.

$$\frac{100\% + 4\%}{100} = 1.04$$

$$\frac{100\% + 1.5\%}{100} = 1.015$$

$$\begin{aligned} \text{Tamsin's house by the end of 2 years} &= 150\,000 \times 1.04^2 \rightarrow \text{number of years} \\ &= 162\,240 \end{aligned}$$

$$\begin{aligned} \text{Rachel's house by the end of 2 years} &= 160\,000 \times 1.015^2 \\ &= 164\,836 \end{aligned}$$

Rachel's house has a greater value

(Total for Question 27 is 4 marks)

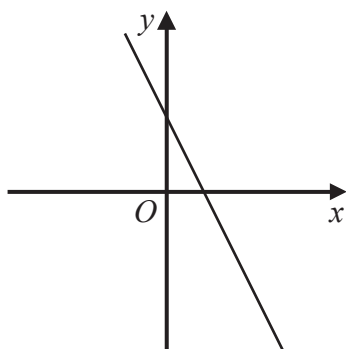
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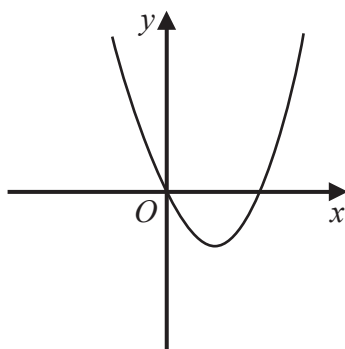
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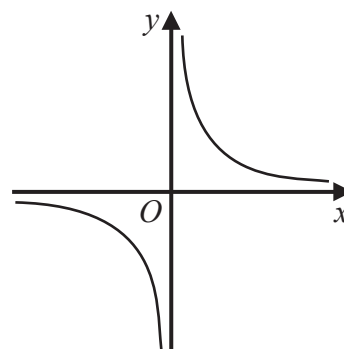
28 Here are five graphs.



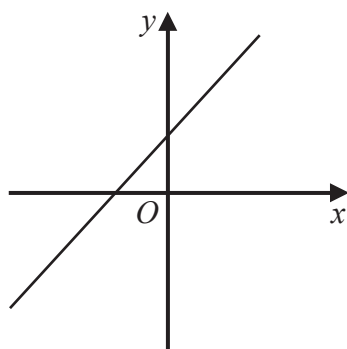
A



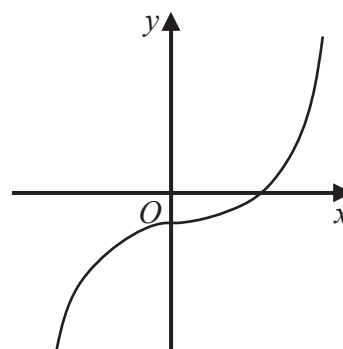
B



C



D



E

The table shows the equations of these graphs.

	Equation	Graph
quadratic	$y = x^2 - 4x$	B
linear with positive m	$y = x + 3$	D
cubic	$y = x^3 - 2$	E
reciprocal	$y = \frac{1}{x}$	C
linear with negative m	$y = 5 - 2x$	A

3

Match the letter of each graph with its equation.

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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