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.

6200

(Total for Question 1 is 1 mark)

2 Write 0.7 as a fraction.

$\frac{7}{10}$

(Total for Question 2 is 1 mark)

×100

3 Change 9 metres into centimetres.

900

.... centimetres

(Total for Question 3 is 1 mark)

4 Simplify $3 \times 4t$

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
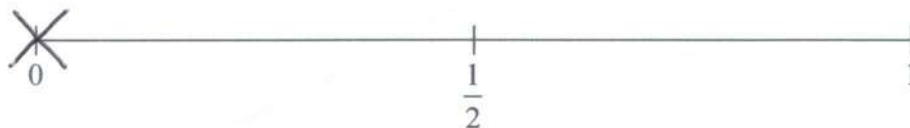
Which number?

25, 50, 75, 100

100

(Total for Question 5 is 1 mark)
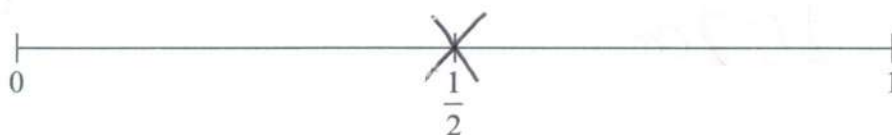
6 Shari has a fair ordinary dice.

She rolls the dice once.

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

(1)

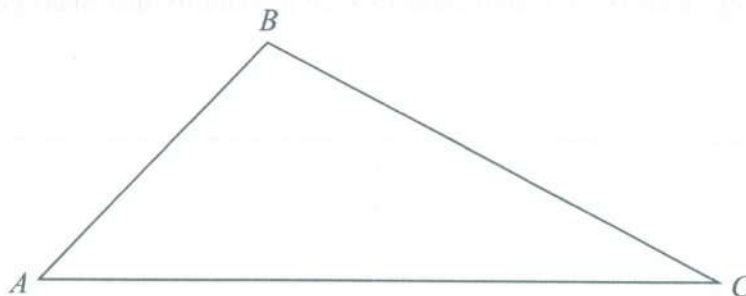(b) On the probability scale, mark with a cross (×) the probability that Shari gets an even number.

(1)

(Total for Question 6 is 2 marks)

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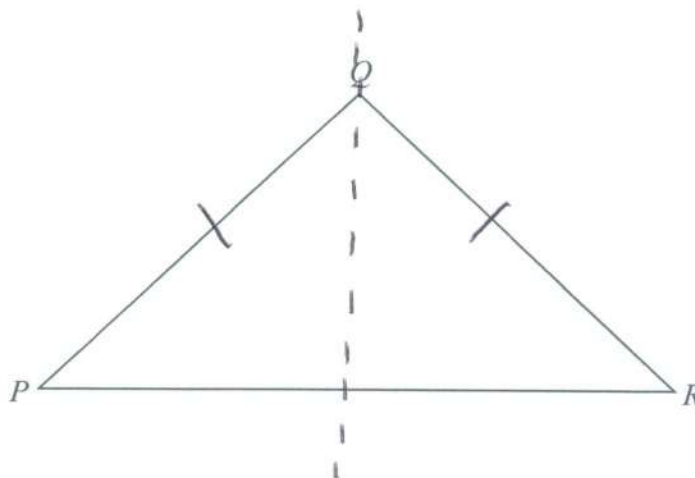

(a) Measure the length of *AC*.

±0·2 cm

9·3

.... cm

(1)

(b) Measure the size of angle *B*.

±2°

106

°

....

(1)

Here is a different triangle.

QP = QR

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

isosceles

....

(1)

(Total for Question 7 is 3 marks)

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

$\longleftarrow$—8 cm—$\longrightarrow$$\longleftarrow$—————16 cm—————$\longrightarrow$

P Q R

$\times 4$

The map has a scale of 1 cm = 4 km.

Work out the real distance from P to R.

24×4

96

.... km

(Total for Question 8 is 3 marks)

9 Here are the first five terms of a sequence.

                   3   8   13   18   23

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

$+5$ 28

....

(1)

(b) Write down the ratio of the second term to the fourth term.
    Give your ratio in its simplest form.
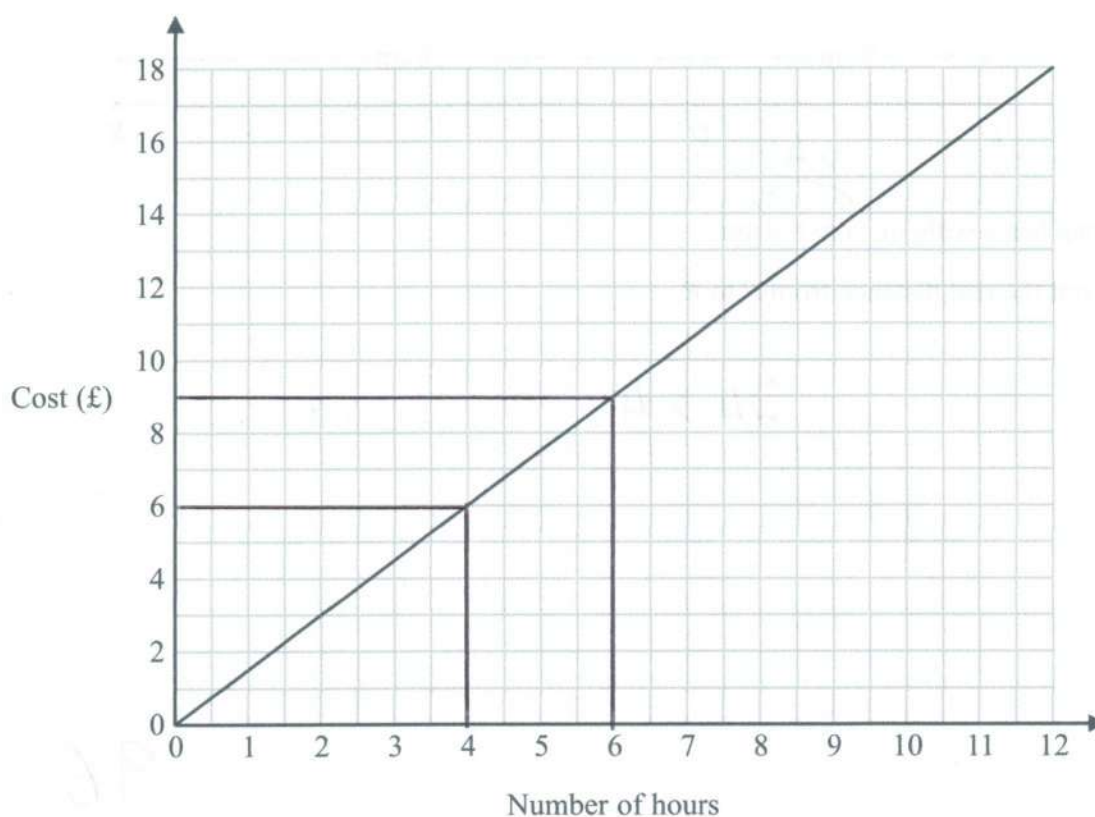
$8 : 18$

$4 : 9$

....

(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.

Cost (£)

Number of 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?

+6hrs

14 00

....

(3)

(Total for Question 10 is 4 marks)

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

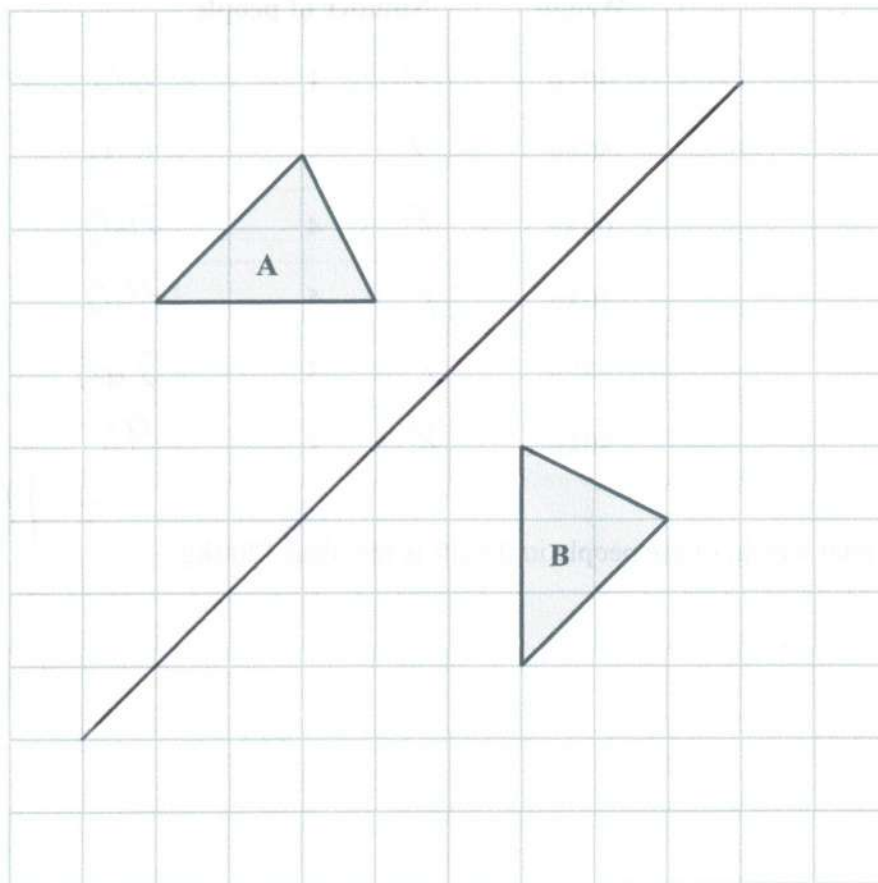| Weight	Number of people	
40 kg	X 1	40
50 kg	X 2	100
60 kg	X 4	240
70 kg	X 5	350
80 kg	X 3	240
90 kg	X 1	90

$+$

$= 1060$

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

(Total for Question 11 is 3 marks)

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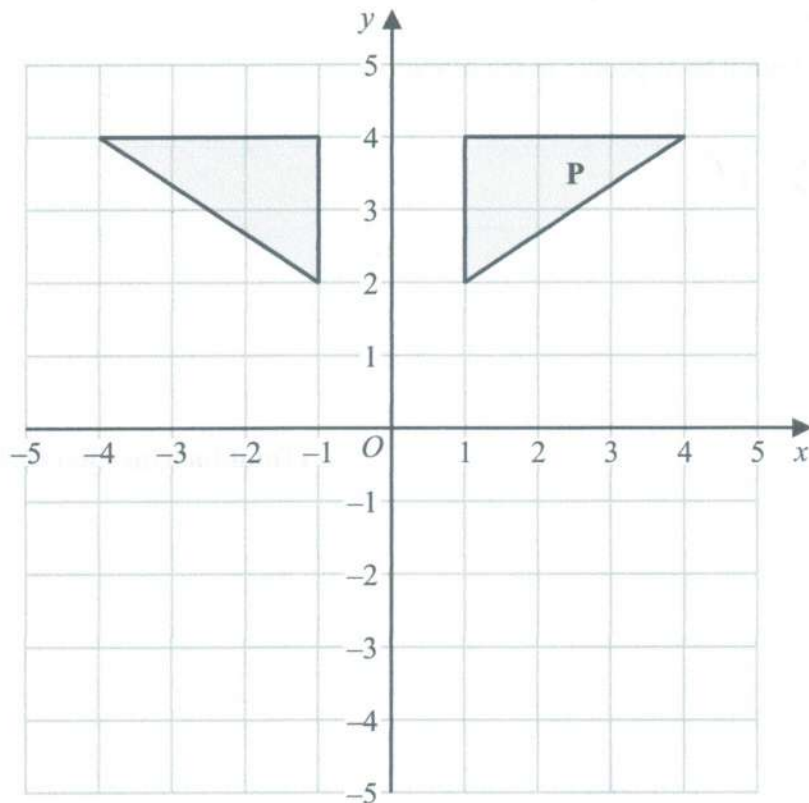

(a) On the grid, draw the mirror line.

(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.

He's reflected in y-axis not the x-axis

(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.

    50×16

    800
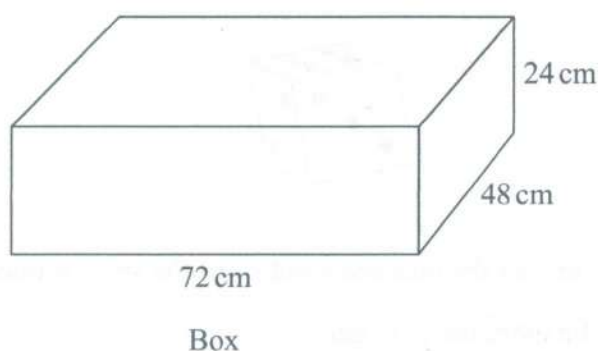
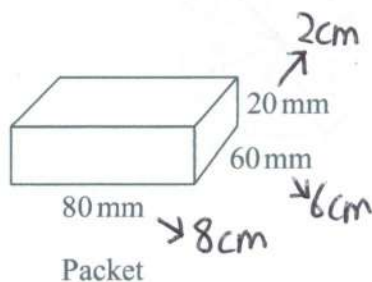   **(Total for Question 13 is 2 marks)**

14 Packets of sweets are put into boxes.

Packet

Box

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.

$$\longleftrightarrow\quad 72 \div 8 = \quad 9$$

$$\updownarrow \quad 24 \div 2 = \quad 12$$

$$\nearrow \quad 48 \div 6 = \quad 8$$

$$12 \times 9 \times 8 = 864$$

OR

864

(P) $8 \times 6 \times 2 = 96 \, cm^2$

(Total for Question 14 is 4 marks)

(B) $72 \times 48 \times 24 = 82\,944 \, cm^2$

$$82944 \div 96 = 864$$

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

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.

(D) Less than 3 is 1 or 2 $= \frac{2}{6} = \frac{1}{3} = 0.\dot{3}$

(S) Above 5 is 6, 7, 8 $= \frac{3}{8} = 0.375$

$0.375 > 0.\dot{3}$ so Charlie is more likely to score > 5 on the spinner.

16 Paulo drives at an average speed of 56 km/h for 1 hour 45 minutes. $= 1.75$ hrs

Work out the distance Paulo drives.

$$D = S \times T$$
$$= 56 \times 1.75$$
$$= 98$$

.... 98 km

(Total for Question 16 is 3 marks)

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**.

$$A \qquad B \qquad C$$
$$350 \qquad 250 \qquad x$$
$$\text{mean } 380 + 380 + 380 = 1140$$

$$1140 - 350 - 250 = x$$

$$x = 540$$

540

(Total for Question 17 is 4 marks)

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.

$$180 \div 12 = 15 \text{ packs}$$

$$15 \times 3 = 45$$

£ _____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.

$$24 \times 330 = 7920 \text{ml}$$

$$\div 79.2 \left(\begin{array}{l} 7920\text{ml} = 700\text{p} \\ 100\text{ml} = 8.838 \end{array} \right) \div 79.2$$

_____9_____ p

(3)

(Total for Question 18 is 6 marks)

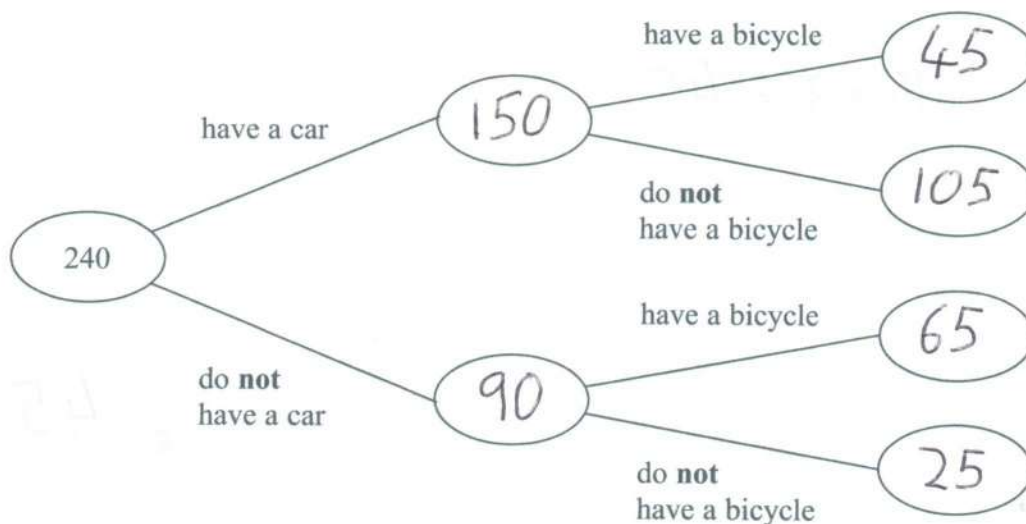**19** 240 people work at a factory.

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?

$$\frac{45}{150} \times 100$$

30 ....%

(2)

(Total for Question 19 is 5 marks)

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

Write down all the figures on your calculator display.

1.76527923

....

(2)

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

$1 \div 0.625$
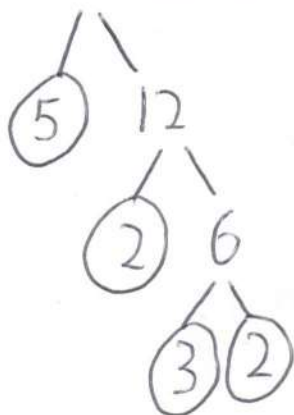
1.6

....

(1)

(Total for Question 20 is 3 marks)

21 Write 60 as a product of its prime factors.

$$5 \times 3 \times 2 \times 2$$

(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.

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.

No, $\frac{1}{3}$ are red, $\frac{2}{3}$ are blue

(Total for Question 22 is 1 mark)
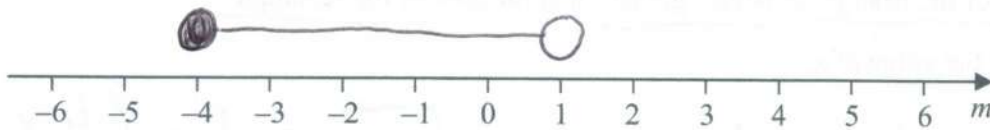
23 $-2 \leqslant n < 5$

n is an integer.

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

$-2, -1, 0, 1, 2, 3, 4$

4

(1)

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

(2)

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

$\frac{2}{5}g < 10$ ⟨+4⟩
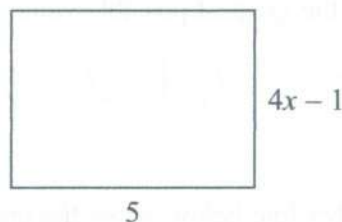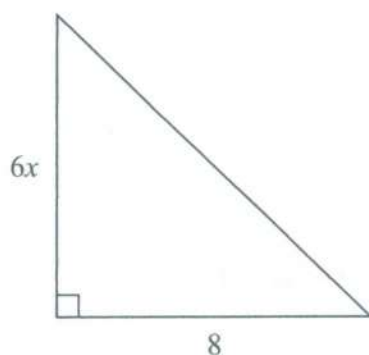
$2g < 50$ ⟨× 5⟩

$g < 25$ ⟨÷2⟩

$g < 25$

(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 $10\,\text{cm}^2$ greater than the area of the rectangle.

Work out the value of x.

$$\triangle = \frac{1}{2} \times b \times h$$

$$= \frac{1}{2} \times 8 \times 6x$$

$$= 24x$$

$$\square = 5 \times (4x - 1)$$

$$= 20x - 5$$

so $\quad 24x - 10 = 20x - 5$

$$24x = 20x + 5 \qquad \boxed{+10}$$

$$\boxed{-20x}$$

$$4x = 5$$

$$x = \frac{5}{4}$$

or

$$x = \underline{\quad 1.25 \quad}$$

(Total for Question 24 is 4 marks)

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.

$$\frac{57}{100} \times 800 = 456$$

$$glass = \frac{7}{19} \times 456$$

168 kg

(Total for Question 25 is 3 marks)

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

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

Complete the error interval for d.

$+\frac{1}{2}$ rounding
$-\frac{1}{2}$ amount

12.65 $\leqslant d < 12.75$

(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.

T: 150000×1.04^2
$= 162240$

R: 160000×1.015^2
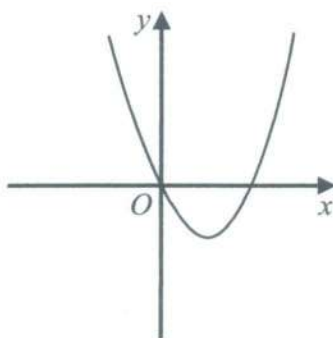$= 164836$

so <u>Rachel</u>

(Total for Question 27 is 4 marks)
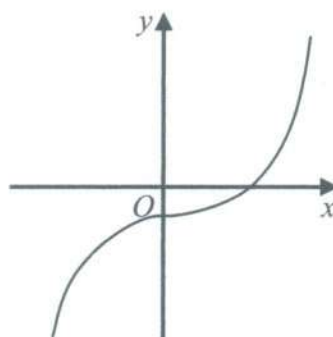
28 Here are five graphs.

A

B

C

D

E

The table shows the equations of these graphs.

Equation	Graph
$y = x^2 - 4x$	B
$y = x + 3$	D
$y = x^3 - 2$	E
$y = \dfrac{1}{x}$	C
$y = 5 - 2x$	A

Match the letter of each graph with its equation.

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS