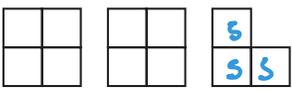
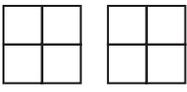
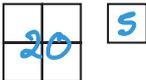
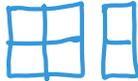


Answer ALL TWENTY SIX questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 The pictogram shows information about the number of ice creams Sandeep sold on each of four days last week.

Monday		20
Tuesday		55
Wednesday		40
Thursday		25
Friday		

Key:



represents
20 ice creams

- (a) How many ice creams did Sandeep sell on Thursday?

25

(1)

Sandeep sold 30 ice creams on Friday.

- (b) Complete the pictogram to show the number of ice creams Sandeep sold on Friday.

(1)

- (c) On which day was the least number of ice creams sold?

Monday

(1)

- (d) Work out the total number of ice creams Sandeep sold last week.

$$20 + 55 + 25 + 40 + 30$$

170

(2)

(Total for Question 1 is 5 marks)



- 2 (a) Write these numbers in order of size.
Start with the smallest number.

2.120 2.190 2.070 2.100 2.001

..... 2.001 2.070 2.1 2.12 2.19
(1)

- (b) Write down the value of 6 in the number 54.623

..... $\frac{6}{10}$
(1)

- (c) Write the number 3.4896 correct to 2 decimal places.



..... 3.49
(1)

- (d) Write 0.6 as a percentage.

..... 60 %
(1)

(Total for Question 2 is 4 marks)

- 3 (a) Simplify $4x + 5x - 2x$

..... $7x$
(1)

- (b) Simplify $4p \times 7$

..... $28p$
(1)

(Total for Question 3 is 2 marks)



- 4 (a) Change 5.48 metres into centimetres.

..... **548** cm
(1)

- (b) Change 4600 millilitres into litres.

..... **4.6** litres
(1)

Here is an isosceles triangle ABC .

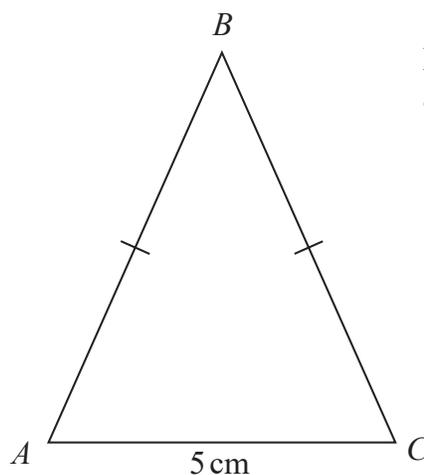


Diagram **NOT**
accurately drawn

$AC = 5$ cm.

The perimeter of the triangle is 32 cm.

- (c) Work out the length of AB .

$$32 - 5 = 27$$

$$27 \div 2 = 13.5$$

..... **13.5** cm
(2)

(Total for Question 4 is 4 marks)



5 Adisha plays basketball for her school.

Here is the number of points that she scored in each of nine games.

<u>13</u>	<u>15</u>	<u>15</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	18	19
15	16	15	18	17	15	13	19	18
✓	✓	✓		✓	✓	✓		

(a) Find the mode of the numbers of points that Adisha scored.

15

(1)

(b) Work out the range of the numbers of points that Adisha scored.

19 - 13

6

(2)

(Total for Question 5 is 3 marks)

6 Here are the first four terms of a number sequence.

4 8 12 16

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

20

(1)

(b) Explain how you found your answer to part (a).

add 4 to the previous term

(1)

(c) Find an expression, in terms of n , for the n th term of the sequence.

4n

(1)

(Total for Question 6 is 3 marks)



8 Here is a rhombus.

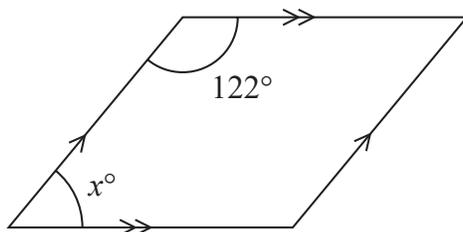


Diagram **NOT** accurately drawn

Work out the value of x .
Give a reason for your answer.

$$180 - 122 = 58$$

Co-interior angles add up to 180°

$$x = \dots\dots\dots 58$$

(Total for Question 8 is 3 marks)

9 The diagram shows a cuboid.

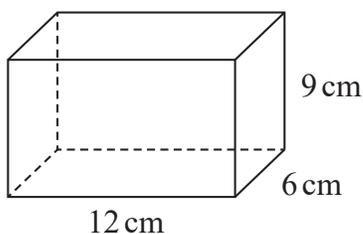


Diagram **NOT** accurately drawn

Work out the volume of the cuboid.

$$9 \times 6 \times 12$$

$$\dots\dots\dots 648 \dots\dots\dots \text{cm}^3$$

(Total for Question 9 is 2 marks)



- 10 (a) Write 25 as a fraction of 145
Give your fraction in its simplest form.

$$\frac{25}{145} = \frac{5}{29}$$

$$\frac{5}{29}$$

(2)

- (b) Work out 9 as a percentage of 25

$$\frac{9}{25} = \frac{36}{100}$$

$\xrightarrow{\times 4}$
 $\xrightarrow{\times 4}$

$$36$$

%

(2)

The cost of 16 sandwiches of the same type is 28 euros.

- (c) Work out the cost of 27 of these sandwiches.

$$\begin{array}{l}
 16 = \text{€ } 28 \\
 \div 16 \downarrow \quad \quad \quad \div 16 \\
 1 = 1.75 \\
 \times 27 \downarrow \quad \quad \quad \times 27 \\
 27 = 47.25
 \end{array}$$

$$47.25$$

euros

(2)

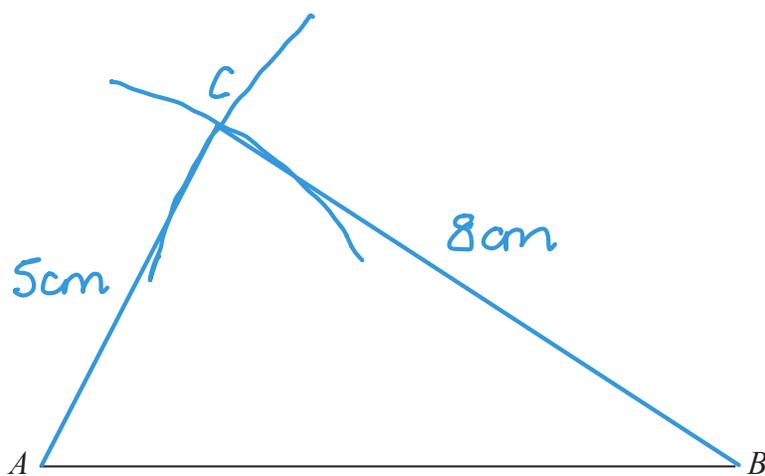
(Total for Question 10 is 6 marks)



11 ABC is a triangle.

$$AB = 9 \text{ cm}, AC = 5 \text{ cm and } BC = 8 \text{ cm.}$$

Use ruler and compasses to construct triangle ABC with AB as its base.
You must show all construction lines.
The line AB has been drawn for you.



(Total for Question 11 is 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



12 $T = 6p - 4d$

(a) Work out the value of T when $p = 8$ and $d = 3$

$$\begin{aligned} T &= 6 \times 8 - 4 \times 3 \\ &= 48 - 12 \end{aligned}$$

$$T = \underline{\quad 36 \quad} \dots\dots\dots (2)$$

$T = 6p - 4d$

(b) Work out the value of p when $T = -41$ and $d = 5$

$$\begin{aligned} -41 &= 6p - 4 \times 5 \\ -41 &= 6p - 20 \\ -41 + 20 &= 6p \\ 6p &= -21 \\ p &= -\frac{21}{6} = -\frac{7}{2} \end{aligned}$$

$$p = \underline{\quad -3.5 \quad} \dots\dots\dots (3)$$

(c) Solve $4(x - 3) = 7x + 15$

Show clear algebraic working.

$$\begin{aligned} 4x - 12 &= 7x + 15 \\ -12 - 15 &= 3x \\ -27 &= 3x \\ x &= -\frac{27}{3} \\ &= -9 \end{aligned}$$

$$x = \underline{\quad -9 \quad} \dots\dots\dots (3)$$

(Total for Question 12 is 8 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



- 13 Trains leave Agra station to go to New Delhi every 40 minutes.
Trains leave Agra station to go to Mumbai every 48 minutes.

At 6 am a train leaves Agra station to go to New Delhi and at the same time a train leaves Agra station to go to Mumbai.

Work out the next time a train leaves Agra station to go to New Delhi and at the same time a train leaves Agra station to go to Mumbai.

New Delhi	Mumbai
40	48
:	96
:	144
:	192
240	240

240 mins = 4 hours

6am \rightarrow 10am

10am

(Total for Question 13 is 3 marks)



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

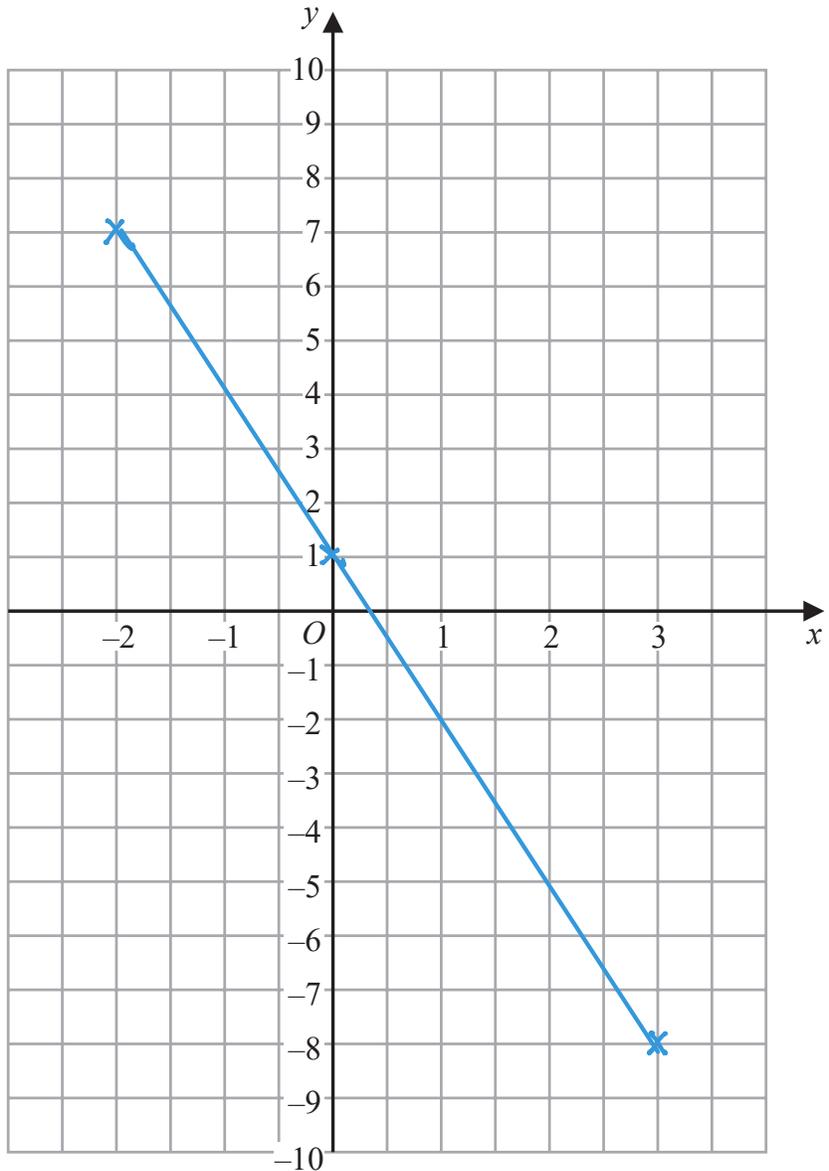
DO NOT WRITE IN THIS AREA

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

$$\begin{aligned}x &= -2 \\ y &= 1 - 3 \times -2 \\ &= 1 + 6 \\ &= 7\end{aligned}$$

$$\begin{aligned}x &= 0 \\ y &= 1\end{aligned}$$

$$\begin{aligned}x &= 3 \\ y &= 1 - 3 \times 3 \\ &= -8\end{aligned}$$



(Total for Question 14 is 3 marks)

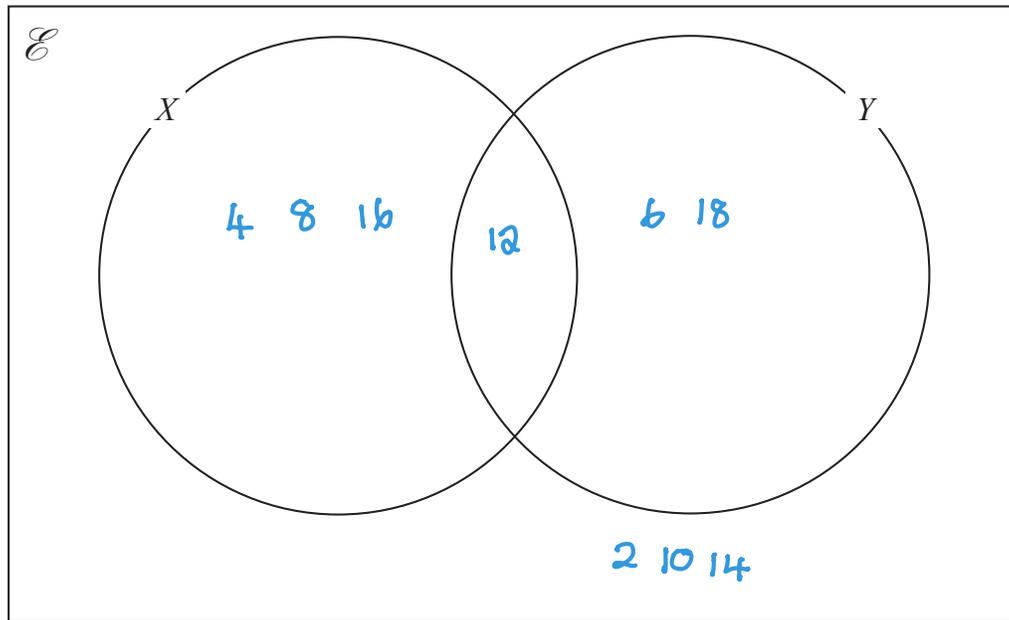


15 $\mathcal{E} = \{2, 4, 6, 8, 10, 12, 14, 16, 18\}$

$X = \{4, 8, 12, 16\}$

$Y = \{6, 12, 18\}$

(a) Complete the Venn diagram for this information.



(3)

A number is chosen at random from \mathcal{E}

(b) Find the probability that the number is in the set $X \cup Y$

$\frac{6}{9}$

(2)

(Total for Question 15 is 5 marks)



16 Ravina leaves her home at 1 35 pm in her car.

Ravina drives 60 km from her home to get to an appointment.
She drives at an average speed of 80 km/h.

At what time does Ravina get to her appointment?

$$80 \text{ km} = 1 \text{ hour}$$

$$20 \text{ km} = 15 \text{ mins}$$

$$60 \text{ km} = 45 \text{ mins}$$

$$1:35 \xrightarrow{25 \text{ mins}} 2:00 \xrightarrow{20 \text{ mins}} 2:20$$

2:20 pm

(Total for Question 16 is 3 marks)

17 (a) Write down the value of m , given that $3^4 \times 3^5 = 3^m$

$$4 + 5 = 9$$

$$m = \underline{9} \quad (1)$$

(b) Write down the value of n , given that $(5^3)^7 = 5^n$

$$5^{3 \times 7} = 5^{21}$$

$$n = \underline{21} \quad (1)$$

(c) Find the value of p , given that $\frac{7^8 \times 7^2}{7^p} = 7^6$

$$\frac{7^{10}}{7^p} = 7^{10-p}$$

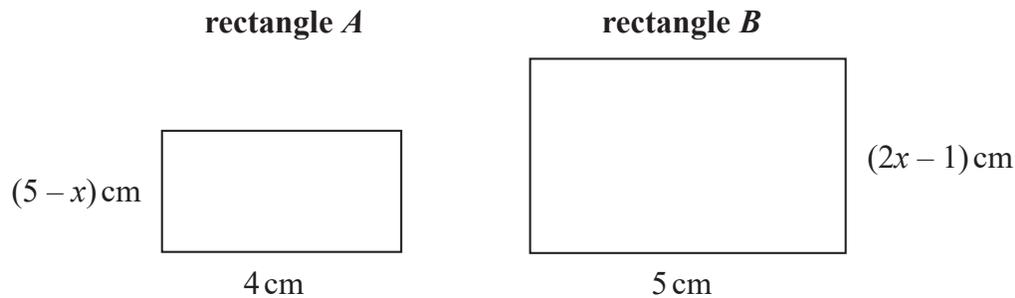
$$\text{so } 10 - p = 6$$

$$p = \underline{4} \quad (2)$$

(Total for Question 17 is 4 marks)



18 Here are two rectangles, rectangle A and rectangle B .



The area of rectangle B is twice the area of rectangle A .

Work out the value of x .
Show your working clearly.

	A	B
area	$4(5-x)$	$5(2x-1)$
	$= 20 - 4x$	$= 10x - 5$

$$B = 2A$$

$$10x - 5 = 2(20 - 4x)$$

$$10x - 5 = 40 - 8x$$

$$18x = 45$$

$$x = \frac{45}{18} = 2.5$$

$x = 2.5$

(Total for Question 18 is 4 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



- 19 The table gives information about the amounts of money, in euros, that 70 of Anjali's friends spent last Saturday.

Money spent (S euros)	Frequency
$0 < S \leq 8$	6
$8 < S \leq 16$	14
$16 < S \leq 24$	19
$24 < S \leq 32$	25
$32 < S \leq 40$	6

70

One of Anjali's 70 friends is going to be chosen at random.

- (a) Find the probability that this friend spent more than 24 euros last Saturday.

$$25 + 6 = 31$$

$$\frac{31}{70}$$

(1)

- (b) Work out an estimate for the mean amount of money spent by Anjali's friends last Saturday. Give your answer correct to 2 decimal places.

$$4 \times 6 = 24$$

$$12 \times 14 = 168$$

$$20 \times 19 = 380$$

$$28 \times 25 = 700$$

$$36 \times 6 = \underline{216}$$

$$1488$$

$$1488 \div 70$$

$$= 21.257\dots$$

↑

(2dp)

$$21.26$$

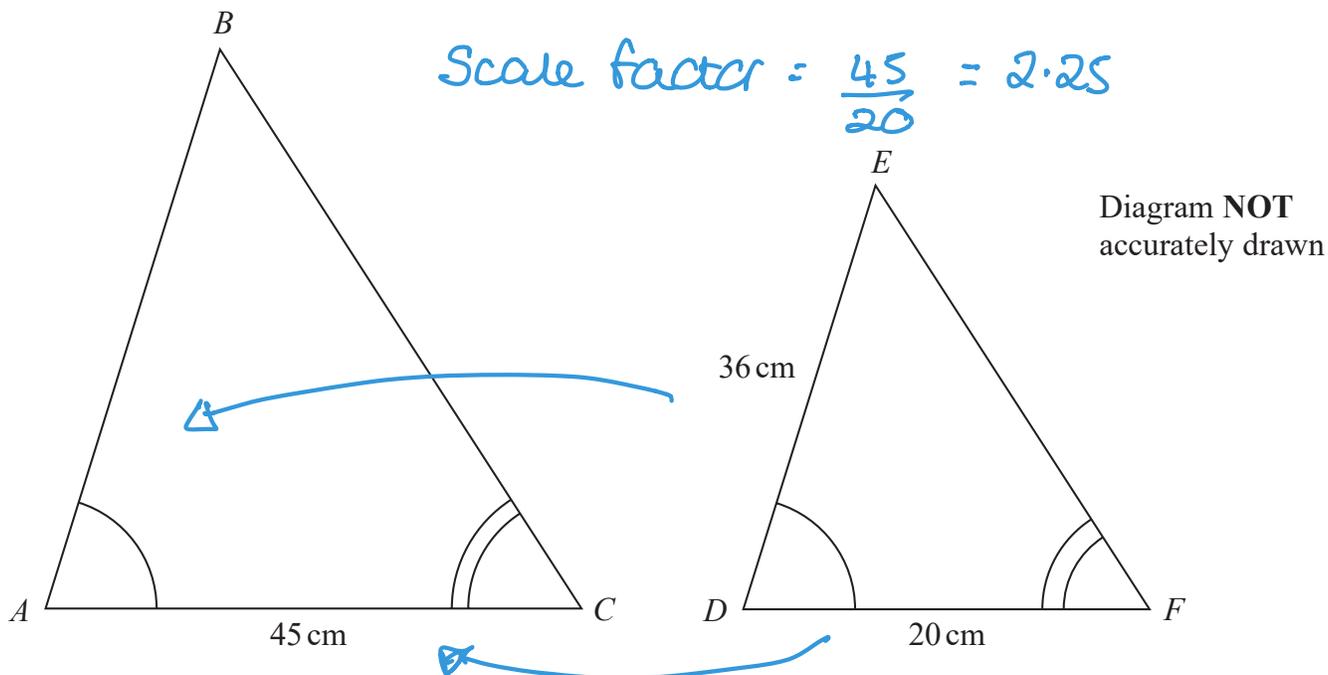
euros

(4)

(Total for Question 19 is 5 marks)



20 ABC and DEF are similar triangles.



(a) Work out the length of AB .

$$36 \times 2.25$$

..... 81 cm
(2)

Given that $BC = 54$ cm,

(b) work out the length of EF .

$$54 \div 2.25$$

..... 24 cm
(2)

(Total for Question 20 is 4 marks)



21 The diagram shows a regular octagon $ABCDHIJK$ and a pentagon $DEFGH$.

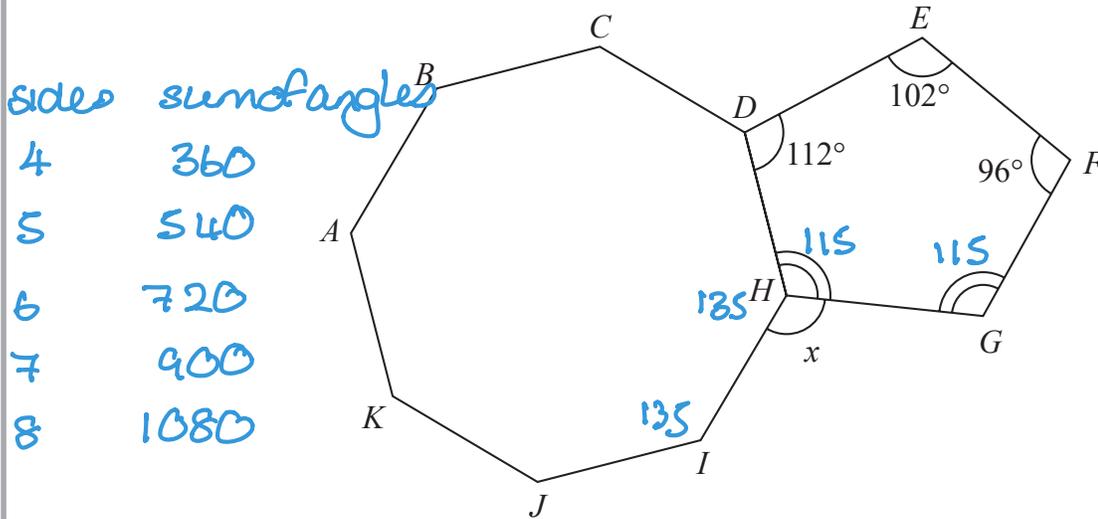


Diagram **NOT** accurately drawn

Angle $GHD =$ angle FGH .

Work out the size of the angle marked x .
Show your working clearly.

DEFGH

$$540 - (112 + 102 + 96) = 230$$

$$230 \div 2 = 115$$

Octagon

$$1080 \div 8 = 135$$

x

$$360 - (135 + 115) = 110$$

..... 110 °

(Total for Question 21 is 5 marks)



- 22 Victor buys 12 bottles of apple juice for a total cost of \$21
Victor sells all 12 bottles at \$2.45 each bottle.

Work out Victor's percentage profit.

Buys 12 for 21

Sells $12 \times 2.45 = 29.40$

Profit $29.40 - 21 = 8.40$

% $\frac{8.40}{21} \times 100$
 $= 40$

.....40.....%

(Total for Question 22 is 3 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



23 Ali and Badia each have 25 000 dollars to invest.

Cyclone Bank	Tornado Bank
Invest 25 000 dollars 4.5% compound interest per year for 3 years	Invest 25 000 dollars Receive 1150 dollars interest each year for 3 years

Ali invests in the Cyclone Bank for 3 years.

Badia invests in the Tornado Bank for 3 years.

By the end of the 3 years, Ali will have received more interest than Badia.

How much more?

Show your working clearly.

Give your answer correct to the nearest dollar.

Cyclone

$$25000 \times 1.045^3$$

$$= 28529.15\dots$$

Interest

$$= \underline{\underline{3529.15}}$$

Tornado

$$25000 + 3 \times 1150$$

$$= 28450$$

Interest

$$= 3450$$

$$\text{Difference} = 3529.15 - 3450$$

$$= 79.15$$

↑
nearest dollar

79

..... dollars

(Total for Question 23 is 4 marks)



24 (a) Simplify $(3x^2y)^0$

$$\frac{1}{\dots\dots\dots} \quad (1)$$

(b) (i) Factorise $x^2 - 5x - 36$

1, 36 2, 18 3, 12 4, 9
-9 + 4

$$(x - 9)(x + 4)$$

$$\frac{(x - 9)(x + 4)}{\dots\dots\dots} \quad (2)$$

(ii) Hence solve $x^2 - 5x - 36 = 0$

$$(x - 9)(x + 4) = 0$$

↓ ↓
9 -4

$$\frac{x = 9, x = -4}{\dots\dots\dots} \quad (1)$$

(Total for Question 24 is 4 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



- 25 A rainwater tank contains 2.4×10^7 raindrops.
The rainwater tank also contains 1.75×10^6 bacteria.

Work out the number of bacteria per raindrop in the tank.
Give your answer in standard form correct to 2 significant figures.

$$1.75 \times 10^6 \div 2.4 \times 10^7$$

$$= 0.07291\dots$$

↑

3 s.f.

$$= 0.073$$

in standard form

$$7.3 \times 10^{-2}$$

$$7.3 \times 10^{-2}$$

(Total for Question 25 is 3 marks)

Turn over for Question 26



26 ABC is an isosceles triangle with $BA = BC$.

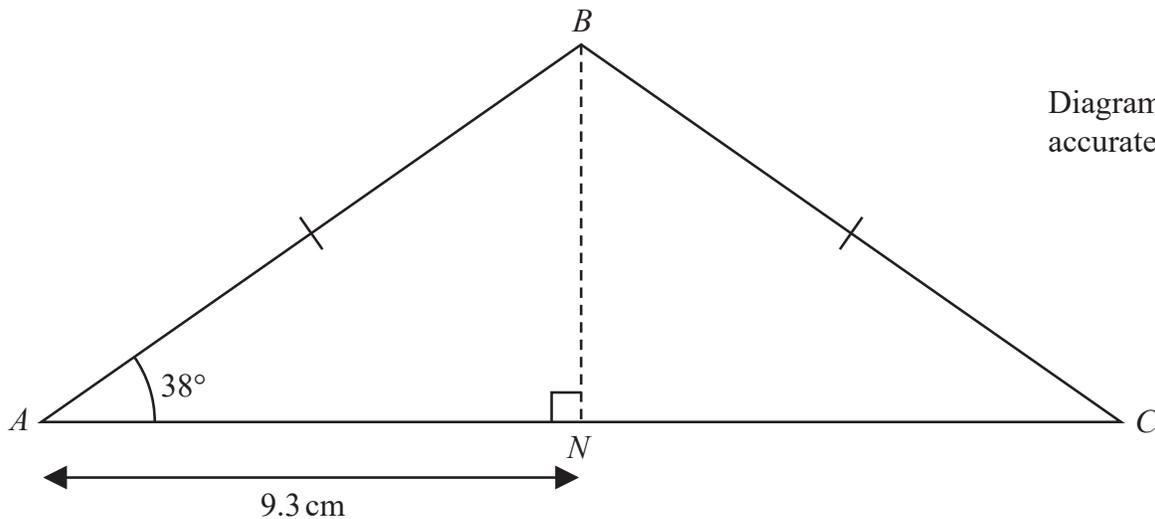
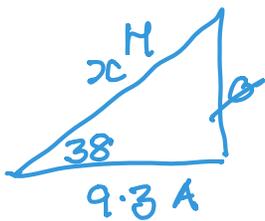


Diagram **NOT** accurately drawn

N is the point on AC such that $AN = 9.3$ cm and BN is perpendicular to AC .

Work out the perimeter of triangle ABC .

Give your answer correct to 3 significant figures.



$$\cos 38 = \frac{9.3}{x}$$

$$x = \frac{9.3}{\cos 38}$$

$$= 11.801\dots$$

$$\text{Perimeter} = 11.801\dots \times 2 + 9.3 \times 2$$

$$= 42.2037\dots$$

↑
(3sf)

42.2..... cm

(Total for Question 26 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

