Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The table gives information about six plays written by William Shakespeare.

Play	Number of words	Year written
The Taming of the Shrew	21 055	1592
Henry V	26 119	1599
Hamlet	30 557	1602
Macbeth	17 121	1606
Julius Caesar	19 703	1599
King John	20 772	1596

(*a*) Which of these six plays has the greatest number of words?

Hamlet

(1)

Two of these six plays were written in the same year.

(*b*) Write down the name of each of these plays.

Henry V and Julius Caesar **(1)**

The play Othello has 9329 more words in it than the play Macbeth.

(*c*) Work out the number of words in the play Othello.

9329 + 17121

26450 **(1)**

(*d*) Write the number 21 055 in words.

Twenty one thousand and fifty five **(1)**

(Total for Question 1 is 4 marks)

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2 Luca has 5 kg of chopped tomatoes. He also has some empty tins.
When full, each tin holds 350 g of chopped tomatoes.
Luca fills as many tins as possible with the chopped tomatoes.
Work out the weight of the chopped tomatoes remaining after Luca has filled as many tins as possible.
Give the units of your answer.

5000g ÷ 350g = 14.285...
so 14 cans

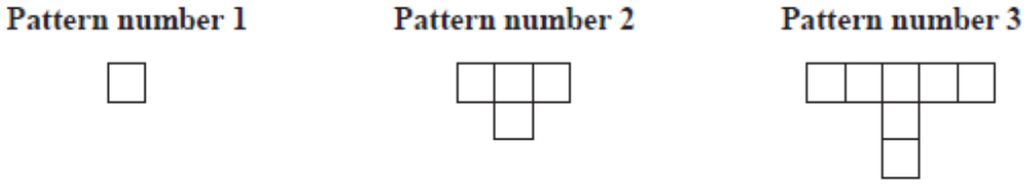
14 x 350 = 4900g in cans

remaining = 5000 - 4900

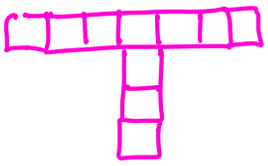
100grams

(Total for Question 2 is 4 marks)

3 A sequence of patterns is made from squares.



(*a*) In the space below, draw Pattern number 4



(1)

(*b*) Complete the table.

Pattern number	1	2	3	4	5
Number of squares	1	4	7	10	13

(1)

(*c*) Work out the number of squares in Pattern number 8

$3n - 2 \quad 3 \times 8 - 2 = 22$

22 **(1)**

Angus says :"there are 42 squares in Pattern number 15"

(*d*) Angus is incorrect. Explain why.

$3 \times 15 - 2 = 43$ There are 43 squares

(1)

(Total for Question 3 is 4 marks)

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4 (*a*) Write 0.8 as a percentage.

80 % **(1)**

(*b*) Write down the value of the 3 in the number 4.7634

$\frac{3}{1000}$ (o.e.) **(1)**

(*c*) Write these decimals in order of size. Start with the smallest decimal.

0.204 0.240 0.040 0.200 0.042

0·04 0·042 0·2 0·204 0·24 **(1)**

(*d*) Write 25.786 21 correct to 2 decimal places.

25·79 **(1)**

(*e*) Find the square root of 1296

36 **(1)**

(Total for Question 4 is 5 marks)

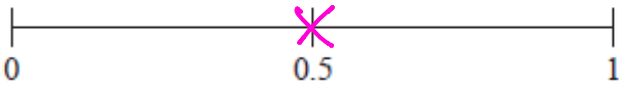
5 Adam has 8 packets of noodles.
Here is the flavour of noodles in each packet.

Hot and Spicy	Curry	Vegetarian	Hot and Spicy
Curry	Hot and Spicy	Curry	Hot and Spicy

Adam takes at random a packet of noodles.

(*a*) (i) On the probability scale, mark with a cross (×) the probability that Adam takes a packet of Hot and Spicy noodles.

$\frac{4}{8} = \frac{1}{2}$



(1)

(ii) Circle the word that best describes the likelihood that Adam takes a packet of Vegetarian noodles.

impossible | unlikely | even | likely | certain

(1)

Belinda asks 20 people to name the type of rice that they each like the best.

Here are her results.

arborio	jasmine	basmati	jasmine	basmati
basmati	arborio	wild	jasmine	jasmine
jasmine	jasmine	arborio	basmati	basmati
wild	basmati	jasmine	wild	arborio

(*b*) Complete the frequency table for Belinda's results.

Type of rice	Tally	Frequency
arborio	𝍸	4
basmati	𝍸 |	6
jasmine	𝍸 ||	7
wild	|||	3

(2)

(Total for Question 5 is 4 marks)

6 Sandeep sells 600 tickets for an event.
He receives a total of $7200 from selling the tickets.

$\frac{1}{4}$ of the tickets sold are child tickets.

The rest of the tickets sold are adult tickets.

The cost of an adult ticket is $13.60

Work out the cost of a child ticket.

600 = $7200

Child = 150

Adult = 450

450 x 13·60

= $6120

7200 - 6120

= $1080

1080 ÷ 150 = $7·20

$ 7·20

(Total for Question 6 is 4 marks)

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7 (*a*) Simplify $5p \times 9k$

45pk **(1)**

(*b*) Simplify $3e + 2f + 8e - 7f$

3e + 8e + 2f - 7f

11e - 5f **(2)**

(*c*) Solve $2d + 7 = 16$

2d = 9

$d = \frac{9}{2}$

= 4·5

$d =$ 4·5 **(2)**

(Total for Question 7 is 5 marks)

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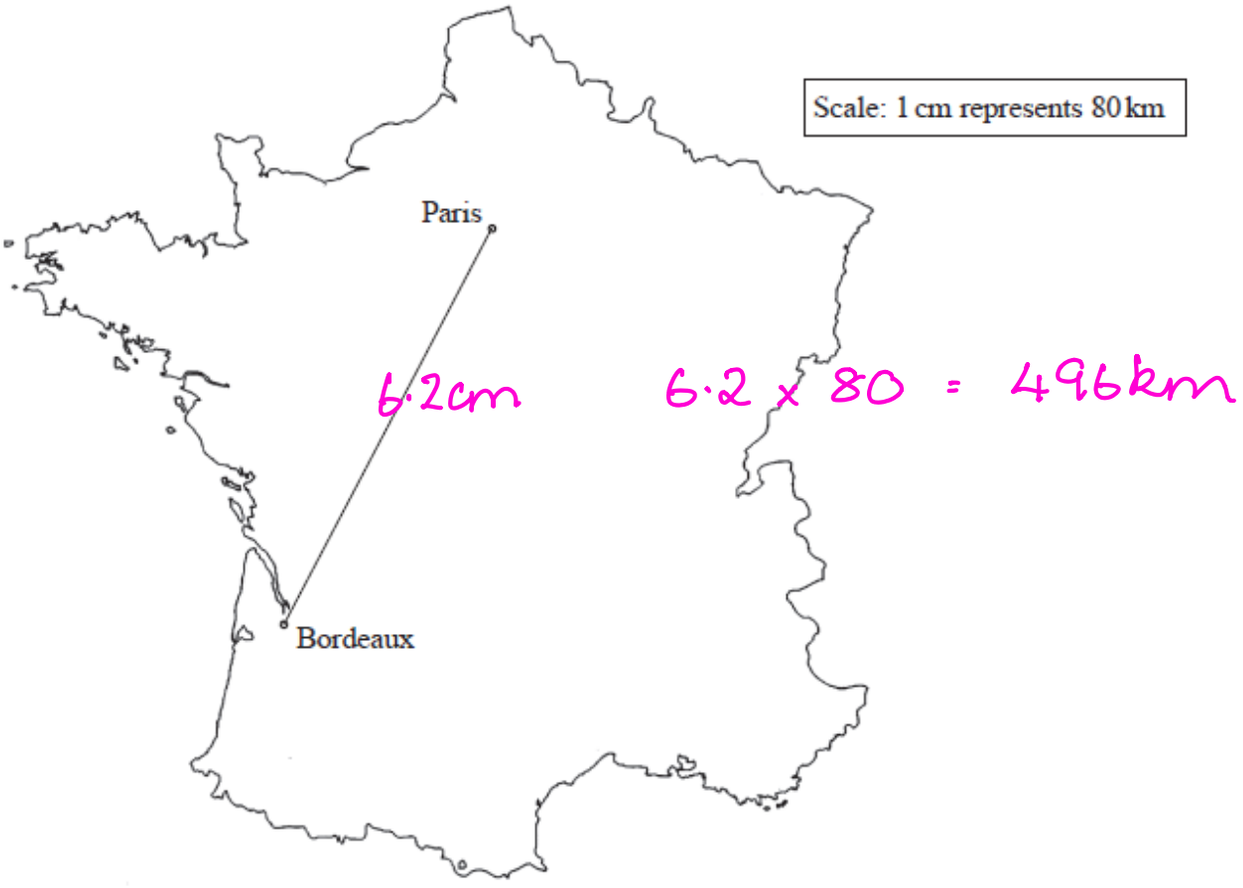
8 Here is a scale drawing showing the positions of Paris and Bordeaux.



Alain drives from Paris to Bordeaux.
The distance that he drives is 590 km.

This distance is greater than the actual straight line distance between Paris and Bordeaux.

How much greater?
Show your working clearly.

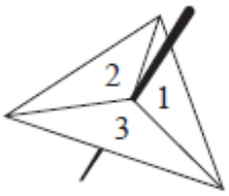
590 - 496 = 94

(This will depend on your printer settings.)

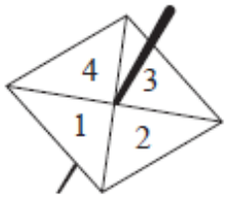
94 km

(Total for Question 8 is 4 marks)

9 Avner has two fair spinners.



Spinner A



Spinner B

Spinner **A** can land on 1, 2 or 3
Spinner **B** can land on 1, 2, 3 or 4

Avner **multiplies** the number on which spinner **A** lands by the number on which spinner **B** lands to find his score.

(*a*) Complete the table to show all possible scores. Seven of the scores have been completed for you.

		Spinner A		
		1	**2**	**3**
Spinner B	**1**	1	2	3
	2	2	4	6
	3	3	6	9
	4	4	8	12

(2)

Avner spins spinner **A** once and spinner **B** once.

(*b*) Find the probability that his score is an odd number.

$\frac{4}{12}$

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

(Total for Question 9 is 3 marks)

10 Orange squash is made from orange juice and water.

Sean has two different cartons of orange squash, carton **P** and carton **Q**.
The table gives information about the two cartons.

Carton P	**Carton Q**
Total volume of orange squash is 250 millilitres 30% of the total volume is **orange juice** and the remainder is water	Total volume of orange squash is 250 millilitres 160 millilitres of the total volume is **water** and the remainder is orange juice

Work out the difference in the volume of orange juice in carton **P** and the volume of orange juice in carton **Q**.

0.3×250
$= 75\text{ml}.$

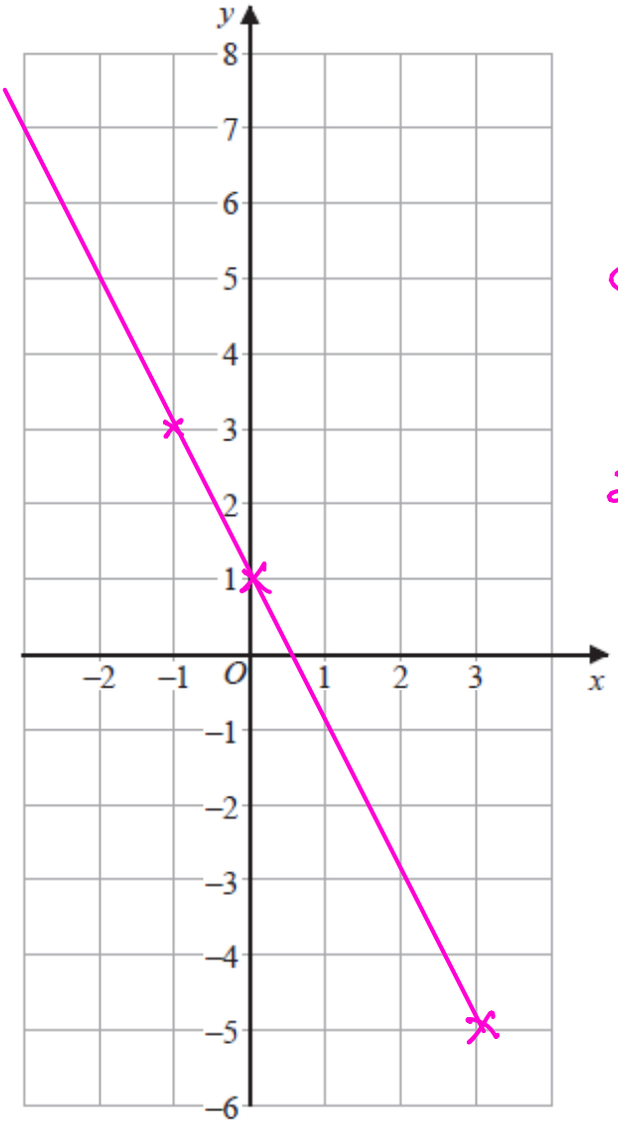
$250 - 160 = 90$

Difference $= 90 - 75$
$= 15$

15 ..... millilitres

(Total for Question 10 is 3 marks)

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



$x = -1$
$y = 1 - 2(-1)$
$= 1 + 2$
$= 3$

$x = 3$
$y = 1 - 2 \times 3$
$= 1 - 6 = -5$

$x = 0$
$y = 1$

(Total for Question 11 is 3 marks)

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12 (*a*) Show that $\frac{7}{8} - \frac{5}{12} = \frac{11}{24}$

$\frac{7}{8} = \frac{21}{24}$ $\frac{5}{12} = \frac{10}{24}$

$\frac{21}{24} - \frac{10}{24} = \frac{11}{24}$

(2)

(*b*) Find the highest common factor (HCF) of 130 and 208. Show your working clearly.

$130 = 2 \times 5 \times 13$
$208 = 2 \times 2 \times 2 \times 2 \times 13$
$HCF = 2 \times 13$
$= 26$

26 ..... **(2)**

(Total for Question 12 is 4 marks)

13 $p = t - ac$ $t = 18$ $a = -3$ $c = 5$

(*a*) Work out the value of p

$p = 18 - (-3 \times 5)$
$= 18 - -15$
$= 18 + 15 = 33$

$p =$ 33 **(2)**

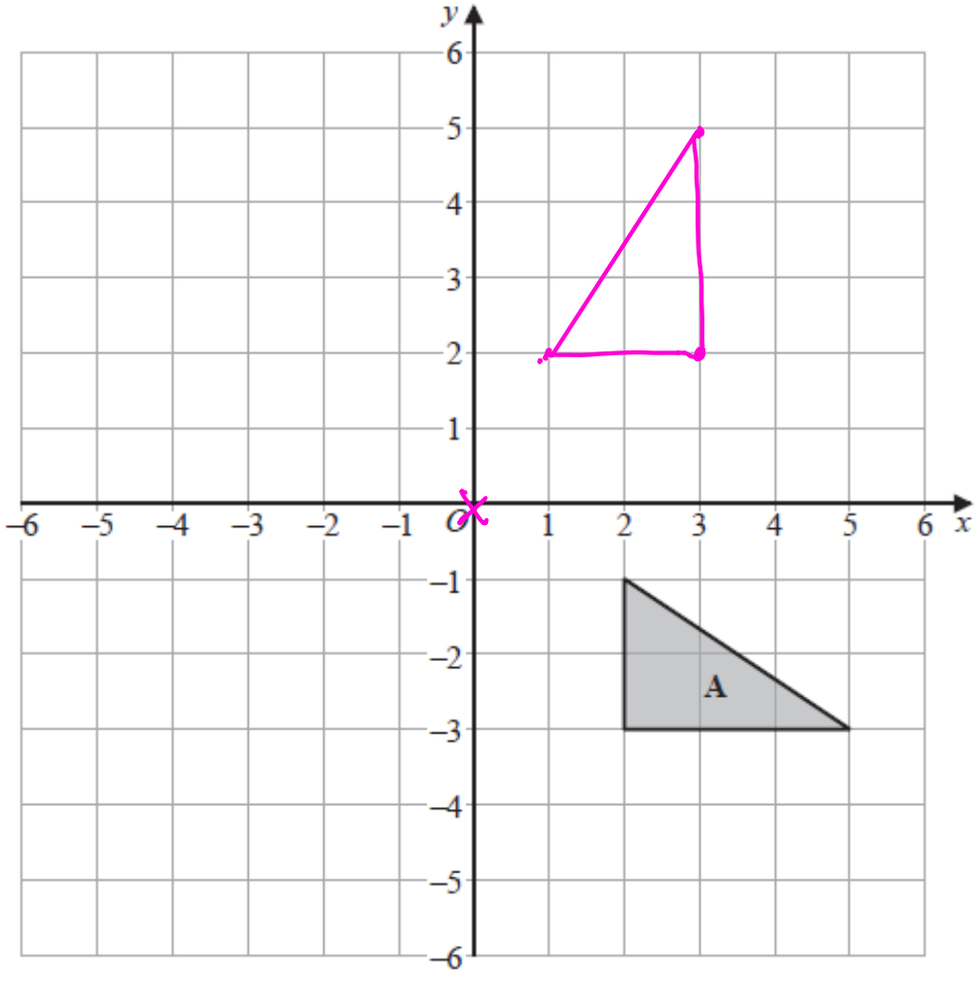
(*b*) Make x the subject of the formula $d = 3x + 10$

$d - 10 = 3x$
$x = \frac{d-10}{3}$

$x = \frac{d-10}{3}$ **(2)**

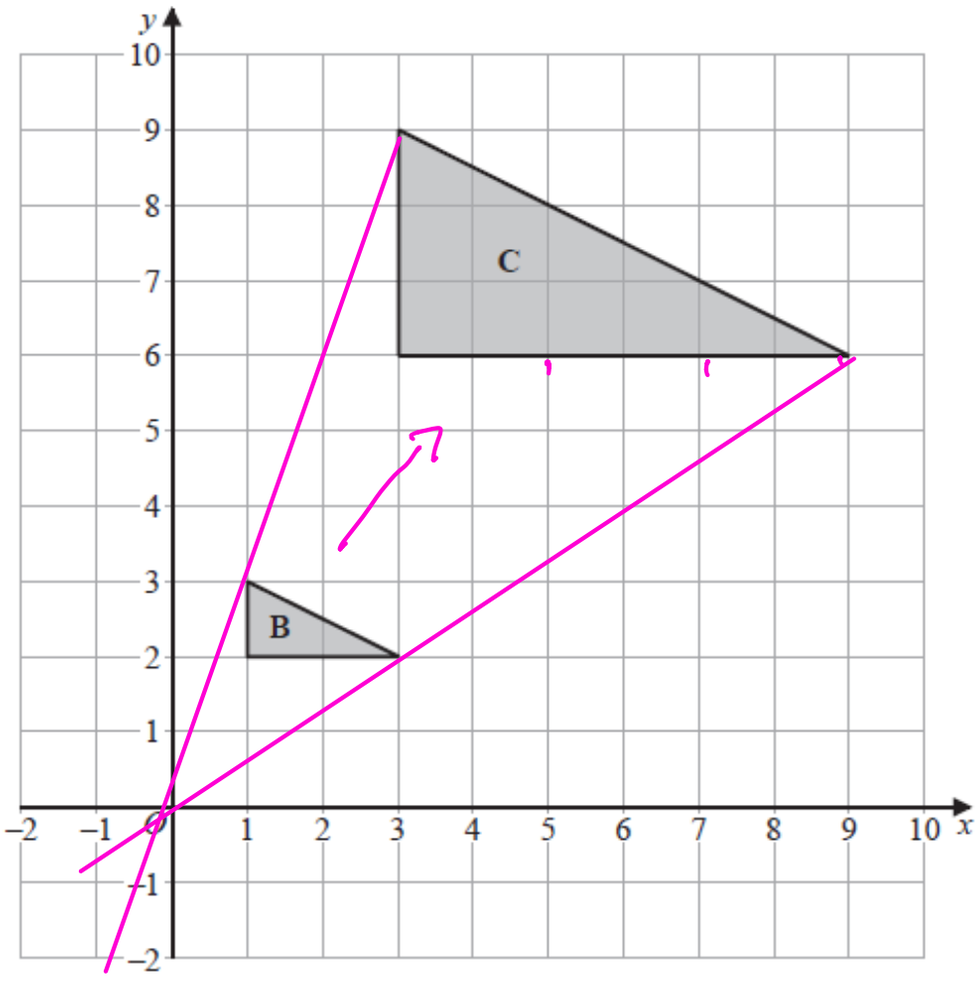
(Total for Question 13 is 4 marks)

14



(*a*) On the grid, rotate triangle **A** 90° anticlockwise about centre O

(2)



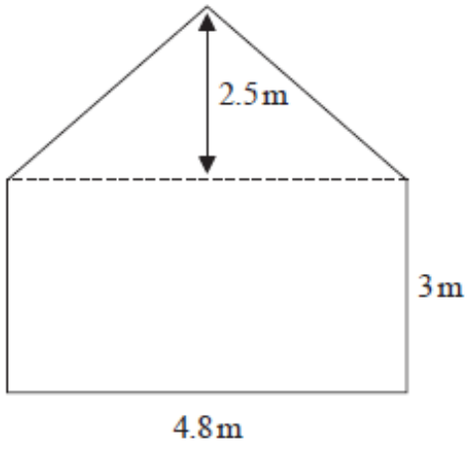
(*b*) Describe fully the single transformation that maps triangle **B** onto triangle **C**

Enlargement, scale factor 3
centre (0, 0)

(2)

(Total for Question 14 is 4 marks)

15 Here is a floor plan of a stage.
The plan is formed from a triangle and a rectangle.



The stage manager is going to paint the floor.

One tin of paint covers an area of 1.8 m^2
One tin of paint costs \$16.40

Paint can only be bought in full tins.

The stage manager has \$190 to spend.

Does the stage manager have enough money to buy enough tins to paint all of the floor?
Show your working clearly.

area = $\frac{1}{2} \times 4.8 \times 2.5 + 4.8 \times 3$

$= 6 + 14.4 = 20.4\ m^2$

Tins = $20.4 \div 1.8 = 11.\dot{3}$ tins so 12 tins

Cost = $12 \times 16.40 = \$196.80$

They do not have enough $196.80 > 190$

(Total for Question 15 is 5 marks)

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16 80 students entered a dancing competition.

The table gives information about the length of time, in minutes, for which each student spent dancing.

Time (m)	Frequency
$0 < m \leq 12$	11
$12 < m \leq 24$	25
$24 < m \leq 36$	23
$36 < m \leq 48$	15
$48 < m \leq 60$	6

Work out an estimate for the mean length of time the students spent dancing.

6 x 11 + 18 x 25 + 30 x 23
+ 42 x 15 + 54 x 6 = 2160

2160 ÷ 80 = 27

80

..... 27 ..... minutes

(Total for Question 16 is 4 marks)

17 Solve $3(2 - 4x) = 5 - 8x$ Show clear algebraic working.

$6 - 12x = 5 - 8x$

$6 - 5 = -8x + 12x$

$1 = 4x$

$x = \frac{1}{4}$

$x =$ 1/4

(Total for Question 17 is 3 marks)

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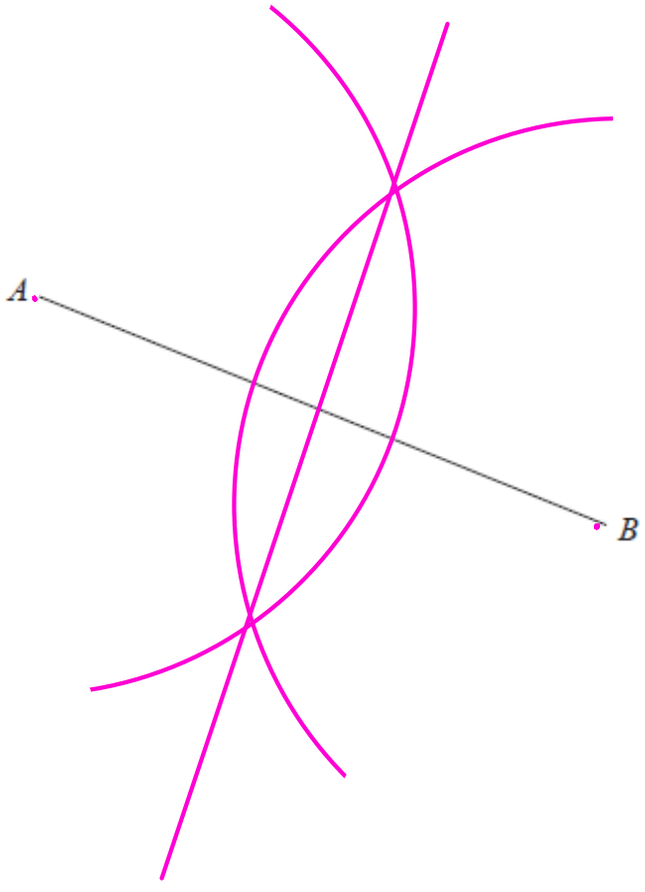
18 Use ruler and compasses only to construct the perpendicular bisector of line AB
You must show all your construction lines.



(Total for Question 18 is 2 marks)

19 The diagram shows a pentagon.

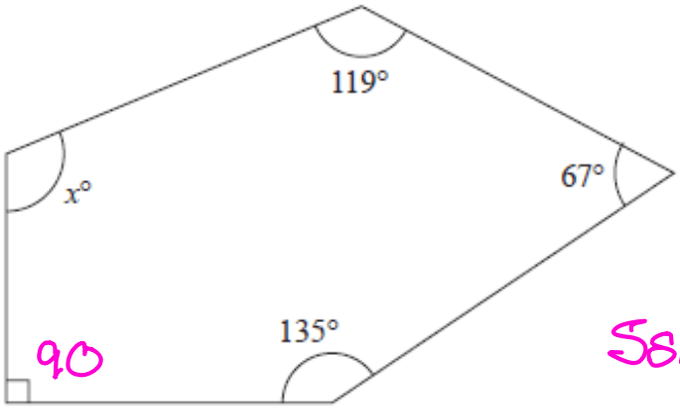


Diagram **NOT** accurately drawn

5sides = 540

Work out the value of x

$540 = 90 + 135 + 67 + 119 + x$

$80\ x = 540 - 411$

$= 129$

$x =$ 129

(Total for Question 19 is 3 marks)

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20 In a box, there are only green sweets, orange sweets and yellow sweets.

There are 280 sweets in the box so that:

the number of green sweets : the number of orange sweets = 2 : 3

and

the number of orange sweets : the number of yellow sweets = 1 : 5

Work out how many green sweets there are in the box.

G : O
2 : 3

O : Y
1 : 5 ×3
3 15

so G : O : Y
2 3 15

280 ÷ 20 = 14

Green = 2 × 14 = 28

28

(Total for Question 20 is 3 marks)

21 Shane bought a car. The amount Shane paid for the car was $32 000

Theresa also bought a car. To pay for this car, Theresa paid a deposit of $18 000 together with 14 monthly payments of $1160

Theresa paid more for her car than Shane paid for his car.

(*a*) Work out how much more Theresa paid as a percentage of the amount Shane paid.

Shane
32000

Theresa
18000 + 14 x 1160 = 34240

Difference = 2240

% = $\frac{2240}{32000}$ x 100 = 7

7 ..... % **(4)**

Kylie bought a van. After 1 year, the value of the van was $39 865
During this year, the value of the van decreased by 15%

(*b*) Work out the value of the van when Kylie bought it.

85% = 39865
÷85
1% = 469
x100
100% = 46900

$ 46900 ..... **(3)**

(Total for Question 21 is 7 marks)

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22 Some members of a library were asked to name the type of book that they each liked to read the best.

One of the members is chosen at random. The table shows information about the probability of the type of book that this member answered.

Type of book	comedy	romance	mystery	thriller
Probability	0.24	0.40	3*x*	*x*

0.27 0.09

48 members answered comedy books.

0.64

1 - 0.64 = 0.36

Work out how many of the members answered mystery books.

0.36 ÷ 4 = 0.09

0.24 = 48
÷ 24
0.01 =
x 27
0.27 = 54

54 .....

(Total for Question 22 is 4 marks)

23 The diagram shows a triangle ABC inside a semicircle.

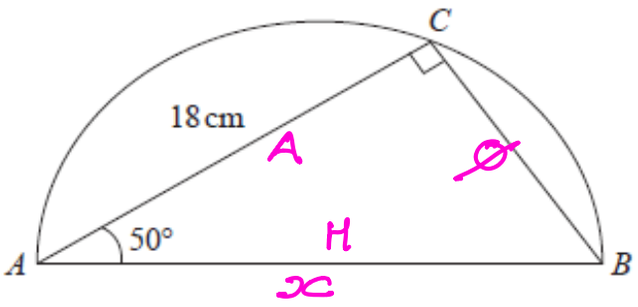
A, B and C are points on the semicircle.

AB is the diameter of the semicircle.

Angle $ACB = 90°$ Angle $BAC = 50°$
$AC = 18$ cm

Work out the perimeter of the semicircle.
Give your answer correct to 2 significant figures.

$C = \pi d$ $A = \pi r^2$



$\cos 50 = \frac{18}{x}$ $x = \frac{18}{\cos 50} = 28.00...$

so diameter = 28.00 radius = 14 cm

Perimeter = $\frac{1}{2} \times \pi \times 28 + 28$

$= 71.9822...$

72 ..... cm

(Total for Question 23 is 5 marks)

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24 (*a*) Write 6.25×10^{-4} as an ordinary number.

0.000625 ..... **(1)**

(*b*) Work out $(2.4 \times 10^{12}) \div (9.6 \times 10^{4})$ Give your answer in standard form.

2.5×10^{7} ..... **(2)**

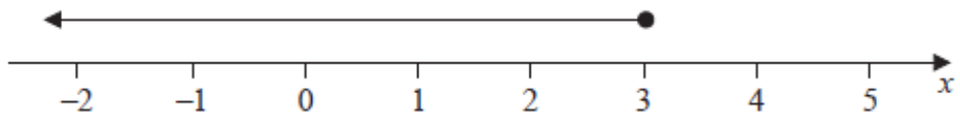
(Total for Question 24 is 3 marks)

25 (*a*) Factorise $y^2 - 2y - 48$

1, 48 4, 12 6 × 8 = 48
2, 24 6, 8 +6 −8
3, 16

$(y+6)(y-8)$ ..... **(2)**

(*b*) Write down the inequality shown on the number line



$x \leqslant 3$ ..... **(1)**

(*c*) Solve the inequality $7w + 6 > 12w + 14$

$+6 - 14 > 12w - 7w$

$-8 > 5w$

$\frac{-8}{5} > w$

$w < -\frac{8}{5}$

$w < -\frac{8}{5}$ ..... **(3)**

(Total for Question 25 is 6 marks)

TOTAL FOR PAPER IS 100 MARKS