

Answer ALL THIRTY FIVE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Solve $5 + x = 12$

$$5 + \underline{7} = 12$$

$$x = \underline{7}$$

(Total for Question 1 is 1 mark)

2 Write 0.8 as a percentage.

$$0.8 \times 100 \\ = 80$$

$$\underline{80} \%$$

(Total for Question 2 is 1 mark)

3 Expand $5(2 + 3h)$

$$5 \times 2 = 10 \\ 5 \times 3h = 15h$$

$$\underline{10 + 15h}$$

(Total for Question 3 is 1 mark)

4 Solve $\frac{y}{6} = 3$

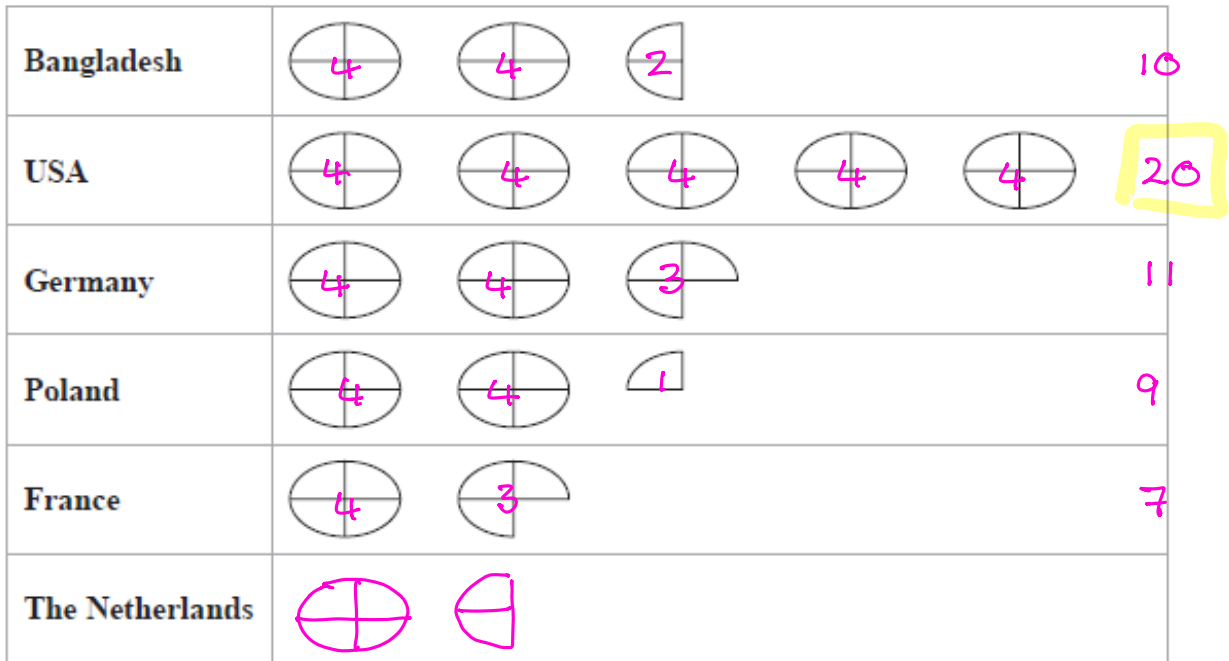
$$\cancel{\times 6} \frac{y}{\cancel{6}} = 3 \times 6 \\ y = 18$$


$$y = \underline{18}$$

(Total for Question 4 is 1 mark)

$$\text{check: } \frac{18}{6} = 3 \checkmark$$

- 5 The pictogram shows information about the total weight of potatoes grown last year in each of five countries.



Key:  represents 4 million tonnes of potatoes

The pictogram shows one country where the total weight of potatoes grown last year was 20 million tonnes.

- (a) Which country?

..... USA (1)

Last year, the weight of potatoes grown in The Netherlands was 6 million tonnes.

- (b) Show this information on the pictogram. ✓ (1)

- (c) Work out the total weight of potatoes grown in Germany and in France last year.

11 7

$11 + 7 = 18$

..... 18 million tonnes (2)

(Total for Question 5 is 4 marks)

6 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.

$$\begin{array}{r} 17121 \\ + 9329 \\ \hline 26450 \end{array}$$

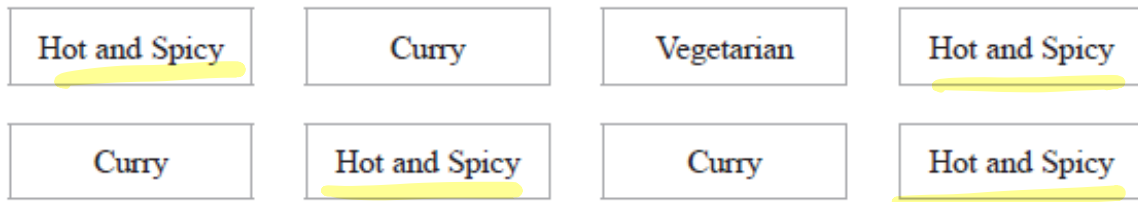
..... 26 450 (1)

(d) Write the number 21 055 in words.

..... Twentyone thousand and fifty five (1)

(Total for Question 6 is 4 marks)

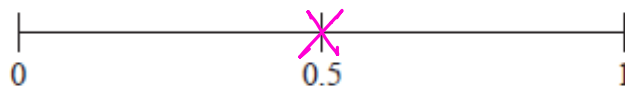
7 Adam has 8 packets of noodles.
Here is the flavour of noodles in each packet.



Adam takes at random a packet of noodles.

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

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



(1)

(ii) Circle the word that best describes the likelihood that Adam takes a packet of Vegetarian noodles. $\frac{1}{8}$



(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 ✓
- basmati ✓
- wild ✓
- basmati ✓
- jasmine ✓
- arborio ✓

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

Type of rice	Tally	Frequency
arborio		4
basmati	1	6
jasmine	11	7
wild		3

(2)

$$\text{check } 4 + 6 + 7 + 3 = 20 \checkmark$$

(Total for Question 7 is 4 marks)

8 (a) Simplify $5p \times 9k$

$$5 \times 9 \times p \times k = 45pk$$

$$45pk$$

(1)

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

$$3e + 8e + 2f - 7f$$

$$11e - 5f$$

$$11e - 5f$$

(2)

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

$$2d + 7 = 16$$

$$\begin{array}{r} -7 \\ \hline \end{array}$$

$$2d = 9$$

$$\begin{array}{r} \div 2 \\ \hline \end{array}$$

$$d = 4.5$$

$$d = 4.5$$

(2)

(Total for Question 8 is 5 marks)

- 9 Here are four cards.
Each card has a number on it.



These four cards are arranged to make the number 5763

- (a) Arrange the four cards to make the smallest possible number.



(1)

- (b) Arrange the four cards to make the largest possible even number.



(1)

- (c) Arrange two of the cards to make a prime number.



(1)

- (d) Arrange two of the cards to make a multiple of 8



(1)

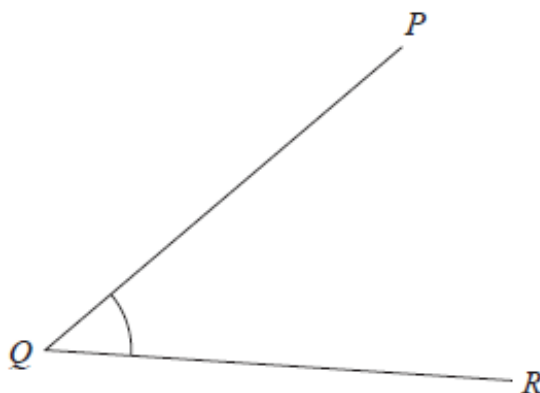
(Total for Question 9 is 4 marks)

10 (a) In the space below, draw a line of length 6.5 cm

line of length 6.5cm
drawn

(1)

The diagram shows the straight lines QP and QR



(b) Measure the size of angle PQR

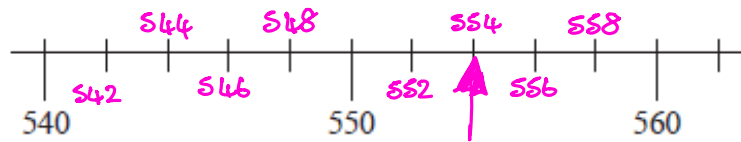
.....⁴⁴°
(accept 42-46) (1)
(Total for Question 10 is 2 marks)

11 Simplify $c \times c \times c \times c \times c$

c^5
(not 5c)

.....^{c⁵}
(Total for Question 11 is 1 mark)

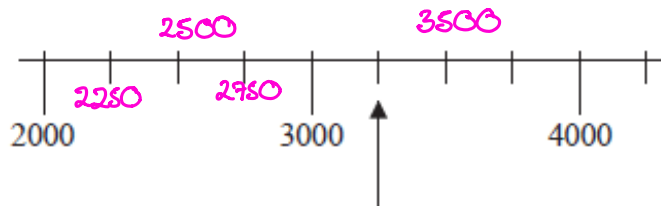
12 Here is a number scale.



(a) On the scale, mark with an arrow () the number 554

(1)

Here is a different number scale.



(b) Write down the number shown marked by the arrow.

..... 3250

(1)

(Total for Question 12 is 2 marks)

13 Work out the value of $(4 + 3 + 6)^2$

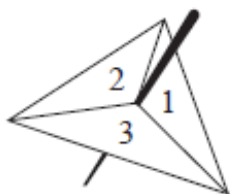
$$13^2$$

$$13 \times 13 = 169$$

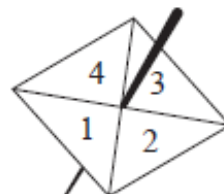
..... 169

(Total for Question 13 is 1 mark)

14 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

LOOK

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	9	12

(2)

Avner spins spinner A once and spinner B once.

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

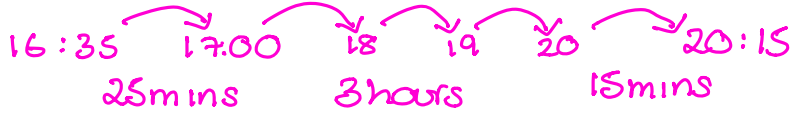
$$\frac{4}{12}$$

(1)

(Total for Question 14 is 3 marks)

- 15 Roberta goes out for a walk.
 She leaves home at 16 35
 She arrives back home at 20 15 on the same day.

Work out for how much time Roberta is out for her walk.



..... 3 hours 40 minutes

(Total for Question 15 is 2 marks)

- 16 Write these decimals in order of size.
 Start with the smallest decimal.

0.204 0.240 0.040 0.200 0.042

0.204 4
 0.240 5
 0.040 1
 0.200 3
 0.042 2

..... 0.04 0.042 0.2 0.204 0.24

(Total for Question 16 is 1 mark)

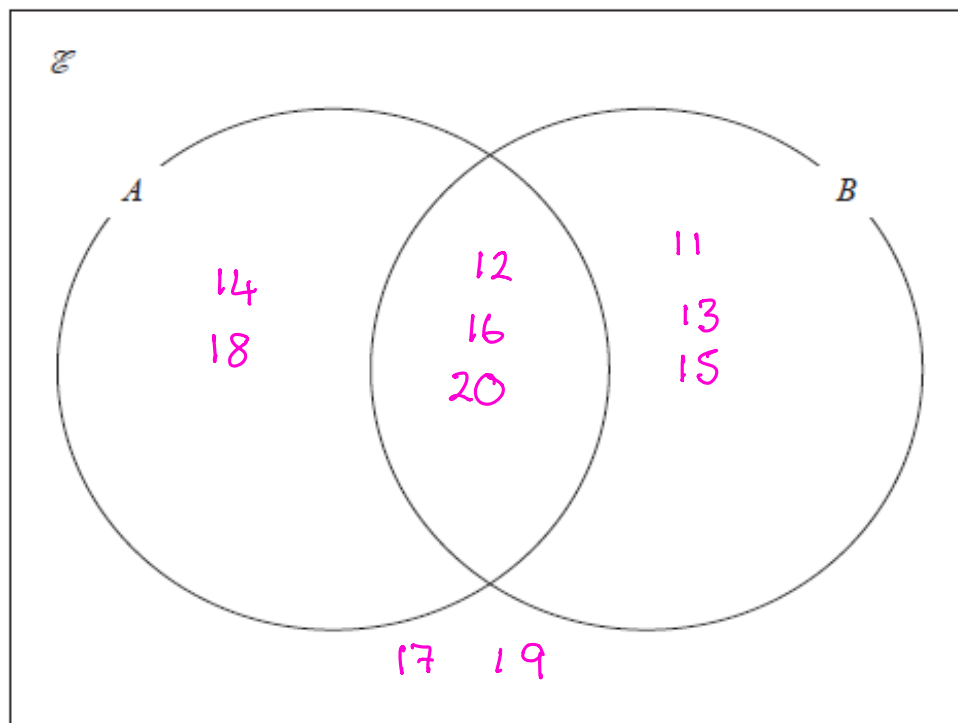
17 $\mathcal{E} = \{11, 12, 13, 14, 15, 16, 17, 18, 19, 20\}$

$A = \{\text{even numbers}\}$ \checkmark 12 \checkmark 14 \checkmark 16 \checkmark 18 \checkmark 20

$A \cap B = \{12, 16, 20\}$ intersection

$(A \cup B)' = \{17, 19\}$ not A or B

Complete the Venn diagram for the sets \mathcal{E} , A and B



(Total for Question 17 is 3 marks)

18 Show that $\frac{7}{8} - \frac{5}{12} = \frac{11}{24}$

$$\frac{7}{8} \times 3 = \frac{21}{24}$$

$$\frac{5}{12} \times 2 = \frac{10}{24}$$

so $\frac{21}{24} - \frac{10}{24} = \frac{11}{24}$
as required.

(Total for Question 18 is 2 marks)

19 $p = t - ac$

$$\begin{aligned} t &= 18 \\ a &= -3 \\ c &= 5 \end{aligned}$$

Work out the value of p

$$\begin{aligned} p &= t - ac \\ &= 18 - (-3 \times 5) \\ &= 18 - (-15) \\ &= 18 + 15 \\ &= 33 \end{aligned}$$

$p = \dots 33 \dots$

(Total for Question 19 is 2 marks)

20 Write $25.\underline{7}8621$ correct to 2 decimal places.

$$25.\underline{7}\underline{8}621$$

$$\dots\dots\dots 25.79$$

(Total for Question 20 is 1 mark)

21 $64 = 4^n$

Write down the value of n

$$4 \times 4 = 16$$

$$16 \times 4 = 64$$

$$\text{so } 4 \times 4 \times 4 = 64$$

$$4^3 = 64$$

$$n = \dots\dots\dots 3$$

(Total for Question 21 is 1 mark)

22 Factorise $g^2 + 7g$

$$g \times g \quad 7 \times g$$

$$g(g + 7)$$

$$\dots\dots\dots g(g + 7)$$

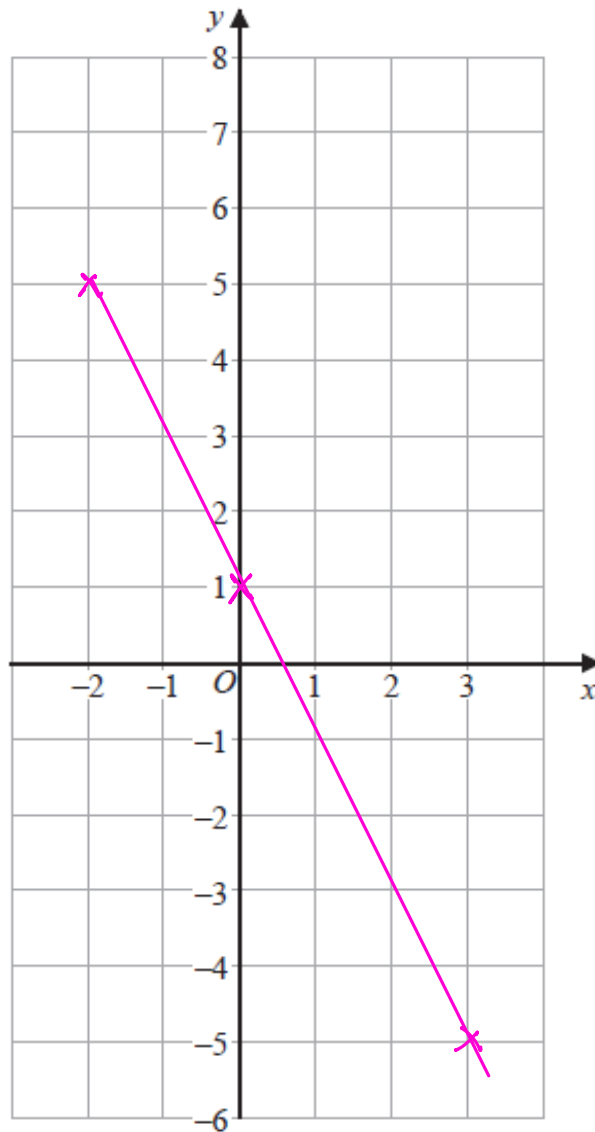
(Total for Question 22 is 1 mark)

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

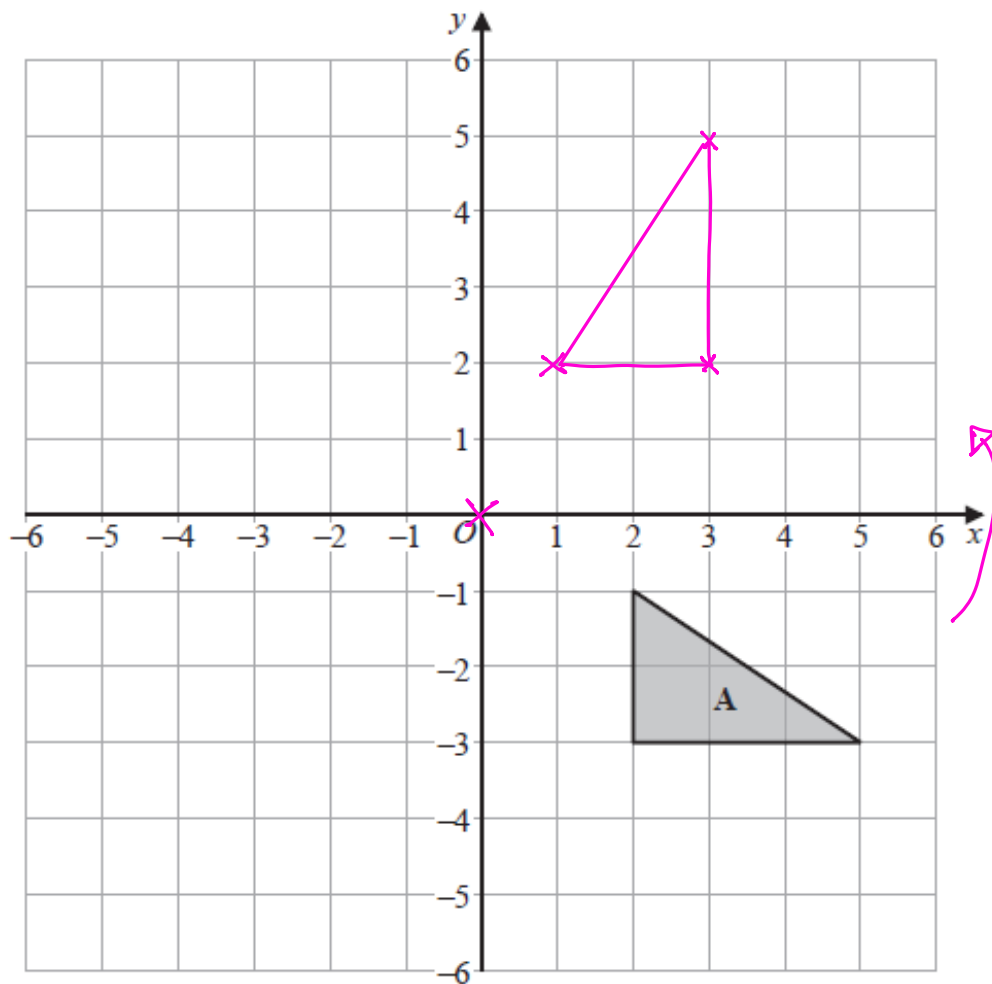
$$x = 3$$
$$y = 1 - 2 \times 3$$
$$= 1 - 6 = -5$$

$$x = 0$$
$$y = 1 - 2 \times 0$$
$$= 1$$

$$x = -2$$
$$y = 1 - 2 \times -2$$
$$= 1 + 4$$
$$= 5$$

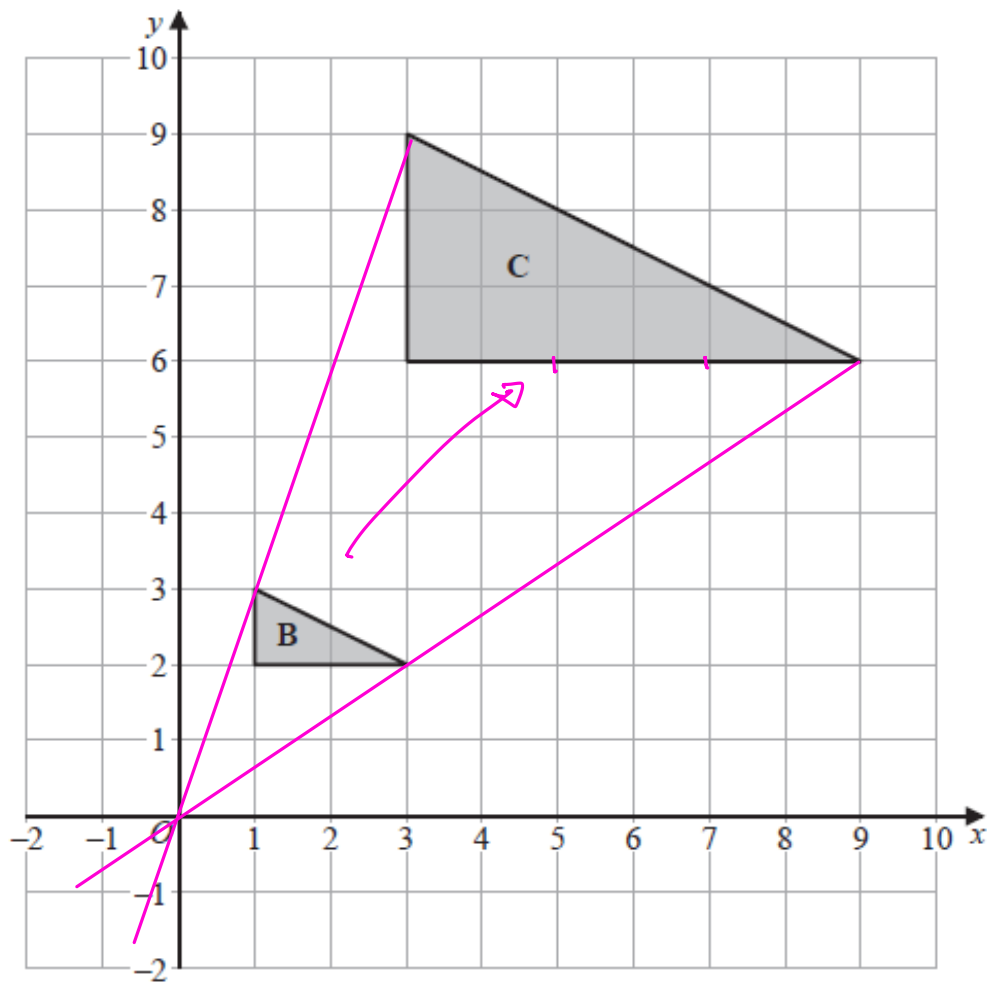


(Total for Question 23 is 3 marks)



(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 24 is 4 marks)

25 Show that $3\frac{5}{7} \div 1\frac{5}{8} = 2\frac{2}{7}$

$$3\frac{5}{7} = \frac{26}{7}$$

$$\frac{26}{7} \div \frac{13}{8}$$

$$1\frac{5}{8} = \frac{13}{8}$$

$$= \frac{\cancel{26}^2}{7} \times \frac{\cancel{8}_2}{\cancel{13}_1}$$

$$= \frac{16}{7}$$

$$\frac{16}{7} = 2\frac{2}{7} \text{ as required}$$

(Total for Question 25 is 3 marks)

26 Write down the value of $(m + 2)^0$ where m is a positive integer.

anything to the power of 0 = 1

1

(Total for Question 26 is 1 mark)

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

$$3(2 - 4x) = 6 - 12x$$

$$\begin{array}{r} 6 - 12x \\ +12x \end{array} = \begin{array}{r} 5 - 8x \\ +12x \end{array}$$

$$\begin{array}{r} 6 \\ -5 \end{array} = \begin{array}{r} 5 \\ -5 \end{array} + 4x$$

$$1 = 4x$$

$$4x = 1$$

$$x = \frac{1}{4} \text{ OR } 0.25$$

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

(Total for Question 27 is 3 marks)

- 28 Make x the subject of the formula $d = 3x + 10$

$$\begin{array}{r} d = 3x + 10 \\ -10 \end{array} \quad \begin{array}{r} -10 \\ -10 \end{array}$$

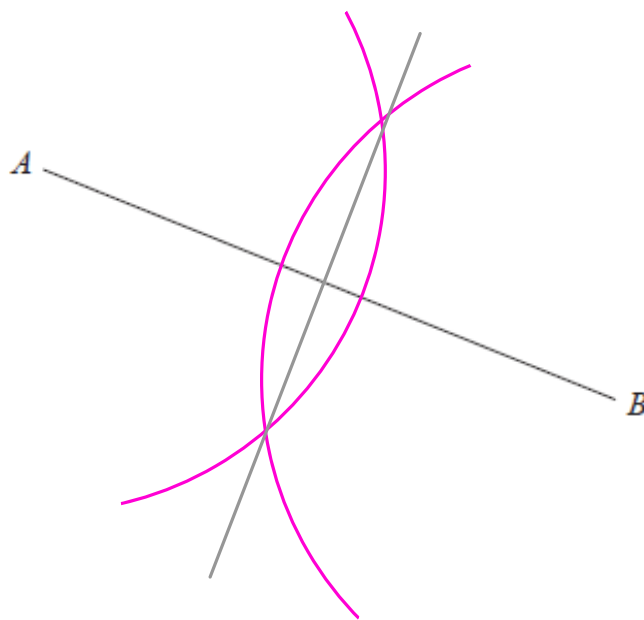
$$d - 10 = 3x$$

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

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

(Total for Question 28 is 2 marks)

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



(Total for Question 29 is 2 marks)

30 Solve the simultaneous equations

$$5x + 4y = -2 \quad \times 2$$

$$2x - y = 4.4 \quad \times 5$$

Show clear algebraic working.

$$\begin{array}{r}
 10x + 8y = -4 \\
 10x - 5y = 22 \\
 \hline
 + 13y = -26 \\
 y = -2
 \end{array}$$

$$\begin{array}{r}
 4 \cdot 4 \\
 \times 5 \\
 \hline
 22 \cdot 3 \\
 2
 \end{array}$$

sub into $2x - y = 4.4$
 $2x - (-2) = 4.4$
 $2x + 2 = 4.4$
 $2x = 2.4$
 $x = 1.2$

$x = 1.2$

$y = -2$

(Total for Question 30 is 3 marks)

31 Simplify $(3a^2b^4)^3$

$$3^3 a^{2 \times 3} b^{4 \times 3}$$

$$27 a^6 b^{12}$$

$$27 a^6 b^{12}$$

(Total for Question 31 is 2 marks)

32 Factorise fully $14x^2y^4 + 21x^3y^2$

$$\begin{array}{c}
 2 \times 7 \\
 x \times x \\
 y \times y \times y \times y
 \end{array}$$

$$\begin{array}{c}
 3 \times 7 \\
 x \times x \times x \\
 y \times y
 \end{array}$$

$$7x^2y^2(2y^2 + 3x)$$

(Total for Question 32 is 2 marks)

33 The diagram shows an isosceles triangle, with base length 24 cm.

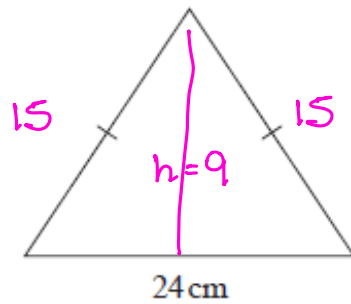
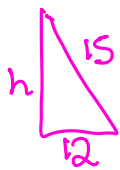


Diagram NOT accurately drawn

$h = \text{height}$

The perimeter of the triangle is 54 cm. $\leftarrow 54 - 24 = 30 \quad 30 \div 2 = 15$

Work out the area of the triangle.



$$15^2 - 12^2 = 225 - 144 = 81$$

$$\sqrt{81} = 9$$

$$\begin{array}{r} 225 \\ -144 \\ \hline 81 \end{array}$$

$$\text{so area} = \frac{24 \times 9}{2} = 108$$

.....108..... cm^2

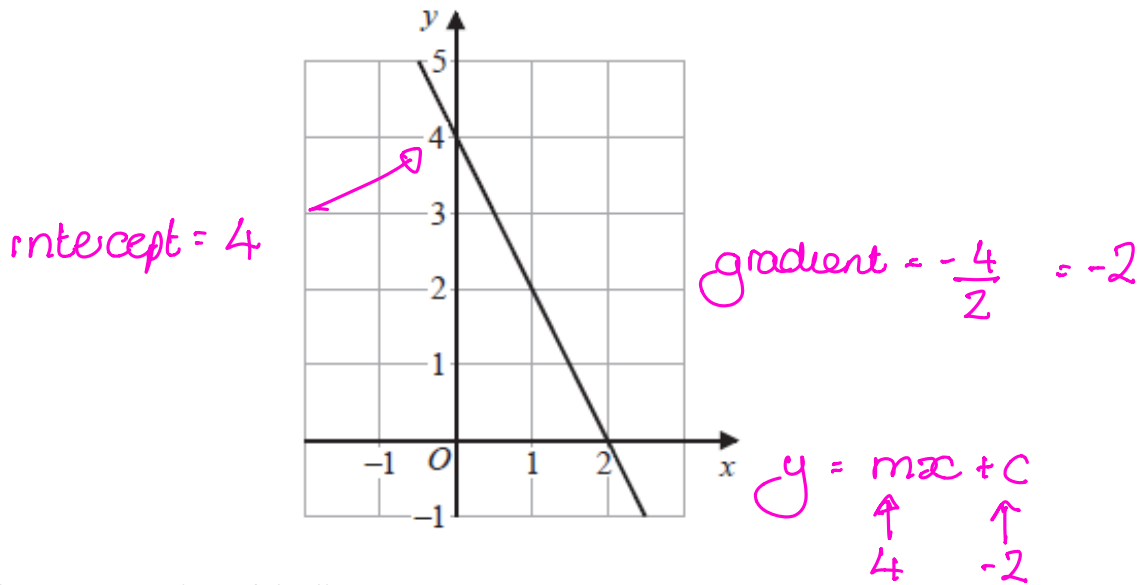
(Total for Question 33 is 5 marks)

34 Write down the value of the 3 in the number 4.7634

three thousandth,
thousandth, $\frac{1}{1000}$ or
0.003

.....
(Total for Question 34 is 1 mark)

35 The diagram shows a straight line drawn on a grid.



Write down an equation of the line.

$y = 4x - 2$

(Total for Question 35 is 2 marks)

TOTAL MARK FOR PAPER IS 80