

Answer ALL THIRTY TWO questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write these numbers in order of size.
Start with the smallest number.

~~171~~ 490 ~~84~~ ~~105~~ 233

.....
84 105 171 233 490

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

- 2 Write 0.08 as a percentage.

..... 8 %

.....
(Total for Question 2 is 1 mark)

- 3 Solve $n + 6 = 5$

$n =$ -1

.....
(Total for Question 3 is 1 mark)

- 4 Solve $7x = 42$

$\div 7 \quad \div 7$

$x =$ 6

.....
(Total for Question 4 is 1 mark)

- 5 Write $\frac{31}{9}$ as a mixed number.

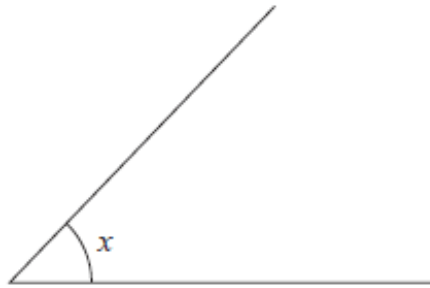
9
18
27 \rightarrow 3

$31 - 27 = 4$

.....
3 $\frac{4}{9}$

.....
(Total for Question 5 is 1 mark)

6 What type of angle is the angle marked x ?



acute

(Total for Question 6 is 1 mark)

7 Linford is going to take part in an athletics competition.
He can choose one event from List A and one event from List B

| List A | List B |
|---|---|
| Discus (<i>D</i>) Hammer (<i>H</i>) Javelin (<i>J</i>) Shot Put (<i>S</i>) | Long Jump (<i>L</i>) Pole Vault (<i>P</i>) Relay (<i>R</i>) |

Write down all the possible combinations Linford can choose.

DL DP DR

HL HP HR

JL JP JR

SL SP SR

(Total for Question 7 is 2 marks)

8 Here is a list of numbers.

2 8 14 15 16 18 20

From this list, write down

(a) the odd number

.....15.....
(1)

(b) the multiple of 6

6 12 18
x x ✓

.....18.....
(1)

(c) the square number

1 4 9 16
✓

.....16.....
(1)

(d) the prime number

.....2.....
(1)

(e) two numbers with a sum of 26

18 + 8

.....18 and 8.....
(1)

(Total for Question 8 is 5 marks)

9 Simplify $8c + 5d - 2c - 3d$

$8c - 2c + 5d - 3d$

..... $6c + 2d$

(Total for Question 9 is 2 marks)

- 10 The two-way table shows some information about the desserts chosen at lunch yesterday by the 80 students from Year 5 and Year 6.
Each student chose one dessert from apple pie or fruit or ice cream.

| | apple pie | fruit | ice cream | Total |
|--------|-----------|-------|-----------|-------|
| Year 5 | 22 | 6 | 8 | 36 |
| Year 6 | 34 | 18 | 2 | 44 |
| Total | 56 | 24 | 10 | 80 |

$80 - 44$

- (a) Complete the two-way table.

$$56 - 22 = 34$$

$$36 - (22 + 6) = 8$$

$$44 - (34 + 2) = 18$$

$$6 + 18 = 24$$

(3)

- (b) What fraction of these 80 students were in Year 5 and chose apple pie?
Give your answer in its simplest form. ← LOOK

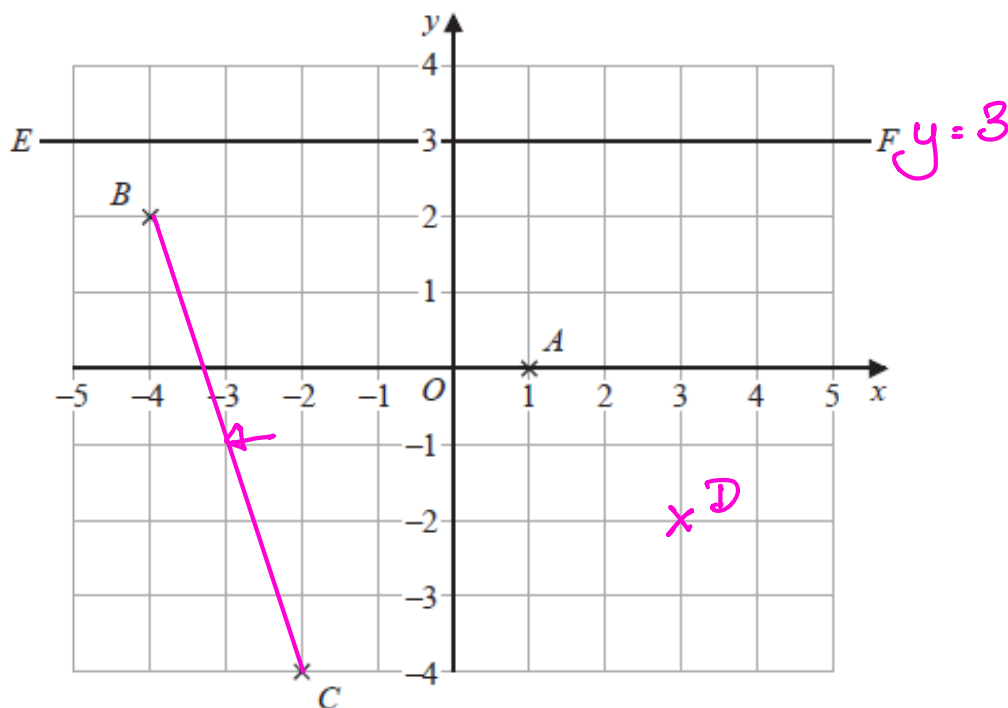
$$\frac{22}{80} \div 2 = \frac{11}{40}$$

$$\frac{11}{40}$$

(2)

(Total for Question 10 is 5 marks)

11 The diagram shows three points, A , B and C , and a line EF on a grid.



(a) Write down the coordinates of the point A

(.....1.....,0.....)
(1)

The coordinates of the point D are $(3, -2)$

(b) On the grid, mark with a cross (\times) the position of D
Label the cross D

(1)

(c) Find the coordinates of the midpoint of BC

(.....-3.....,-1.....)
(2)

(d) Write down the equation of the line EF

.....y = 3.....
(1)

(Total for Question 11 is 5 marks)

12 Write down the mathematical name for an 8-sided polygon.

Octagon

.....
(Total for Question 12 is 1 mark)

13 Change 3.6 metres into centimetres.

$$1 \text{ m} = 100 \text{ cm}$$

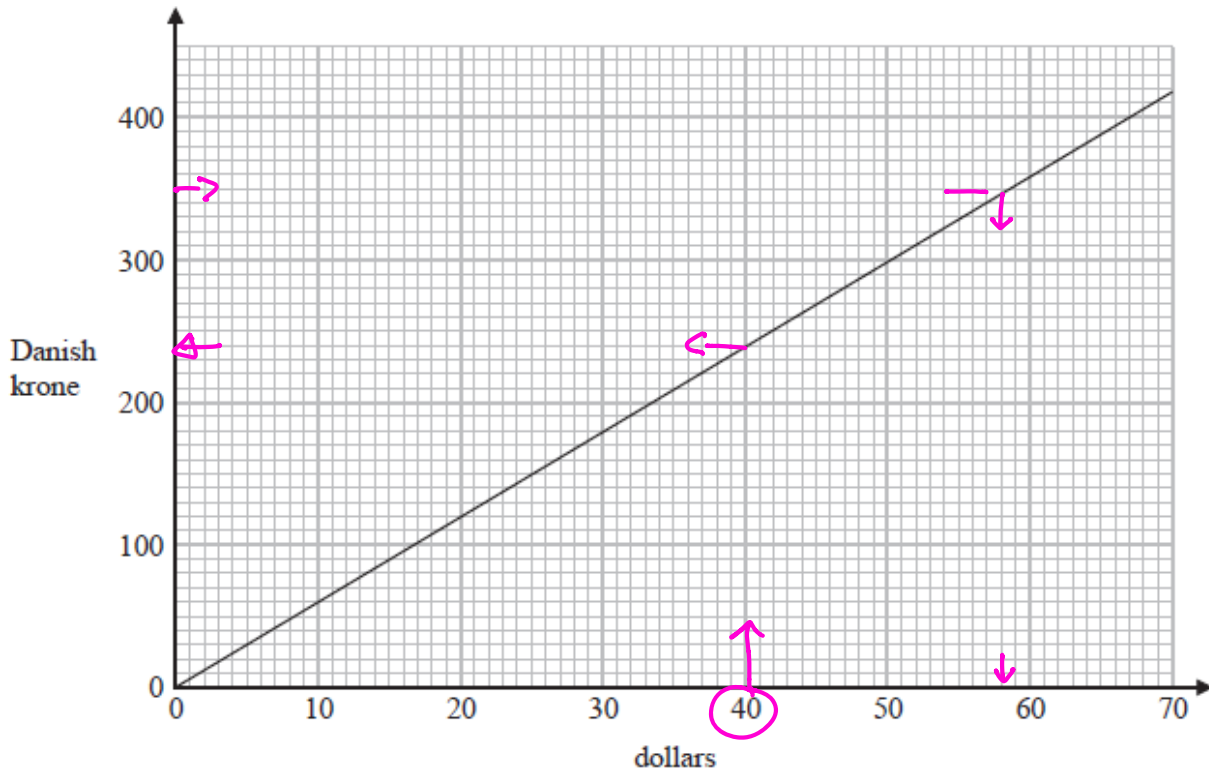
$$3.6 \text{ m} = 360 \text{ cm}$$

360

..... cm

(Total for Question 13 is 1 mark)

14 The graph below can be used to change between dollars and Danish krone.



(a) Change 40 dollars to Danish krone.

..... 240 Danish krone
(1)

(b) Change 350 Danish krone to dollars.

..... 58 dollars
(1)

Robert needs 950 Danish krone to pay for a hotel stay.
He has 170 dollars.

(c) Show that Robert has enough money to pay for his hotel stay.

$\div 40$
 40 dollars = 240 krone
 1 dollar = 6 krone
 170 dollars = 1020 krone
 so yes he has enough

$$\begin{array}{r} 170 \\ \times 6 \\ \hline 1020 \\ 4 \end{array}$$

(2)

(Total for Question 14 is 4 marks)

15 (a) Simplify $w^{12} \div w^3$

$$w^{12-3}$$

$$w^9$$

(1)

(b) Simplify $5m^4p^2 \times 2m^3p$

$$5 \times 2 m^{4+3} p^{2+1}$$

$$10m^7p^3$$

(2)

(Total for Question 15 is 3 marks)

16 (a) Expand $x(10 - x)$

$$x \times 10 = 10x$$

$$x \times x = x^2$$

$$10x - x^2$$

(1)

(b) Factorise $6y + 27$

$$2 \times 3 \quad 9 \times 3$$

$$3(2y + 9)$$

(1)

(Total for Question 16 is 2 marks)

17 Find the number that is exactly halfway between $\frac{7}{25}$ and 0.88

$$\frac{7}{25} = \frac{28}{100}$$

$$0.88 = \frac{88}{100}$$

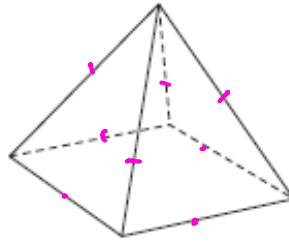
$$\begin{array}{r} 28 \\ + 88 \\ \hline 116 \end{array}$$

$$116 \div 2 = 58$$

$$\frac{58}{100} = 0.58$$

(Total for Question 17 is 2 marks)

18 Here is a 3-D shape.



Marie makes a model of the shape.
She uses a length of wire to make each edge of the model.
Each edge of the model is 5 cm long.

Marie has 70 cm of wire.

What length of wire does she have left after making the model?

$$5\text{cm} \times 8 = 40\text{cm}$$

$$70\text{cm} - 40\text{cm} = 30\text{cm}$$

..... 30 cm

(Total for Question 18 is 2 marks)

19 (a) Simplify $10y - y$

..... $9y$ (1)

(b) Simplify $3p \times 4p$

..... $12p^2$ (1)

(Total for Question 19 is 2 marks)

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

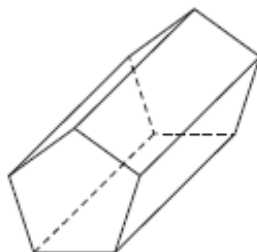
0.500 0.540 0.450 0.504 0.405

0.500 3
0.540 5
0.450 2
0.504 4
0.405 1

0.405 0.45 0.5 0.504 0.54

(Total for Question 20 is 1 mark)

21 (a) Write down the mathematical name of this 3-D shape.



(Hexagonal) prism

(1)

(b) (i) How many faces does this shape have?

7

(1)

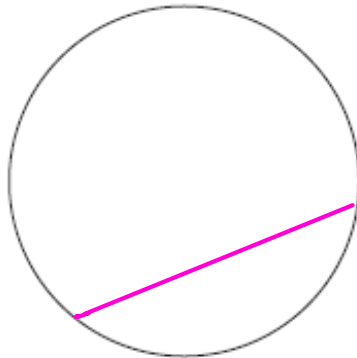
(ii) How many vertices does this shape have?

12

(1)

(Total for Question 21 is 3 marks)

22 On the diagram above, draw a chord of the circle.



(Total for Question 22 is 1 mark)

23 Here are 6 counters.
Each counter has a number on it.



Finn takes at random one of these counters.

(i) Select with a tick (✓) the word that best describes the likelihood that Finn takes a counter with the number 2 on it.

| | | | | |
|------------|----------|-------|--------|---------|
| impossible | unlikely | evens | likely | certain |
| | ✓ | | | |

(ii) Select with a tick (✓) the word that best describes the likelihood that Finn takes a counter with the number 3 on it.

| | | | | |
|------------|----------|-------|--------|---------|
| impossible | unlikely | evens | likely | certain |
| | | ✓ | | |

(iii) Select with a tick (✓) the word that best describes the likelihood that Finn takes a counter with a number greater than 4 on it.

| | | | | |
|------------|----------|-------|--------|---------|
| impossible | unlikely | evens | likely | certain |
| ✓ | | | | |

(Total for Question 23 is 3 marks)

24 Solve $7g + 3 = 2g - 5$

Show clear algebraic working.

$$7g + 3 = 2g - 5$$
$$\begin{array}{r} -2g \\ \hline 5g + 3 = -5 \end{array}$$

$$\begin{array}{r} -3 \\ \hline 5g = -8 \end{array}$$

$$5g = -8$$

$$g = \frac{-8}{5}$$

$$g = \frac{-8}{5}$$

(Total for Question 24 is 3 marks)

25 Show that $4\frac{2}{3} \div 1\frac{5}{6} = 2\frac{6}{11}$

$$4\frac{2}{3} = \frac{14}{3} \quad 1\frac{5}{6} = \frac{11}{6}$$

$$\frac{14}{3} \div \frac{11}{6} = \frac{14}{3} \times \frac{6}{11}$$
$$= \frac{28}{11}$$

$$\frac{11}{22} \quad \frac{28}{11} = 2\frac{6}{11} \text{ as required}$$

(Total for Question 25 is 3 marks)

26 Here is a list of six numbers written in order of size.

x 5 y z 10 12
 \downarrow \uparrow

The numbers have
 a range of 9
 a median of 8
 a mode of 10

Find the value of x , the value of y and the value of z

Range of 9 $12 - 9 = 3$ so $x = 3$
 mode of 10 so z must be 10
 median of 8 so y must be 6

 $\begin{matrix} 3 & 5 & 6 & 10 & 10 & 12 \\ x & & y & z & & \end{matrix}$

$x = \underline{\hspace{2cm} 3 \hspace{2cm}}$

$y = \underline{\hspace{2cm} 6 \hspace{2cm}}$

$z = \underline{\hspace{2cm} 10 \hspace{2cm}}$

(Total for Question 26 is 3 marks)

27 30 children were asked whether they have a cat (c) or a dog (D)

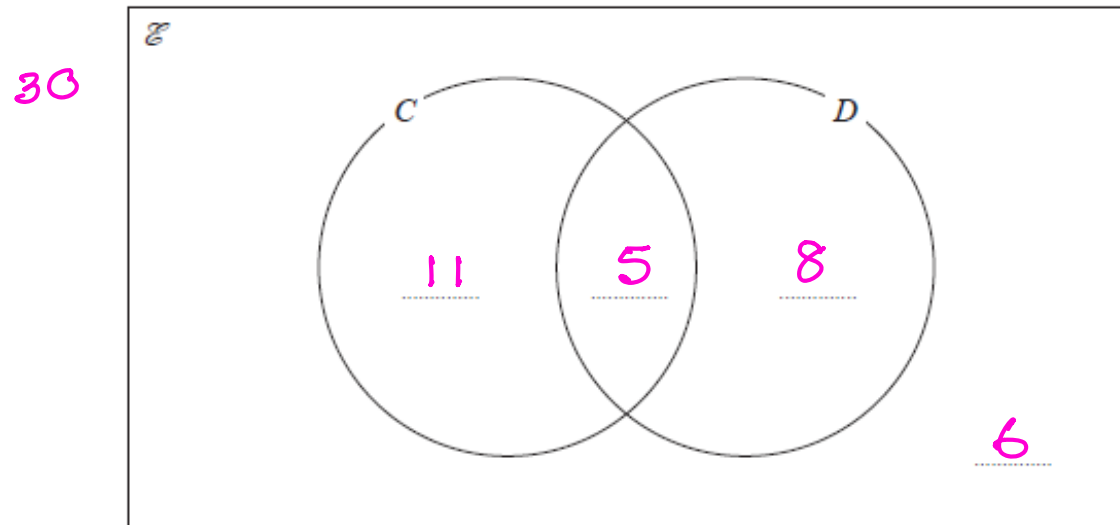
Of the 30 children

5 have both a cat and a dog

13 have a dog

11 have **only** a cat

(a) Complete the Venn diagram.



(3)

One of the children is picked at random.

(b) Find the probability that this child

(i) has a dog,

$$\frac{13}{30}$$

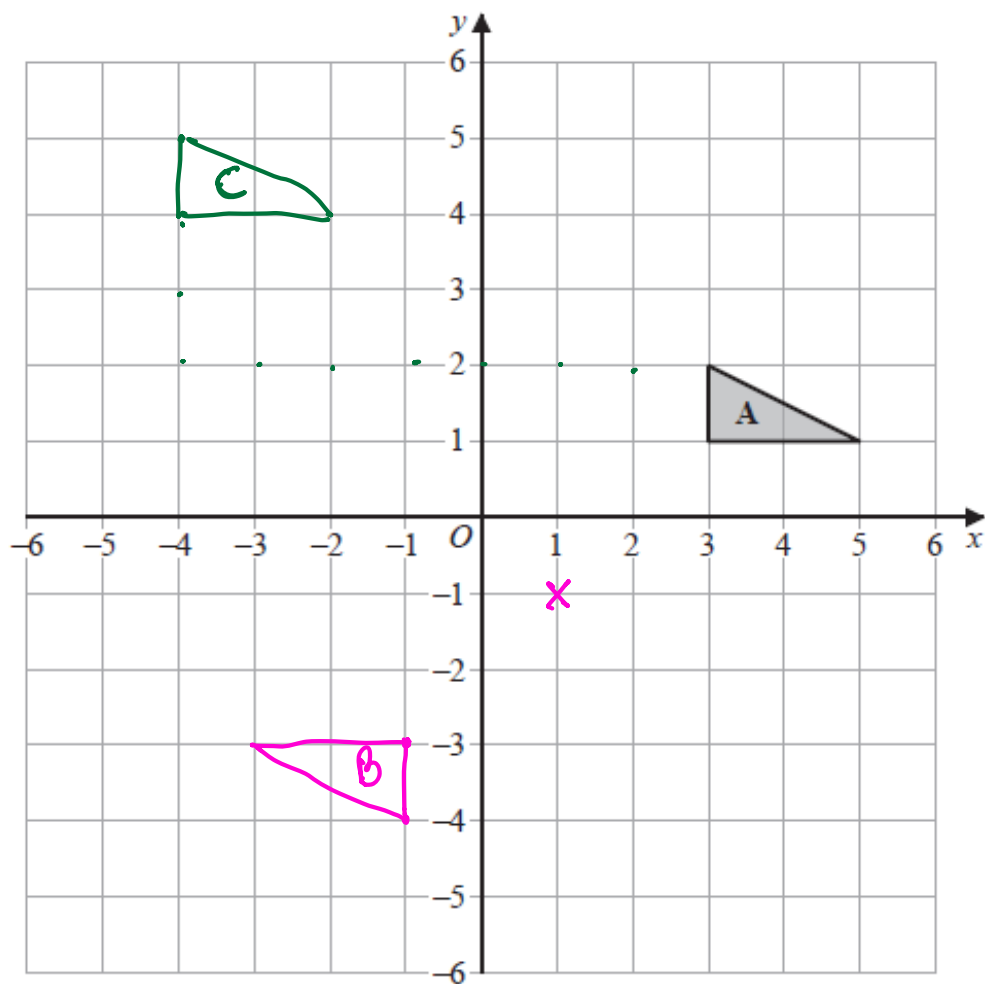
(1)

(ii) does not have a dog and does not have a cat.

$$\frac{6}{30}$$


(1)

(Total for Question 27 is 5 marks)



- (a) On the grid, rotate triangle **A** 180° about $(1, -1)$
Label the new triangle **B**

(2)

- (b) On the grid, translate triangle **A** by the vector $\begin{pmatrix} -7 \\ 3 \end{pmatrix}$ 

Label the new triangle **C**

(1)

(Total for Question 28 is 3 marks)

29 (a) Write 9.32×10^{-5} as an ordinary number.

$$0.0000932$$

(1)

(b) Work out $3 \times 10^5 - 6 \times 10^4$
Give your answer in standard form.

$$\begin{array}{r} 3 \times 10^5 \\ - 0.6 \times 10^5 \\ \hline 2.4 \times 10^5 \end{array}$$

$$2.4 \times 10^5$$

(2)

(c) Work out $(3 \times 10^{55}) \times (6 \times 10^{65})$
Give your answer in standard form.

$$\begin{aligned} & 18 \times 10^{55+65} \\ & = 18 \times 10^{120} \end{aligned}$$

$$1.8 \times 10^{121}$$

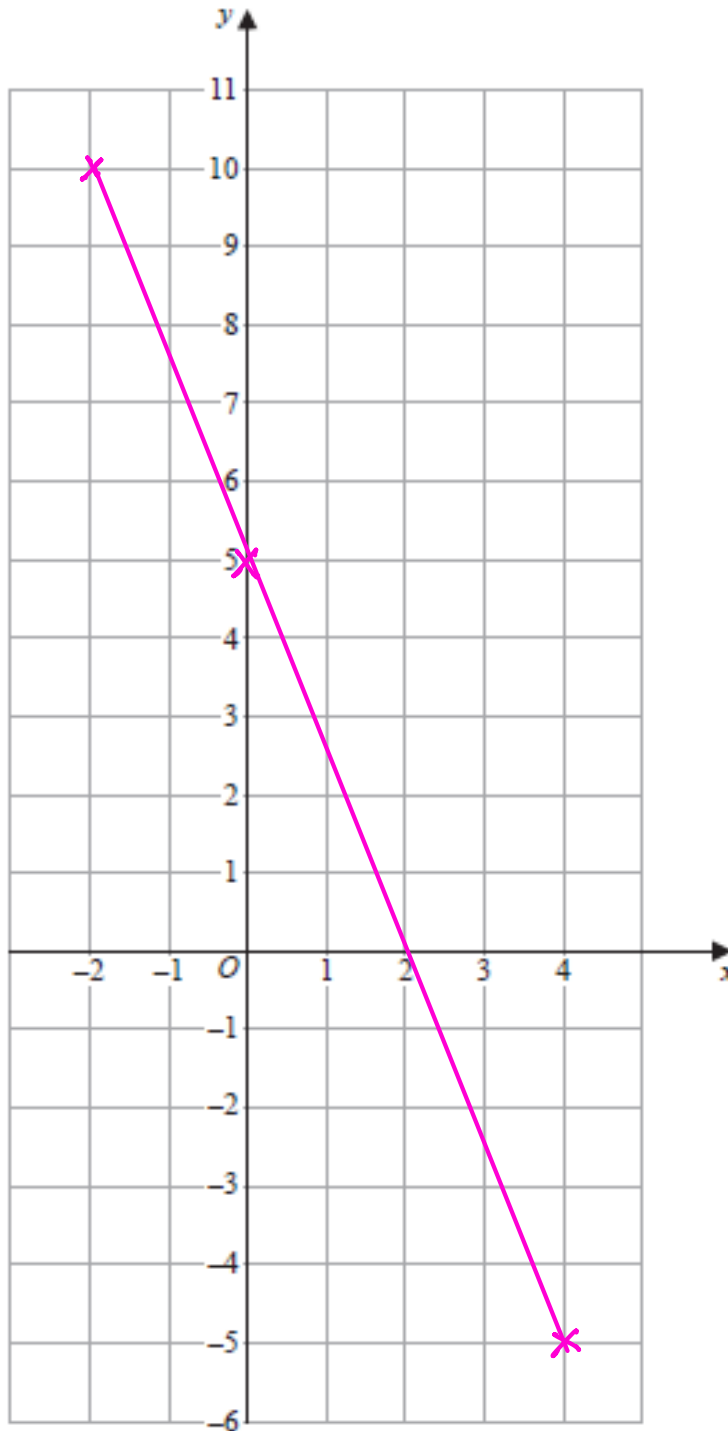
(2)

(Total for Question 29 is 5 marks)

$$2y = -5x + 10$$
$$y = -2.5x + 5$$

30 On the grid, draw the graph of $5x + 2y = 10$ for values of x from -2 to 4

| | | | |
|-----|------|-----|------|
| x | -2 | 0 | 4 |
| y | 10 | 5 | -5 |



(Total for Question 30 is 3 marks)

31 (a) Factorise $y^2 - 3y - 18$

$$\begin{array}{l} 1, 18 \\ 2, 9 \\ 3, 6 \leftarrow -6 + 3 \end{array}$$

$$(y-6)(y+3) \dots\dots\dots (2)$$

(b) Hence, solve $y^2 - 3y - 18 = 0$

$$\begin{array}{l} y-6=0 \quad y=6 \\ y+3=0 \quad y=-3 \end{array}$$

$$y=6, y=-3 \dots\dots\dots (1)$$

(Total for Question 31 is 3 marks)

32 Make m the subject of the formula $h = \frac{m}{2} + 4$

$$\begin{array}{l} 2h = m + 8 \\ m = 2h - 8 \end{array}$$

$$\begin{array}{l} m = 2h - 8 \\ (or \ m = 2(h-4)) \end{array} \dots\dots\dots (Total \ for \ Question \ 32 \ is \ 2 \ marks)$$

TOTAL FOR PAPER IS 80 MARKS

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