Answer ALL TWENTY SIX questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The table gives information about the weight of sugar produced by each of five countries in one year.

Country	Weight (tonnes)
Japan	72 900
Barbados	15 745
Kenya	592 668
Gabon	23 787
Malaysia	28 149

(a) Write the number 28 149 in words.

twenty eight thousand, one hundred and forty nine

(1)

(b) Which of these five countries produced the greatest weight of sugar?

Kenya

(1)

(c) Write down the value of the 8 in the number 23 787

80

(1)

(d) Write the number 15 745 correct to the nearest thousand.

16000

(1)

(Total for Question 1 is 4 marks)

2 The pictogram gives information about the number of parcels a company posted on each of four days last week.

Monday	16 16 16 8	56
Tuesday	16 16 16 4	52
Wednesday	16 16 16 16 12	76
Thursday	16 16 16	48
Friday		

Represents 16 parcels

(a) How many parcels were posted on Tuesday?

16 + 16 + 16 + 4

52

(1)

24 parcels were posted on Friday.

(b) Show this information on the pictogram. ✓

(1)

More parcels were posted on Wednesday than on Monday.

(c) How many more?

76 - 56

20

(1)

(d) Find the ratio

56 48

number of parcels posted on Monday : number of parcels posted on Thursday

Give your answer in its simplest form.

56 : 48

7 : 6

7 : 6

(2)

(Total for Question 2 is 5 marks)

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3 (a) Write 0.03 as a fraction.

$\frac{3}{100}$

(1)

(b) Write 0.9 as a percentage.

90 %

(1)

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

0.4 0.48 0.204 0.24 0.408

0·400 0·480 0·240

(3) (5) (1) (2) (4)

0·204, 0·24, 0·4, 0·408, 0·48

(1)

(d) Work out $0.93 + \frac{7}{10}$

Give your answer as a decimal.

0·93 + 0·7

1·63

(1)

(Total for Question 3 is 4 marks)

4 Barney went for 4 walks on Tuesday.

The lengths of the walks were

800 metres
2 kilometres
1.7 kilometres
x metres

The total length of the 4 walks was 6250 metres.

Work out the value of x

800 + 2000 + 1700 = 4500

6250 - 4500 = 1750

$x =$ 1750

(Total for Question 4 is 3 marks)

5 There are 8 counters in a bag.

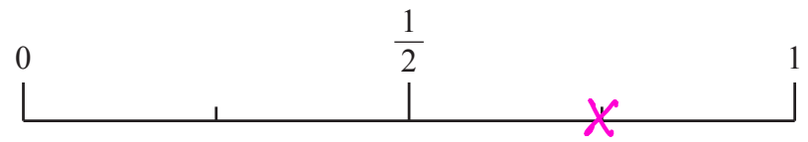
6 of these counters are orange.
The rest of the counters are purple.

O P
6 2

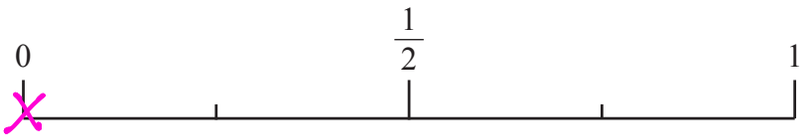
Delilah takes at random a counter from the bag.

(i) On the probability scale below, mark with a cross (×) the probability that the counter is orange.

$\frac{6}{8} = \frac{3}{4}$



(ii) On the probability scale below, mark with a cross (×) the probability that the counter is yellow.

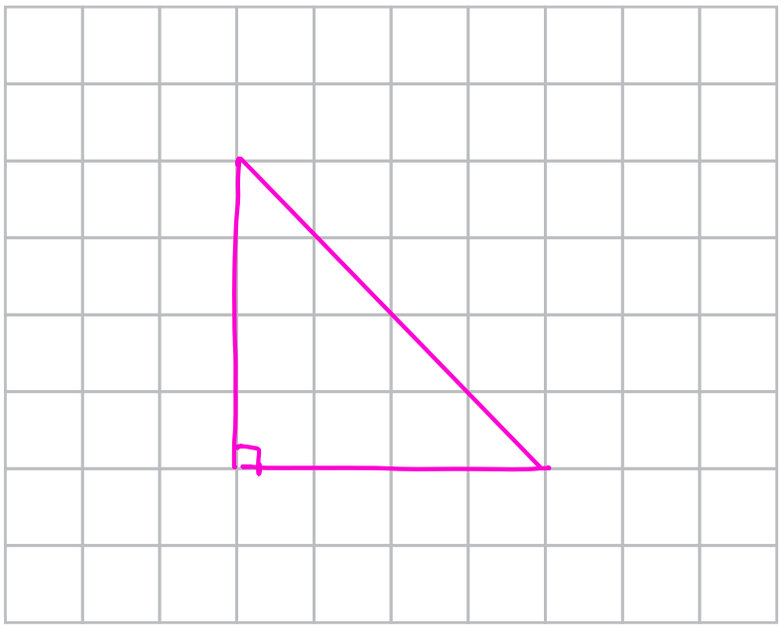


(Total for Question 5 is 2 marks)

6 Here is a centimetre grid.

(a) On the grid, draw a right-angled triangle.

eg.



(1)

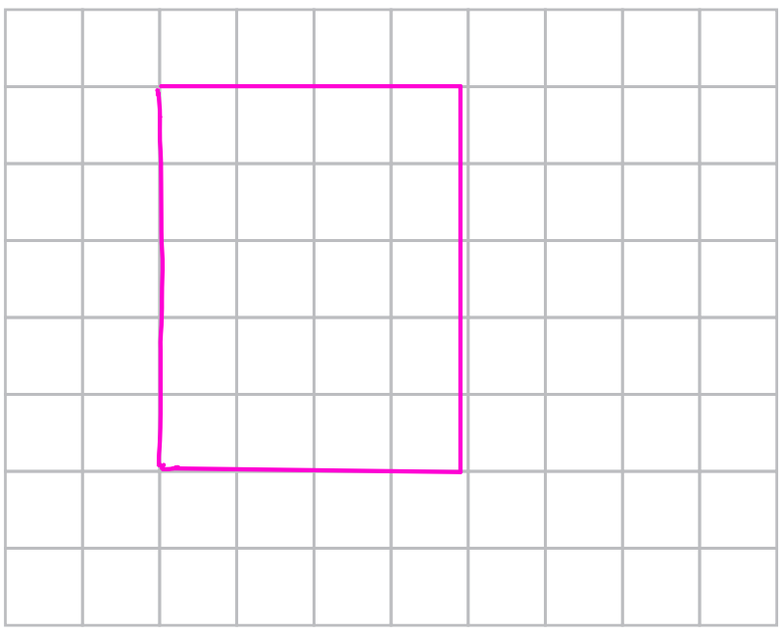
Here is a centimetre grid.

(b) On the grid, draw a rectangle with an area of $20\,cm^2$

1 × 20, 2 × 10 or 4 × 5

2·5 × 8

etc



(2)

(Total for Question 6 is 3 marks)

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7 (a) Write 4 30 pm as a time in the 24-hour clock.

16:30

(1)

Here is part of a bus timetable from Beetown to Pilton.

Beetown	08 45
Corthill	09 50
Pilton	10 36

The bus should take more time to get from Beetown to Corthill than from Corthill to Pilton.

(b) How much more time?
Give your answer in minutes.

B → C
1 hr 5 mins
65 mins

C → P
46 mins

Difference = 65 - 46
= 19

19 minutes

(3)

(Total for Question 7 is 4 marks)

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8

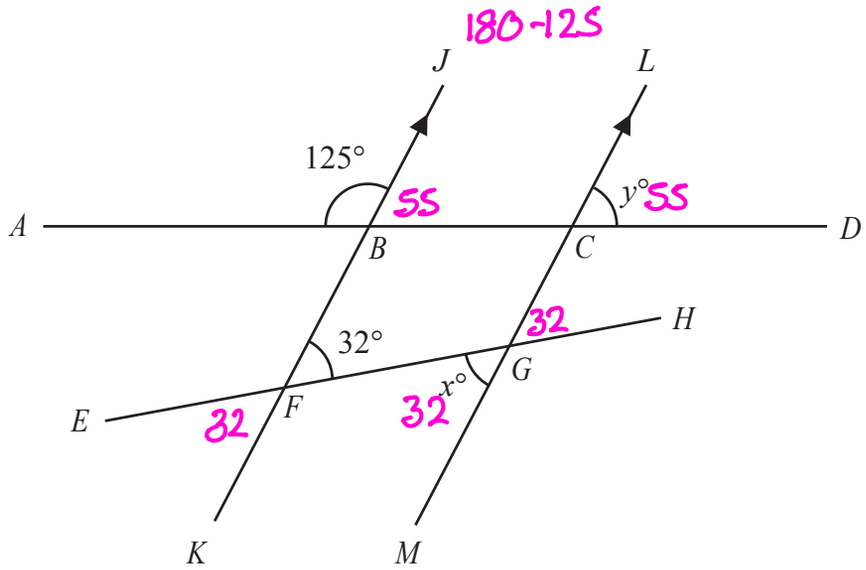

Diagram **NOT** accurately drawn

ABCD and *EFGH* are straight lines.
KFBJ and *MGCL* are parallel straight lines.

angle $ABJ = 125°$ angle $BFG = 32°$ angle $FGM = x°$ angle $LCD = y°$

(a) Write down the value of x

$x =$ 32

(1)

(b) (i) Work out the value of y

$y =$ 55

(2)

(ii) Give a reason for your answer to (b) (i)

eg. angles on a straight line = 180, (and corresponding angles are equal)

(1)

(Total for Question 8 is 4 marks)

9 3 kg of carrots and 5 kg of potatoes cost a total of 207 rand.
2 kg of the carrots cost 48 rand.

Work out the cost of 1 kg of potatoes.

3 kg carrots + 5kg potatoes = 207 rand

2 kg carrots = 48 rand
1 kg = 24 rand.
so 3kg = 72 rand.

72 rand + 5kg potatoes = 207 rand
5kg potatoes = 207 - 72
= 135 rand

1kg = $\frac{135}{5}$
= 27 rand

27 rand

(Total for Question 9 is 4 marks)

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10 Here is a number machine.

When the input is 7 the output is 60

(a) Work out the value of y

$7 \times y - 17 = 60$

$60 + 17 = 77$

$\frac{77}{7} = 11$

$y =$ 11

(2)

Here is a different number machine.

The input is x

(b) Write down an expression, in terms of x, for the output.

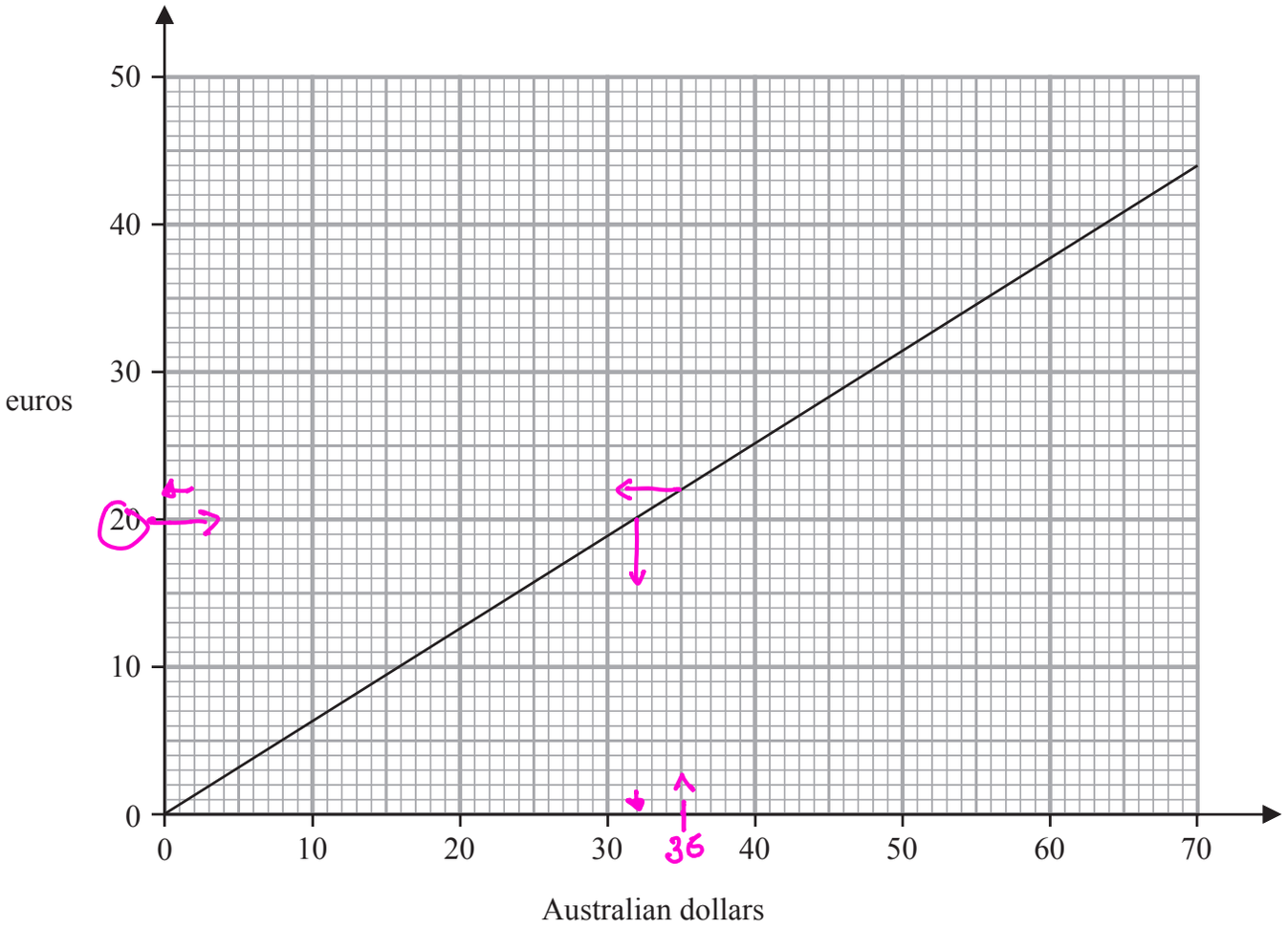
$x + 7$ $\frac{x+7}{5}$

$\frac{x+7}{5}$

(2)

(Total for Question 10 is 4 marks)

11 The graph below can be used to change between Australian dollars and euros.



(a) Use the graph to change

(i) 35 Australian dollars to euros

22 euros

allow 21·5 - 22·5 **(1)**

(ii) 20 euros to Australian dollars

32 Australian dollars

allow 31 - 32 **(1)**

Lachlan changes 500 Australian dollars to euros.

(b) Work out how many euros he should receive.

35 dollars = 22 euros

÷ 35 ÷ 35

× 500 × 500

500 dollars = 314.2857...

314.29 euros

allow 300 - 325 **(2)**

(Total for Question 11 is 4 marks)

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12 (a) Expand $x(x + 3)$

$x \times x = x^2$

$x \times 3 = 3x$

$x^2 + 3x$

(1)

(b) Factorise $8p + 10$

2×4 2×5

$2(4p + 5)$

(1)

(c) Make e the subject of $y = eh - f$

$y + f = eh$

$eh = y + f$

$e = \frac{y+f}{h}$

$e = \frac{y+f}{h}$

(2)

Janya thinks of a whole number.
She calls her whole number w
Janya writes down this information about her whole number.

$$w > 7 \quad \text{and} \quad w \leqslant 10$$

(d) Write down the possible values of w

$w \rightarrow 8 \quad 9 \quad 10$ ~~x~~

8, 9, 10

(2)

(Total for Question 12 is 6 marks)

13 Bella buys 150 football shirts for a total cost of 1800 dollars.

She gives 10% of the shirts to the local football team.
Bella sells the rest of the shirts for g dollars each.
She makes a total profit of 360 dollars.

Work out the value of g

150 shirts = 1800 dollars

local team
10% = 15 shirts

sells
135 shirts

for 1800 + 360 = 2160

$\frac{2160}{135} = 16$ dollars

$g =$ 16

(Total for Question 13 is 4 marks)

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14 Work out the value of $\dfrac{5.2^2 + 8.7}{\sqrt{14.5}}$

Write down all the figures on your calculator display.

9.385783821

9.385783821

(Total for Question 14 is 2 marks)

15 Yuan sells fudge in small bags and in large bags.

Small bag
Weight 150 g
Cost £1.80

Large bag
Weight 400 g
Cost £5

Work out which bag is the better value for money.
Show your working clearly.

150g = £1.80
÷15 ÷15
10g = £0.12

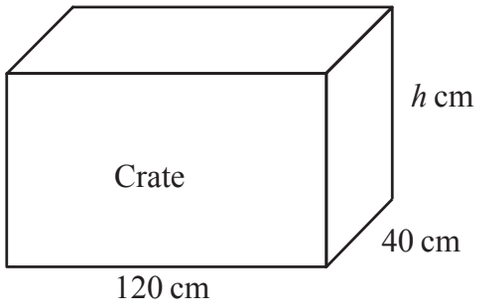
400g = £5
÷40 ÷40
10g = £0.125

0.12 < 0.125

so the small bag is better value

(Total for Question 15 is 3 marks)

16



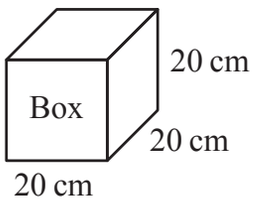


Diagram **NOT** accurately drawn

A crate is in the shape of a cuboid with inside lengths of 120 cm, 40 cm and h cm
The crate has a lid.

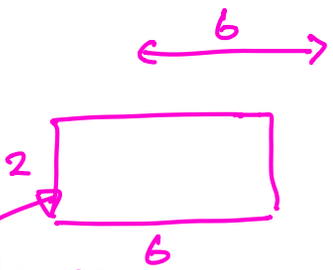
Micah has 48 boxes.
Each box is in the shape of a cube 20 cm by 20 cm by 20 cm

Micah wants to put all the boxes in the crate and shut the lid.

Work out the least possible value of h

120 ÷ 20 = 6

40 ÷ 20 = 2



12 boxes per layer

needs 4 layers to fit 48 boxes

4 x 20 = 80cm

80cm

(Total for Question 16 is 4 marks)

17 The table shows information about the lengths, in minutes, of 50 telephone calls.

Length of telephone call (m minutes)		Frequency	
$0 < m \leqslant 5$ (2.5)	×	8	= 20
$5 < m \leqslant 10$ (7.5)	×	2	= 15
$10 < m \leqslant 15$ (12.5)	×	6	= 75
$15 < m \leqslant 20$ (17.5)	×	4	= 70
$20 < m \leqslant 25$ (22.5)	×	12	= 270
$25 < m \leqslant 30$ (27.5)	×	18	= 495
		50	

(a) Write down the modal class.

25 < m ≤ 30

(1)

(b) Work out an estimate for the total length, in minutes, of these telephone calls.

not mean

20 + 15 + 75 + 70 + 270 + 495 = 945

945 minutes

(3)

(Total for Question 17 is 4 marks)

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18 The diagram shows triangle ABC and triangle ECD

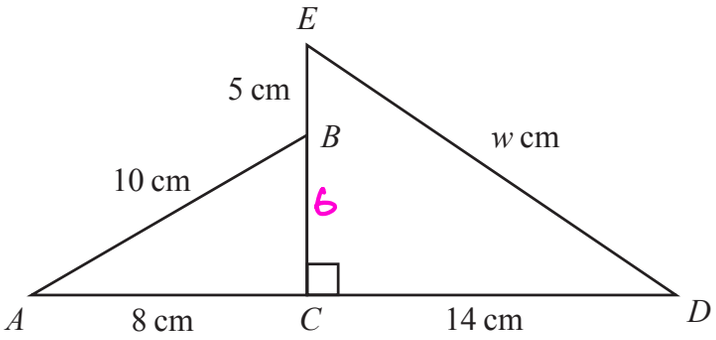


Diagram **NOT** accurately drawn

ACD and EBC are straight lines.

$AB = 10$ cm $AC = 8$ cm $EB = 5$ cm $CD = 14$ cm $ED = w$ cm

Work out the value of w
Give your answer correct to one decimal place.

△ ABC $BC = \sqrt{10^2 - 8^2}$

$= \sqrt{100 - 64} = \sqrt{36} = 6$

△ CDE $ED = \sqrt{11^2 + 14^2}$

$= \sqrt{121 + 196}$

$= \sqrt{317}$

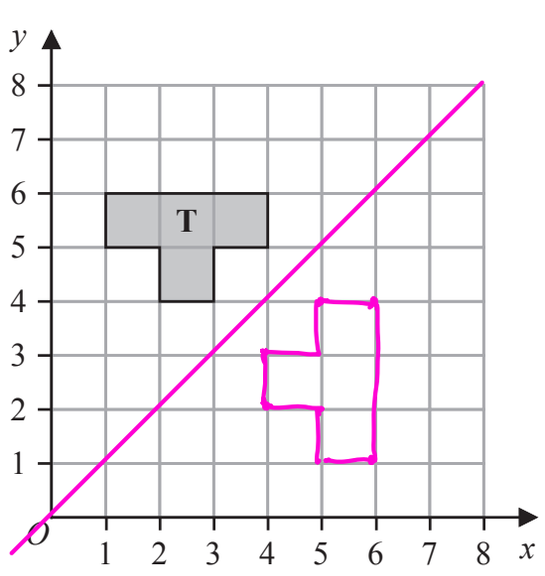
$= 17.8044493$

1 dp

$w =$ 17.8

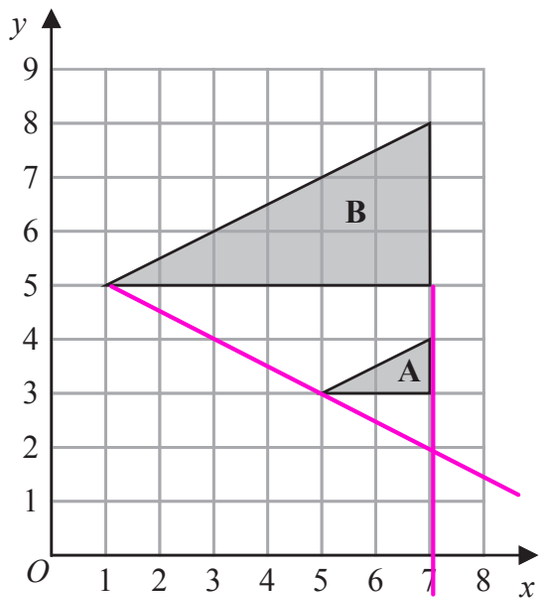
(Total for Question 18 is 4 marks)

19



(a) Reflect shape **T** in the line $y = x$

(2)



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

Enlargement, scale factor 3, centre (7,2)

(3)

(Total for Question 19 is 5 marks)

20 (a) Solve $\frac{2x+5}{6} = 2x - 5$

Show clear algebraic working.

$2x + 5 = 6(2x - 5)$

$2x + 5 = 12x - 30$

$-2x \qquad -2x$

$5 = 10x - 30$

$+30 \qquad +30$

$10x = 35$

$x = \frac{35}{10}$

$x =$ 3.5

(3)

(b) Simplify $h^{15} \div h^3$

h^{15-3}

h^{12}

(1)

(c) Simplify fully $\left(2g^3k^5\right)^4$

$2g^3k^5 \times 2g^3k^5 \times 2g^3k^5 \times 2g^3k^5$

$= 16g^{12}k^{20}$

$16g^{12}k^{20}$

(2)

(d) Given that $\frac{y^5 \times y^n}{y^7} = y^{12}$

work out the value of n

$5 + n - 7 = 12$

$n = 12 + 7 - 5$

$= 14$

$n =$ 14

(2)

(Total for Question 20 is 8 marks)

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21 Avril bakes a cake.

She uses flour, butter and sugar such that

weight of flour : weight of butter = 6 : 5
weight of butter : weight of sugar = 3 : 2

Avril uses 120 grams of sugar.

Work out the weight of flour Avril uses.

B : S
3 : 2
x60 = 180g 120 x60

F : B
6 : 5
x36 = 216g 180g x36

216 grams

(Total for Question 21 is 3 marks)

22 Show that $3\frac{3}{7} \div 2\frac{2}{3} = 1\frac{2}{7}$

$3\frac{3}{7} = \frac{24}{7}$

$2\frac{2}{3} = \frac{8}{3}$

$\frac{24}{7} \div \frac{8}{3}$

$= \frac{\cancel{24}^{3}}{7} \times \frac{3}{\cancel{8}_{1}}$

$= \frac{9}{7}$

$\frac{9}{7} = 1\frac{2}{7}$ as required.

(Total for Question 22 is 3 marks)

23 Hermione buys a boat for \$26 800
The value of the boat depreciates by 8% each year.

$100 - 8 = 92\%$

Work out the value of the boat at the end of 3 years.
Give your answer correct to the nearest dollar.

$26800 \times 0.92^{3} = 20868.8384$

nearest dollar

\$ 20869

(Total for Question 23 is 3 marks)

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24 The mean number of goals scored by a hockey team in 8 matches is 6
The team plays 2 more matches and scores k goals in each match.
The mean number of goals scored by the hockey team in the 10 matches is 7

Work out the value of k

matches 8 → 8+2 = 10

mean 6 → 7

total goals 8 × 6 = 48 → 10 × 7 = 70

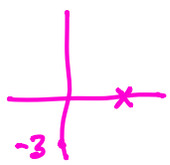
so 70 − 48 goals scored in 2 games
= 22 in 2 games
22 ÷ 2 = 11

$k =$ 11

(Total for Question 24 is 3 marks)

25 A straight line passes through the points with coordinates (0, –3) and (2, 0)

Find an equation of the line.



gradient = $\frac{3}{2}$ = 1·5

$y = 1.5x + c$ passes through (2, 0) (x, y)

$0 = 1.5 \times 2 + c$

$c = -3$

so $y = 1.5x - 3$

$y = 1.5x - 3$

(Total for Question 25 is 2 marks)

26 The diagram shows a hexagon *ABCDEF*

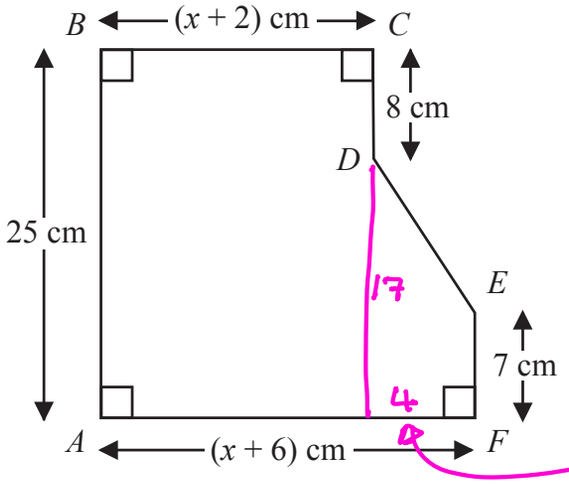


Diagram **NOT** accurately drawn

$AB = 25$ cm $BC = (x + 2)$ cm $CD = 8$ cm $EF = 7$ cm $AF = (x + 6)$ cm

The area of hexagon *ABCDEF* is 258 cm²

Work out the value of x

$$258 = 25(x+2) + \frac{1}{2}(17+7) \times 4$$

$$= 25x + 50 + 48$$

$$258 = 25x + 98$$

$$258 - 98 = 25x$$

$$25x = 160$$

$$x = \frac{160}{25}$$

$$= 6.4$$

$x =$ 6.4

(Total for Question 26 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

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