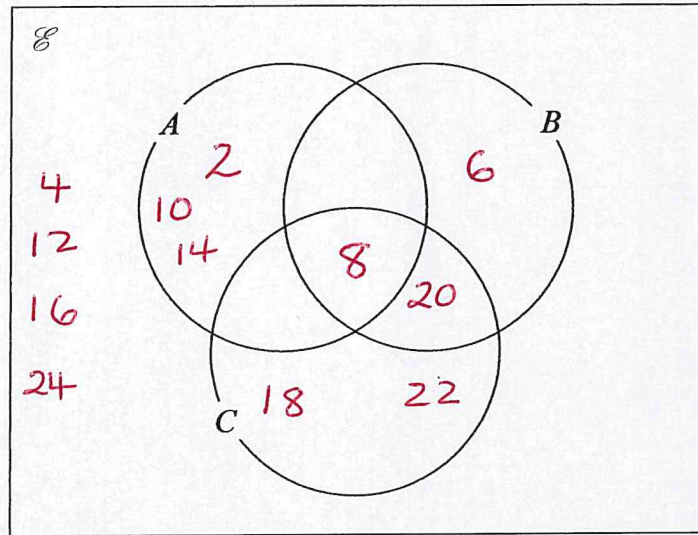


- 20/1 $\mathcal{E} = \{\text{even numbers between 1 and 25}\}$
 $A = \{\cancel{2}, \cancel{8}, \cancel{10}, \cancel{14}\}$ $B = \{\cancel{6}, \cancel{8}, \cancel{20}\}$ $C = \{\cancel{8}, \cancel{18}, \cancel{20}, \cancel{22}\}$
 (a) Complete the Venn diagram for this information.

~~2~~
~~7~~
~~8~~
~~8~~
~~10~~
~~12~~
~~17~~
~~16~~
~~18~~
~~20~~
~~22~~
~~24~~



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

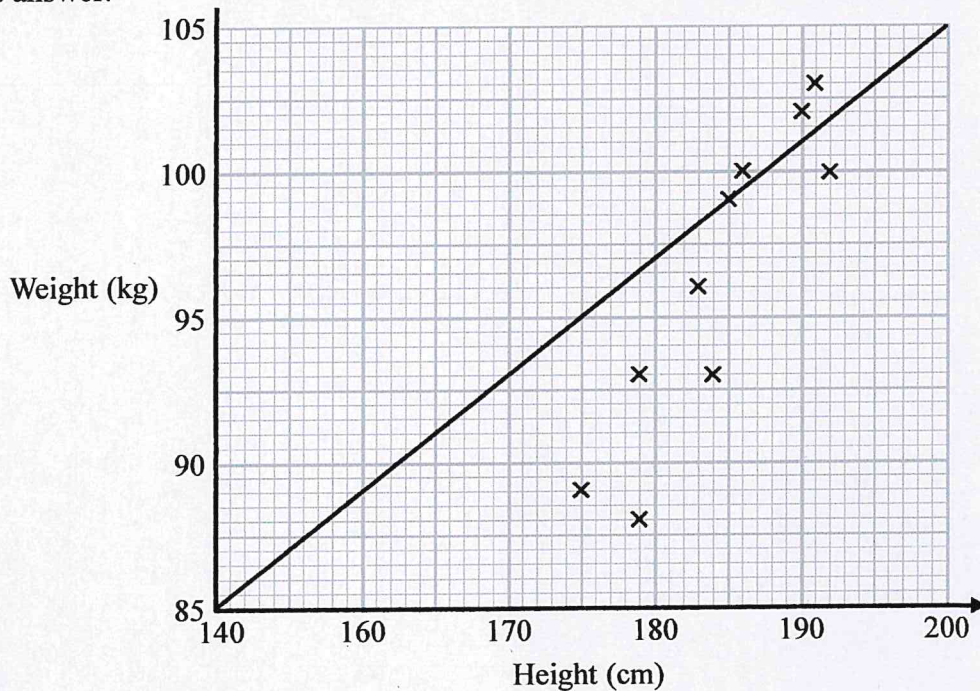
- (b) Find the probability that the number is a member of $A \cap B$.

intersection
 $\frac{1}{12}$

(4)

(2)

- 21/2 Sean has information about the height, in cm, and the weight, in kg, of each of ten rugby players. He is asked to draw a scatter graph and a line of best fit for this information. Here is his answer.



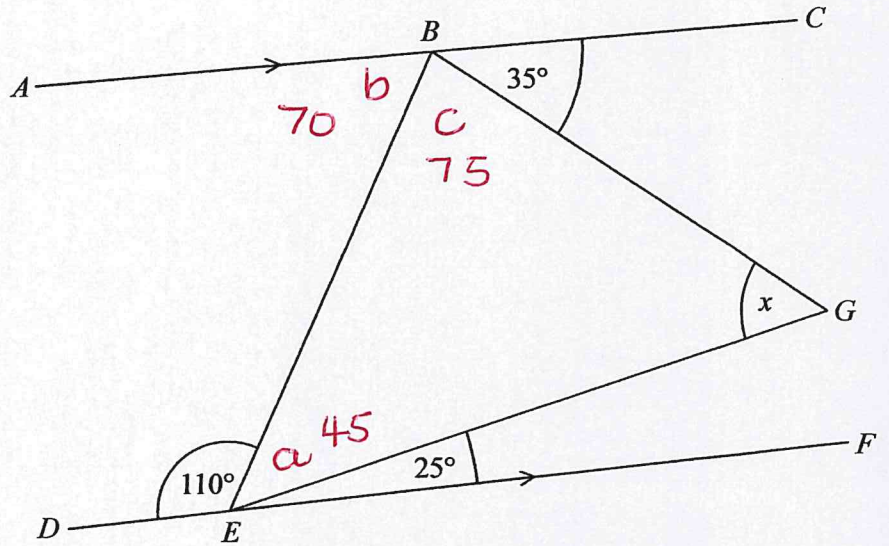
Sean has plotted the points accurately.

Write down two things that are wrong with his answer.

1. *The line of best fit is not near the data*
2. *The height axis is numbered incorrectly. It starts off going up in 20s then changes to 10s.*

22/3 BEG is a triangle.

ABC and DEF are parallel lines.



Work out the size of angle x .
Give a reason for each stage of your working.

$$\angle a = 180 - 135 = \underline{45^\circ}$$

Angles on a straight line add up to 180° .

$$\angle b = \underline{70^\circ}$$

Allied angles add up to 180° .

$$\angle c = 180 - 105 = \underline{75^\circ}$$

Angles on a straight line add up to 180° .

$$\angle x = 180 - 120 = \underline{\underline{60}}$$

Angles in a triangle add up to 180° .

..... 60 °

(4)

23/4 Northern Bank has two types of account.
Both accounts pay compound interest.

Ali

Cash savings account Interest 2.5% per annum

Ben

Shares account Interest 3.5% per annum

Ali invests £2000 in the cash savings account.
Ben invests £1600 in the shares account.

- (a) Work out who will get the most interest by the end of 3 years.
You must show all your working.

Ali

$$\begin{aligned} \text{Balance} &= 2000 \times 1.025^3 \\ &= 2153.78125 \\ &= \underline{\underline{\pounds 2153.78}} \\ \text{Interest} &= \underline{\underline{\pounds 153.78}} \end{aligned}$$

Ben

$$\begin{aligned} \text{Balance} &= 1600 \times 1.035^3 \\ &= 1773.9486 \\ &= \underline{\underline{\pounds 1773.95}} \\ \text{Interest} &= \underline{\underline{\pounds 173.95}} \end{aligned}$$

Ben will get the most interest.

(4)

In the 3rd year the rate of interest for the shares account is changed to 4% per annum.

- (b) Does this affect who will get the most interest by the end of 3 years?
Give a reason for your answer.

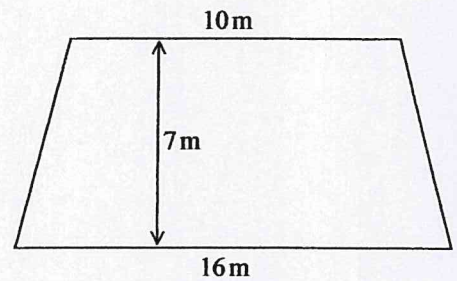
$$\begin{aligned} &1600 \times 1.035^2 \times 1.04 \\ &= 1782.52 \\ &= \underline{\underline{\pounds 182.52}} \end{aligned}$$

(1)

Ben already had the most interest so the increase will make sure he get even more interest

24/5 The diagram shows a floor in the shape of a trapezium.

John is going to paint the floor.
Each 5 litre tin of paint costs £16.99
1 litre of paint covers an area of 2m^2
John has £160 to spend on paint.



Has John got enough money to buy all the paint he needs?
You must show how you get your answer.

$$\text{Area of floor} = \frac{10+16}{2} \times 7 = 91\text{m}^2$$

$$\text{Number of litres needed} = 91 \div 2 = \underline{45.5 \text{ litres}}$$

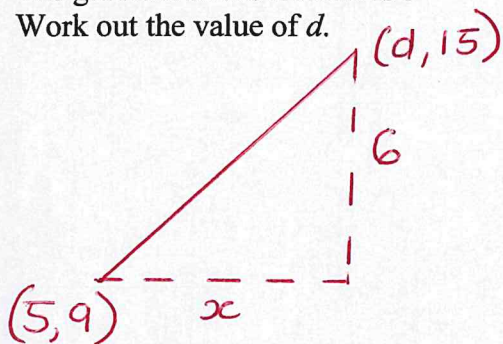
$$\text{Number of tins} = 10$$

$$\text{Cost of paint} = 10 \times 16.99 = \underline{\underline{£169.90}}$$

John does not have enough money.

(5)

25/6 A is the point with coordinates (5, 9)
B is the point with coordinates (d, 15)
The gradient of the line AB is 3
Work out the value of d.



$$\text{Gradient} = 3 = \frac{6}{x}$$

$$\text{so } \underline{x = 2}$$

$$d = 5 + 2 = 7$$

$$d = 7$$

(Total for Question is 3 marks)

TOTAL FOR PAPER IS 25 MARKS