

Name.....

Teacher.....

4th Year Summer Assessment

Paper 2 (middle sets)

1 Hour

Give all answers to 3sf where necessary.

Show your full working.

Calculators Allowed

(Total 61 Marks)

1) At the school fayre, I play a game 20 times.

Each go costs 50p.

Each time I win I receive £1.50

The probability of winning is $\frac{1}{5}$.

How much money do I expect to lose?

Answer £ _____

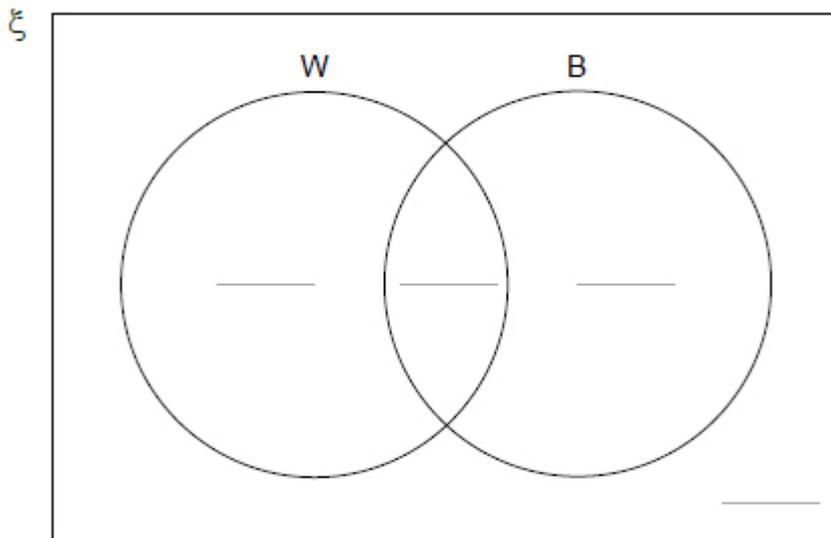
(Total 3 marks)

2) In the Venn diagram

$\xi = 100$ farms

W = farms that grow wheat

B = farms that grow barley



70 farms grow **only** wheat or **only** barley.

$\frac{4}{5}$ of these 70 farms grow **only** wheat.

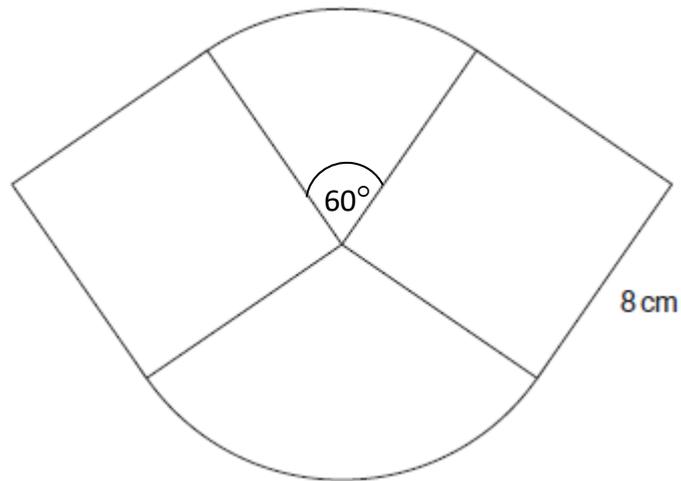
The number of farms that grow wheat is three times the number that grow barley.

Complete the Venn diagram.

(Total 5 marks)

- 5) The shape below is made from two sectors and two squares of side 8 cm. The radius of each sector is also 8 cm.

Not drawn accurately



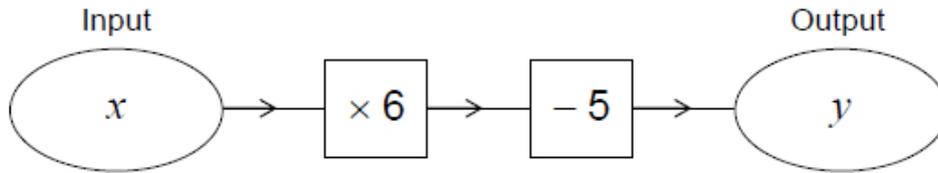
Work out the total area of the shape.

- 6) Factorise $3x^2 + 14x + 8$

(Total 4 marks)

(Total 2 marks)

- 7) (a) Work out the output y when $x = 4$



Answer _____

(1)

- (b) Calculate the input if the output $y = 10$

Answer _____

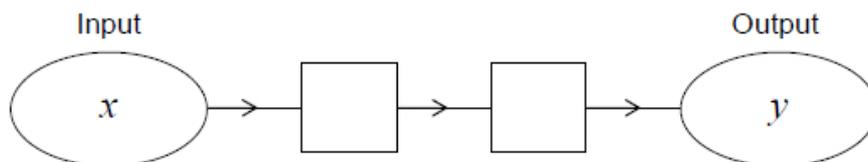
(1)

- (c) Calculate the value of x in function machine a) above if the output is 4 times the input

Answer _____

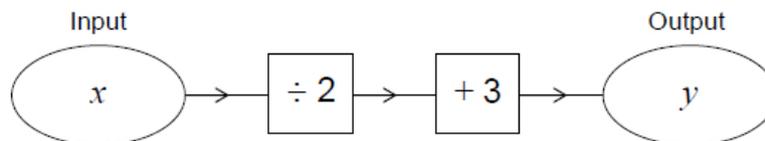
(2)

- (d) Complete this number machine so that $y = 2(x + 7)$



(1)

- (e) Here is a different number machine.



Which equation is correct for this machine?
Circle your answer.

$$y = \frac{x}{2} + 3$$

$$x = \frac{y}{2} + 3$$

$$x = \frac{y + 3}{2}$$

$$y = \frac{x + 3}{2}$$

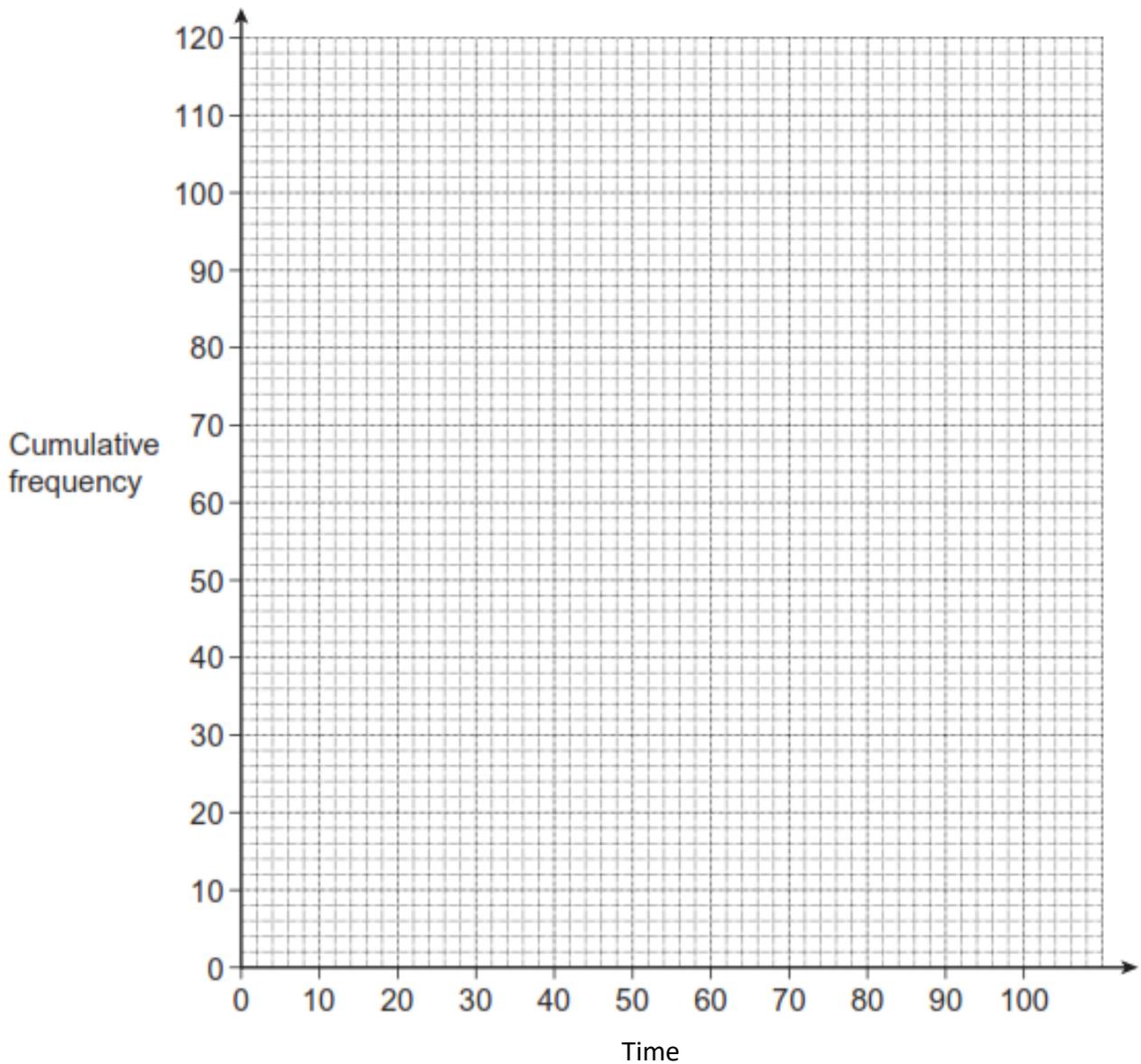
(1)

(Total 6 marks)

8) The table shows a summary of the times (t) in seconds to complete a task for 110 boys

Time	Frequency
$10 < t \leq 20$	12
$20 < t \leq 40$	8
$40 < t \leq 60$	42
$60 < t \leq 80$	29
$80 < t \leq 100$	19

(a) Find the interquartile range of times by first drawing a cumulative frequency diagram



Answer _____

(b) 80 girls also carried out the task, the data for their times taken is summarised below:

median = 42 seconds IQR = 55 seconds

Compare the boys and girls times stating any values you use:

Comparison 1

Comparison 2

(4)

(ii) 2 boys are chosen at random, find the probability that they both take over 70 minutes

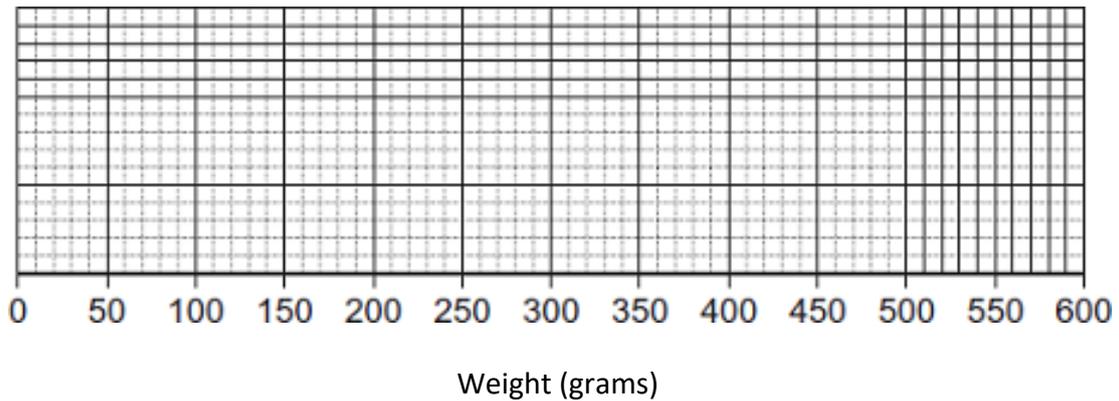
(4)

(Total 13 marks)

- 9) Bags of sugar are weighed.
The results are summarised in the table.
All measurements are in grams.

Minimum	Lower Quartile	Median	Upper Quartile	Maximum
210	250	310	390	470

- (a) Draw a box plot to show this information.



(2)

- (b) An extra 10 grams of sugar is added to each of the bags.
Tick the correct box to show how each of the following will change.

	Decrease	No Change	Increase
Range	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Median	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lower quartile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(3)

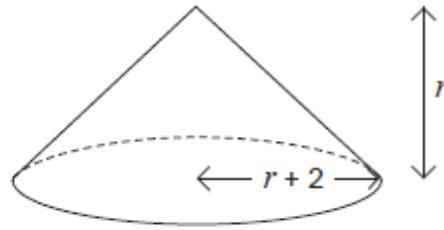
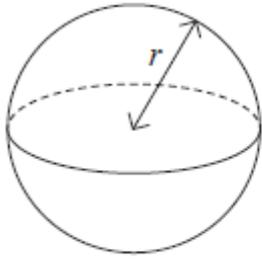
(Total 5 marks)

- 10) Lauren is given a 12% pay rise. Her new salary is £24,080 "
What was Lauren's salary before the pay rise?

Answer £ _____

(Total 3 marks)

- 11) The volume of the sphere is equal to the volume of the cone.



Work out the value of r .
Do **not** use trial and improvement.
You **must** show your working.

(Total 5 marks)

12)

Bag X contains 9 blue balls and 18 red balls.

Bag Y contains 7 blue balls and 14 red balls.

Liz picks a ball at random from bag X.

She puts the ball into bag Y.

Mike now picks a ball at random from bag Y.

Show that

$P(\text{Liz picks a blue ball}) = P(\text{Mike picks a blue ball})$

(Total 4 marks)

- 13) Area of triangle BCD = 40cm^2 .
Area of triangle ADC = 92cm^2

Calculate the length AB.

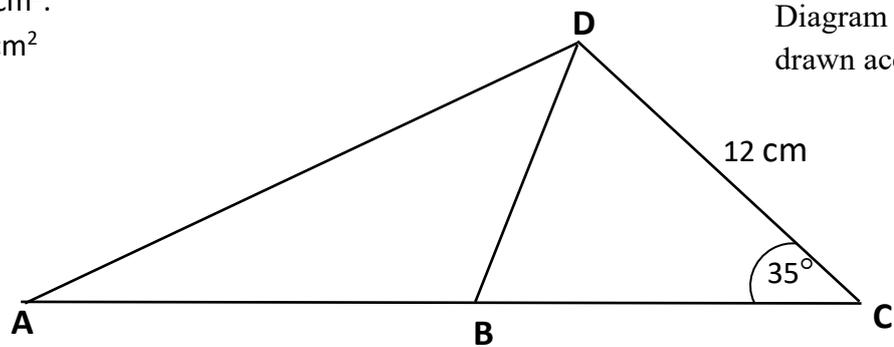


Diagram not
drawn accurately

Answer _____ cm
(Total 4 marks)

END OF QUESTION PAPER