

Name:

Core Mathematics
Summer Work – Passport to Post 16

In preparation for starting Core Mathematics in September it is important that you are confident in some key topics from GCSE.

You will need to complete the 7 questions in this booklet and hand your work to your teacher in September. On each page, there are video links for the topic via the QR codes.



Tree diagrams



Natalie has 8 socks in a drawer.

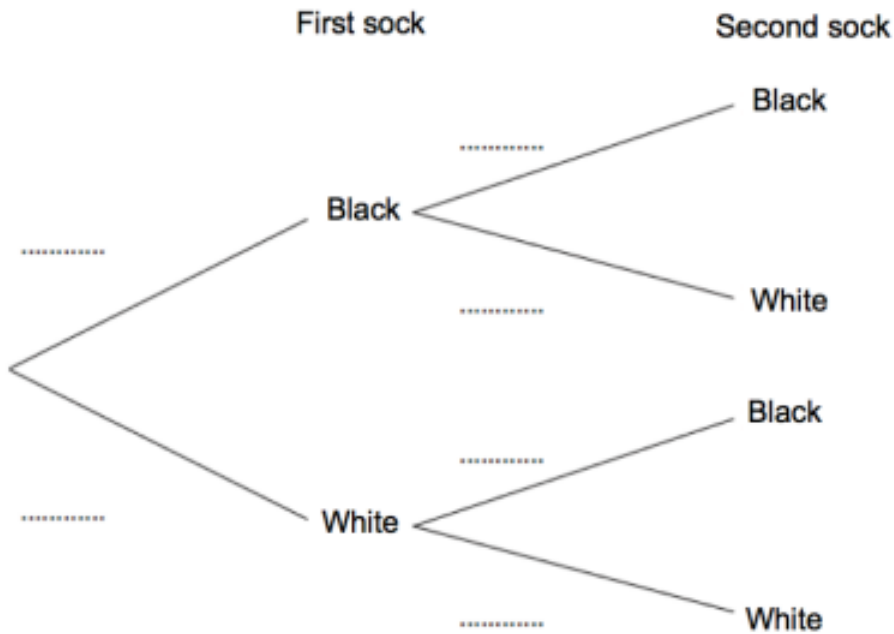
5 of the socks are black.

3 of the socks are white.

Natalie takes out a sock at random, writes down its colour and puts it back into the drawer.

Then Natalie takes out a second sock, at random, and writes down its colour.

(a) Complete the probability tree diagram.



(2)

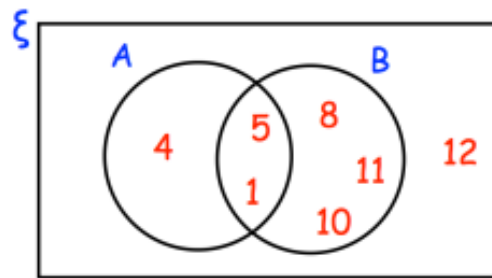
(b) Work out the probability that the two socks are the same colour.

.....
(2)

Venn Diagrams



Here is a Venn diagram.



A number is chosen at random.

(a) Write down $P(A \cap B')$

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(2)

(b) Write down $P(A' \cup B')$

.....
(2)

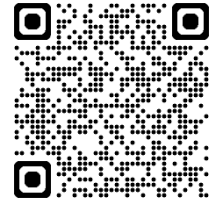
(c) Write down $P(B | A)$

.....
(2)

Mean from a table

The table shows the number of sweets in 20 bags.

Number of sweets	Frequency
23	1
24	4
25	9
26	3
27	3



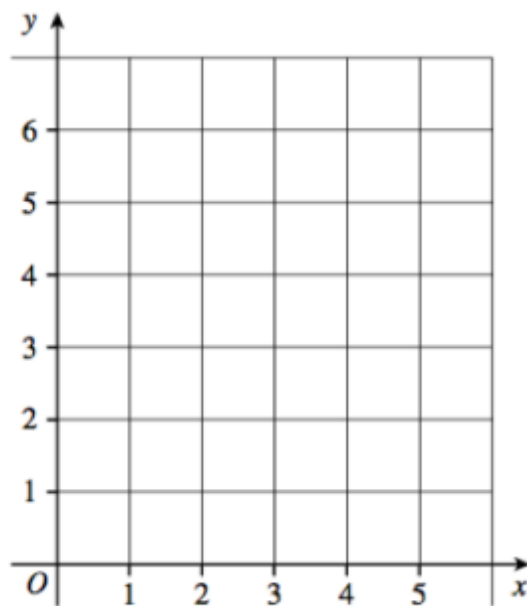
Calculate the mean.

.....
(3)

Inequalities and regions

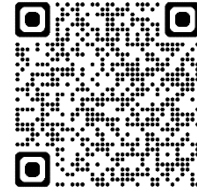
On the grid, clearly indicate the region that satisfies all these inequalities.

$$x \geq 3 \quad y \geq 1 \quad x + y \leq 5$$



(3)

Cumulative frequency

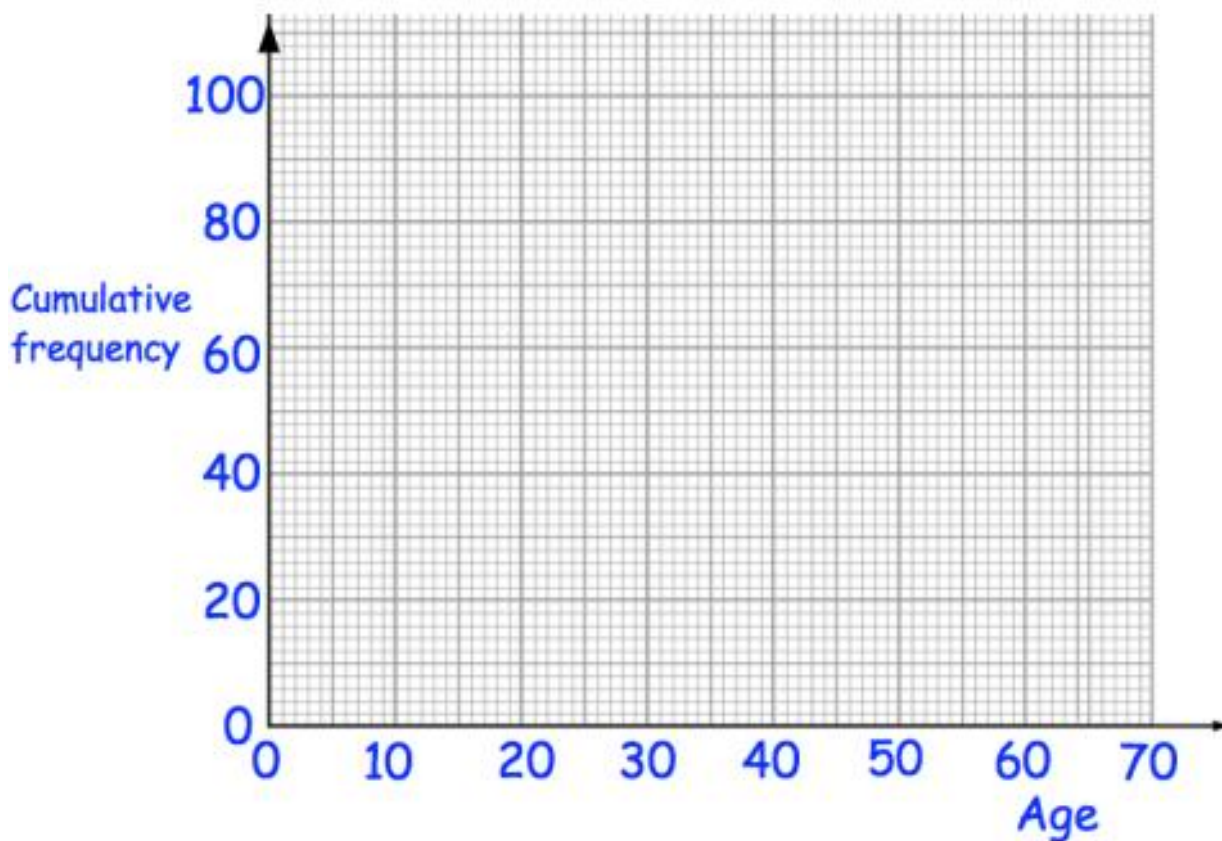


The ages of 100 teachers were recorded.
The table below shows this information.

Age, x years	Frequency	Cumulative frequency
$20 < x \leq 30$	12	
$30 < x \leq 40$	30	
$40 < x \leq 50$	28	
$50 < x \leq 60$	22	
$60 < x \leq 70$	8	

(a) Complete the cumulative frequency column in the table.

(1)



(b) Draw a cumulative frequency graph for this information.

(2)

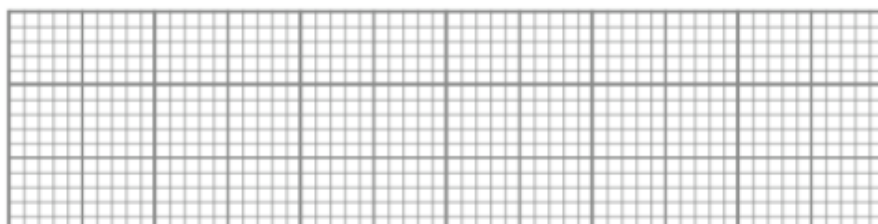
Box plots

The table gives information about the weights of 50 male rugby players.

Lowest	68kg
Lower Quartile	74kg
Median	82kg
Upper Quartile	88kg
Highest	100kg



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



(3)

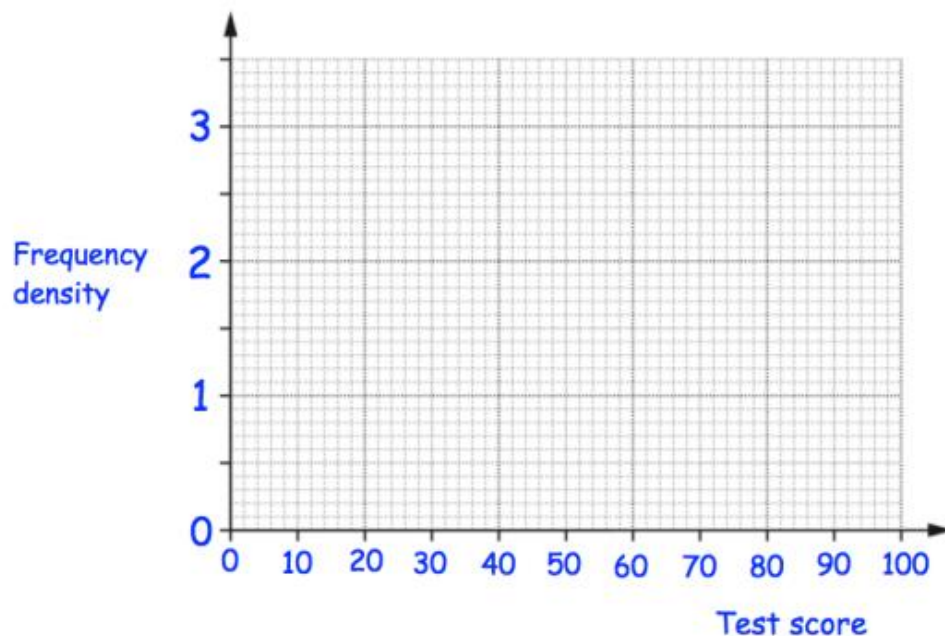
Histograms

The test scores from the students in a school are summarised in the table.

Test score, x	Frequency
$0 < x \leq 30$	15
$30 < x \leq 40$	22
$40 < x \leq 50$	28
$50 < x \leq 70$	30
$70 < x \leq 100$	9



Draw a histogram for this data.



(3)