

- 1 The table gives information about the length of time, in minutes, that each of 60 students took to travel to school on Monday.

Length of time (t minutes)	Frequency
$0 < t \leq 10$	4
$10 < t \leq 20$	10
$20 < t \leq 30$	15
$30 < t \leq 40$	25
$40 < t \leq 50$	6

- (a) Write down the modal class interval.

.....
(1)

- (b) Work out an estimate for the mean length of time taken by these 60 students to travel to school on Monday.
Give your answer correct to one decimal place.

..... minutes
(4)

(Total for Question 1 is 5 marks)

2 The frequency table gives information about the ages of the 80 people in a train carriage.

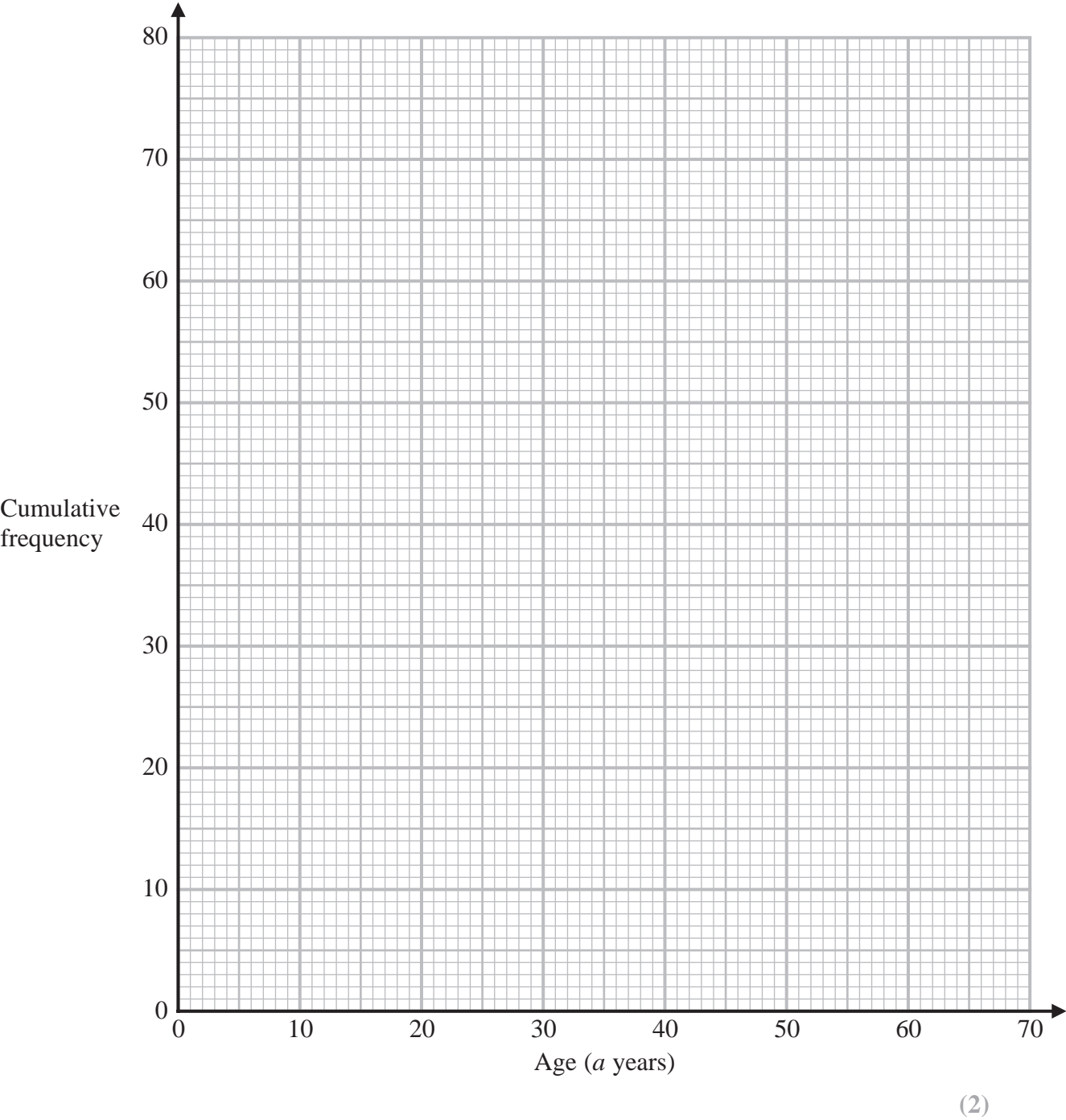
Age (a years)	Frequency
$0 < a \leq 20$	9
$20 < a \leq 30$	19
$30 < a \leq 40$	17
$40 < a \leq 50$	18
$50 < a \leq 60$	13
$60 < a \leq 70$	4

(a) Complete the cumulative frequency table.

Age (a years)	Cumulative frequency
$0 < a \leq 20$	
$0 < a \leq 30$	
$0 < a \leq 40$	
$0 < a \leq 50$	
$0 < a \leq 60$	
$0 < a \leq 70$	

(1)

(b) On the grid, draw a cumulative frequency graph for your table.



(c) Use your graph to find an estimate for the median age of the people in the train carriage.

..... years

(2)

(Total for Question 2 is 5 marks)

- 3** Alexa has five cards.
Each card has a number on it.

The table gives information about the numbers on the five cards.

Total	Median	Mode	Range
45	8	5	10

Using the information in the table, complete each card by writing its number on it.

(Total for Question 3 is 3 marks)

- 4 Alison buys 2 boxes of strawberries, box **A** and box **B**.

Box **A** contains 15 strawberries.

The strawberries in box **A** have a mean weight of 24 grams.

Box **B** contains 25 strawberries.

The strawberries in box **B** have a mean weight of 18 grams.

Alison puts all 40 strawberries into a bowl.

Work out the mean weight of the 40 strawberries.

..... grams

(Total for Question 4 is 3 marks)

5 Sandeep sat 11 tests in January 2020

Each test was marked out of 60

Here are his test results.

45 41 35 44 38 47 47 39 37 43 42

- (a) Find the interquartile range of these test results.
Show your working clearly.

.....
(3)

Sandeep also sat some tests in May 2020

Each test was marked out of 60

The median of the May 2020 test results is 42

The interquartile range of the May 2020 test results is 12

- (b) In which month, January or May, were Sandeep's test results more consistent?
Give a reason for your answer.

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

(Total for Question 5 is 4 marks)

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

4 7 x 10 y y

The numbers have

a median of 9

a mean of 11

Find the value of x and the value of y .

$x =$

$y =$

(Total for Question 6 is 4 marks)

7 The table shows information about the lengths of time, in minutes, 120 customers spent in a supermarket.

Length of time (L minutes)	Frequency
$20 < L \leq 30$	6
$30 < L \leq 40$	26
$40 < L \leq 50$	31
$50 < L \leq 60$	40
$60 < L \leq 70$	17

(a) Write down the modal class.

.....
(1)

(b) Work out an estimate for the mean length of time spent by the 120 customers in the supermarket.

.....minutes
(4)

(Total for Question 7 is 5 marks)

- 8 5 children are playing on a trampoline.
The mean weight of the 5 children is 28 kg.

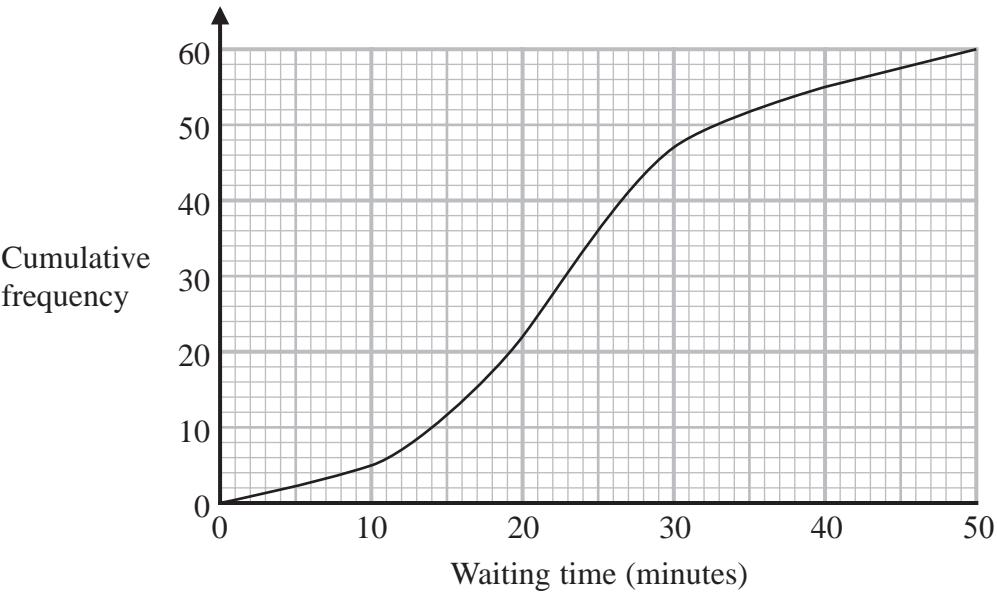
2 of the children get off the trampoline.
The mean weight of these 2 children is 26.5 kg.

Work out the mean weight of the 3 children who remain on the trampoline.

..... kg

(Total for Question 8 is 3 marks)

9 The cumulative frequency graph gives information about the waiting times, in minutes, of people with appointments at Hospital A.



(a) Use the graph to find an estimate of the median waiting time at Hospital A.

..... minutes

(1)

(b) Use the graph to find an estimate of the interquartile range of the waiting times at Hospital A.

..... minutes

(2)

At a different hospital, Hospital B, the median waiting time is 28 minutes and the interquartile range of the waiting times is 19 minutes.

(c) Compare the waiting times at Hospital A with the waiting times at Hospital B.

.....

.....

.....

.....

(2)

10 Max kept a record of the marks he scored in each of the 11 spelling tests he took one term.

Here are his marks.

18 5 7 12 11 18 15 16 17 13 14

Find the interquartile range of the marks.

.....
(Total for Question 10 is 3 marks)

11 The table shows information about the weights, in kilograms, of 40 babies.

Weight (w kg)	Frequency
$2 < w \leq 3$	12
$3 < w \leq 4$	16
$4 < w \leq 5$	9
$5 < w \leq 6$	2
$6 < w \leq 7$	1

(a) Write down the modal class.

.....
(1)

(b) Work out an estimate for the mean weight of the 40 babies.

..... kg
(4)

One of the 40 babies is going to be chosen at random.

(c) Find the probability that this baby has a weight of more than 5 kg.

.....
(2)

(Total for Question 11 is 7 marks)

12 Here is the number of goals that Henri's team scored one summer in each water polo match.

5 8 9 11 13 13 14 15 16 17 20

Find the interquartile range of the numbers of goals.

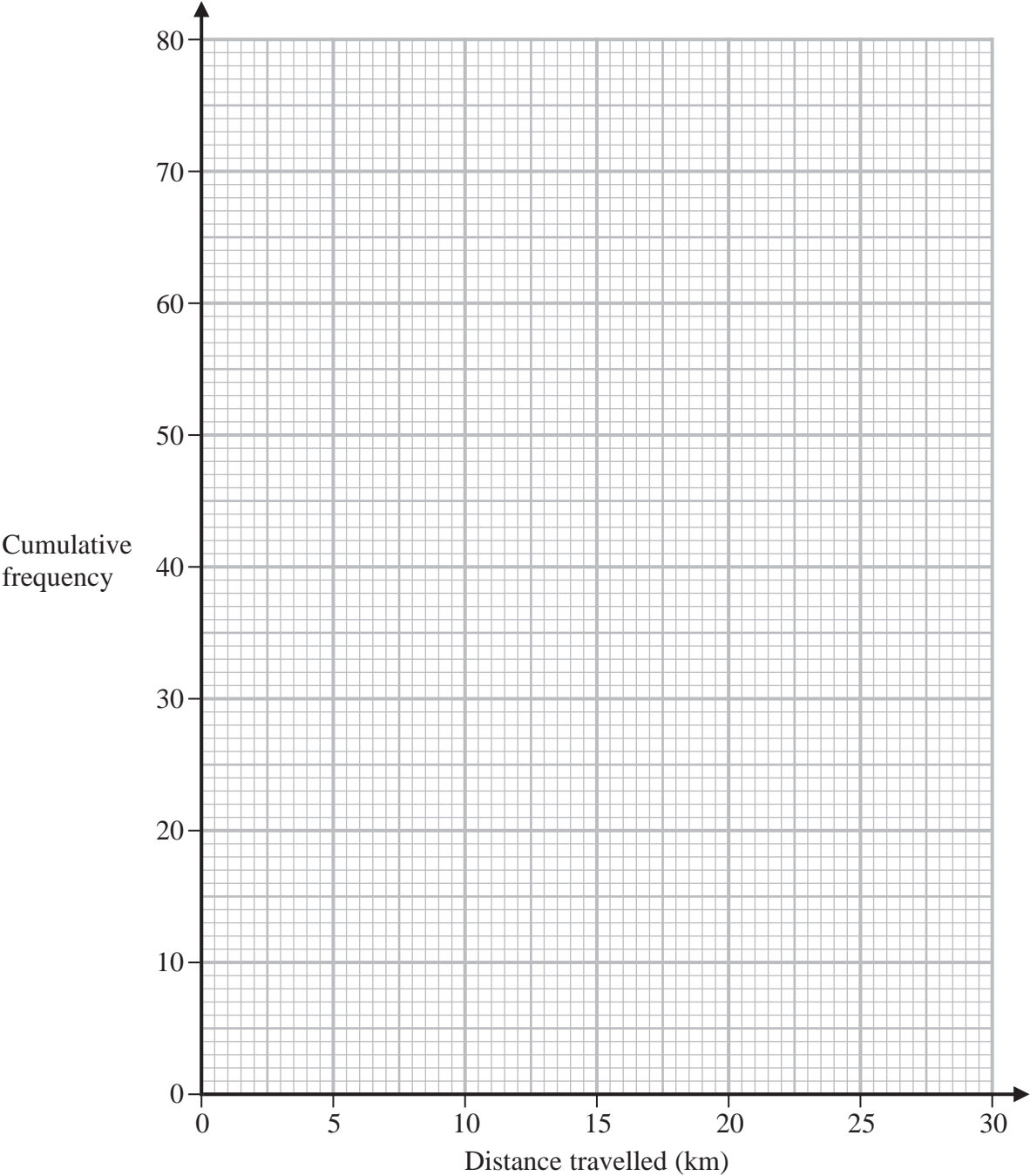
Show your working clearly.

(Total for Question 12 is 2 marks)

13 The cumulative frequency table gives information about the distance, in kilometres, that each of 80 workers travel from home to work at Office A.

Distance travelled (d km)	Cumulative frequency
$0 < d \leq 5$	17
$0 < d \leq 10$	32
$0 < d \leq 15$	57
$0 < d \leq 20$	70
$0 < d \leq 25$	76
$0 < d \leq 30$	80

(a) On the grid below, draw a cumulative frequency graph for the information in the table.



(b) Use your graph to find an estimate for the median distance travelled.

..... km
(1)

(c) Use your graph to find an estimate for the interquartile range of the distances travelled.

..... km
(2)

For Office *B*, the median distance workers travel from home to work is 15 km and the interquartile range is 5 km.

(d) Use the information above to compare the distances that workers at Office *A* and workers at Office *B* travel from home to work.
Write down **two** comparisons.

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

(Total for Question 13 is 7 marks)

14 Given that $a < b < c$

the four whole numbers a , a , b and c have

a mode of 7

a median of 8.5

a mean of 9

Work out the value of a , the value of b and the value of c .

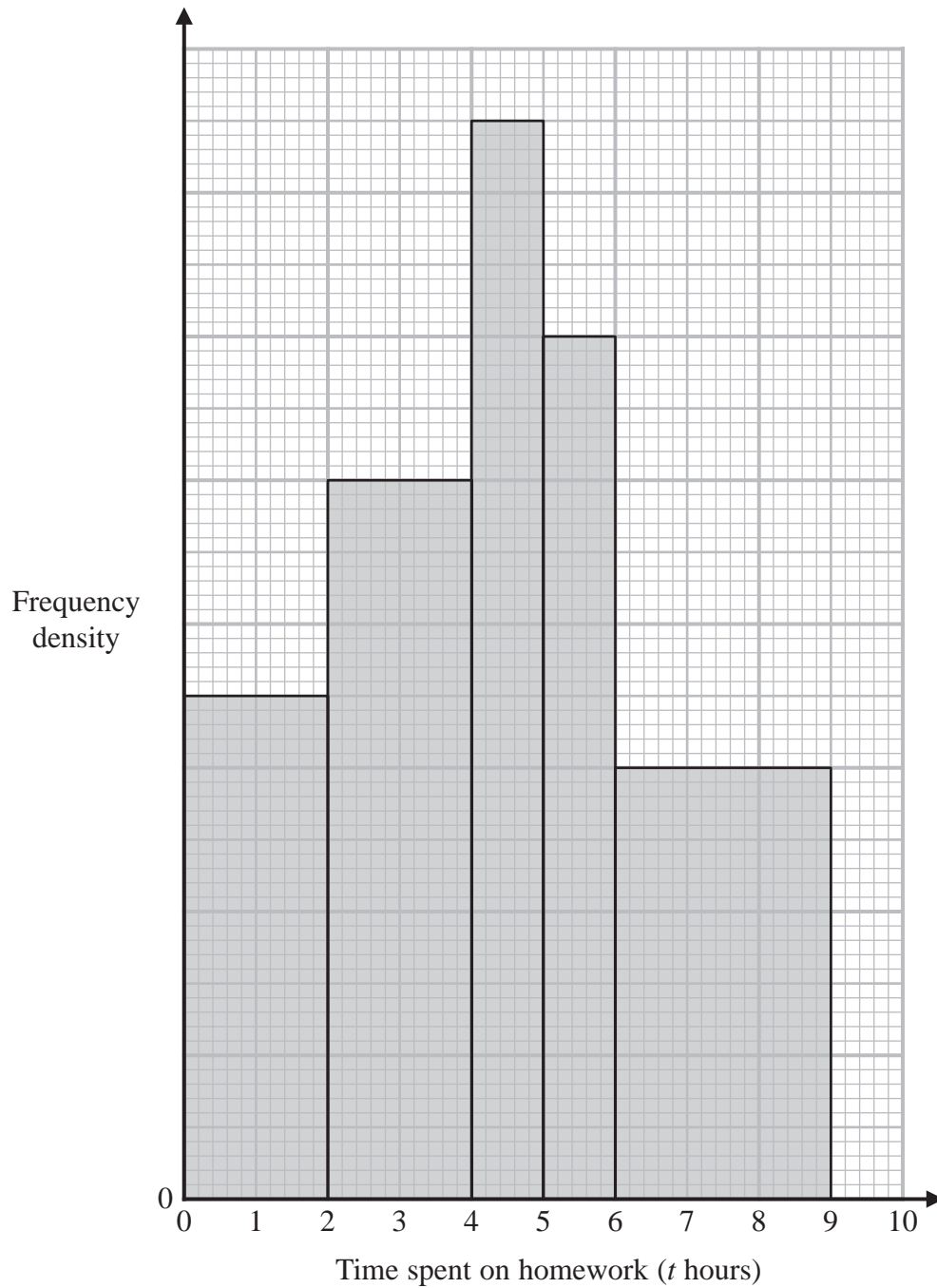
$a =$

$b =$

$c =$

(Total for Question 14 is 4 marks)

- 15** The histogram and the table give some information about the amounts of time, in hours, that Year 11 students at Bergdesh Academy spent, in total, on their homework last week. No student in Year 11 spent longer than 9 hours on their homework.



Time spent on homework (t hours)	Frequency
$0 < t \leq 2$	28
$2 < t \leq 4$	
$4 < t \leq 5$	
$5 < t \leq 6$	
$6 < t \leq 9$	

Using the information in the histogram and in the table, work out an estimate for the mean amount of time the Year 11 students spent on their homework last week.
Give your answer in hours correct to 3 significant figures.

..... hours

16 A mathematics teacher at a school asked a group of students how far, in kilometres, each student had travelled to get to school that day.

The table gives information about their answers.

Distance travelled (d km)	Number of students
$0 < d \leq 2$	x
$2 < d \leq 4$	11
$4 < d \leq 6$	8
$6 < d \leq 8$	6
$8 < d \leq 10$	5

The teacher calculated that an estimate for the mean distance travelled by the whole group of students was 4.25 km.

Work out the value of x .
Show your working clearly.

$x =$

(Total for Question 16 is 4 marks)

17 The table gives information about the speeds, in kilometres per hour, of 80 motorbikes as each pass under a bridge.

Speed (s kilometres per hour)	Frequency
$40 < s \leq 50$	10
$50 < s \leq 60$	16
$60 < s \leq 70$	19
$70 < s \leq 80$	23
$80 < s \leq 90$	12

(a) Write down the modal class.

.....
(1)

(b) Work out an estimate for the mean speed of the motorbikes as they pass under the bridge.
Give your answer correct to 3 significant figures.

..... kilometres per hour
(4)

(Total for Question 17 is 5 marks)

18 Ava writes down five whole numbers.

For these five numbers

the median is 7

the mode is 8

the range is 5

Find a possible value for each of the five numbers that Ava writes down.

(Total for Question 18 is 3 marks)

19 There are 5 cocoa pods in a bag.

The mean weight of the 5 cocoa pods is 398 grams.

A sixth cocoa pod is put into the bag.

The mean weight of the 6 cocoa pods is 401 grams.

Work out the weight of the sixth cocoa pod that is put into the bag.

..... grams

(Total for Question 19 is 3 marks)

20 15 people were asked how long, in minutes, they had been waiting for a bus.

Here are the results.

2 3 3 4 5 6 6 8 9 10 11 13 14 15 18

Find the interquartile range of these times.

..... minutes

(Total for Question 20 is 2 marks)

21 Here are five cards.

Each card has a number written on it.

15

7

-2

23

x

The mean of the five numbers is 12

Work out the value of x

$x = \dots\dots\dots$

(Total for Question 21 is 3 marks)

22 Here is the number of runs scored by a baseball team in each of its 15 games this season.

The number of runs have been arranged in order of size.

0 1 1 3 5 6 7 7 8 9 9 12 12 15 16

Work out the interquartile range of the number of runs.

(Total for Question 22 is 2 marks)

23 Alberto, Bill, Candela and Diana are four friends.

Here is some information about the height of each of these friends.

Alberto's height is 158 cm.

Bill's height is 175 cm.

Candela's height is greater than Diana's height.

The median height of these four friends is 160 cm.

The range of the heights of these four friends is 21 cm.

Work out Candela's height and Diana's height.

Candela cm

Diana cm

(Total for Question 23 is 3 marks)

24 Here are some integers where $a < b < c < d$

a b c d d d

The mode of the integers is 9

The median of the integers is 8

The range of the integers is 4

Work out the value of a , the value of b , the value of c and the value of d

$a = \dots\dots\dots$

$b = \dots\dots\dots$

$c = \dots\dots\dots$

$d = \dots\dots\dots$

(Total for Question 24 is 3 marks)

25 Yusuf sat 8 examinations.

Here are his marks for 5 of the examinations.

68 72 75 77 80

For his results in all 8 examinations

the mode of his marks is 80

the median of his marks is 74

the range of his marks is 16

Find Yusuf's marks for each of the other 3 examinations.

.....

.....

.....

(Total for Question 25 is 4 marks)

- 26** Shane invests 7200 dollars for 3 years in a savings account.
He gets 2.5% per year compound interest.

How much money will Shane have in his savings account at the end of 3 years?
Give your answer to the nearest dollar.

..... dollars

(Total for Question 26 is 3 marks)

27 Jenny has six cards.

Each card has a whole number written on it so that

the smallest number is 5

the largest number is 24

the median of the six numbers is 14

the mode of the six numbers is 8

Jenny arranges her cards so that the numbers are in order of size.

5					24
	

- (a) For the remaining four cards, write on each dotted line a number that could be on the card.

(3)

A basketball team plays 6 games.

After playing 5 games, the team has a mean score of 21 points per game.

After playing 6 games, the team has a mean score of 23 points per game.

- (b) Work out the number of points the team scored in its 6th game.

(3)

(Total for Question 27 is 6 marks)

- 28** The frequency table gives information about the number of points scored by a player.

Number of points	Frequency
0	13
1	17
2	8
3	x
4	11

The mean number of points scored is 2

Work out the value of x

$x =$

(Total for Question 28 is 4 marks)

- 29** Diyar recorded the distance, in kilometres, that he cycled each day for 11 days.
Here are his results.

8 10 12 13 5 23 21 7 5 16 14

Find the interquartile range of his results.

..... km

(Total for Question 29 is 3 marks)

30 The table shows information about the frame size, in cm, of 60 bicycles sold in a shop.

Frame size (S cm)	Frequency
$30 < S \leq 36$	4
$36 < S \leq 42$	14
$42 < S \leq 48$	18
$48 < S \leq 54$	19
$54 < S \leq 60$	5

(a) Write down the modal class.

.....
(1)

(b) Work out an estimate for the mean frame size.

..... cm
(4)

(Total for Question 30 is 5 marks)

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

x 5 y z 10 12

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

$x =$

$y =$

$z =$

(Total for Question 31 is 3 marks)

32 60 students sat a Mathematics exam.

The mean mark for the 32 students in Class A was 55

The mean mark for the 28 students in Class B was 52

Find the mean mark for all 60 students.

.....

(Total for Question 32 is 3 marks)

33 Here are the numbers of aces that Rutger served in each of 11 tennis matches.

1 1 2 4 6 8 8 9 11 12 15

- (a) Find the interquartile range of the numbers of aces.
Show your working clearly.

.....
(2)

Kim also plays in 11 tennis matches.

For Kim

the median number of aces is 11

the interquartile range of the numbers of aces is 5

- (b) State, giving a reason, whether Rutger or Kim

- (i) served more aces on average,

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

- (ii) was more consistent with the number of aces served.

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

(Total for Question 33 is 4 marks)

34 80 students entered a dancing competition.

The table gives information about the length of time, in minutes, for which each student spent dancing.

Time (<i>m</i>)	Frequency
$0 < m \leq 12$	11
$12 < m \leq 24$	25
$24 < m \leq 36$	23
$36 < m \leq 48$	15
$48 < m \leq 60$	6

Work out an estimate for the mean length of time the students spent dancing.

..... minutes

(Total for Question 34 is 4 marks)

- 35** Here is a list giving the numbers of runs scored last week by the eleven members of cricket team **A**.

2 3 4 6 21 26 27 32 34 61 72

The interquartile range of the numbers of runs scored last week by the eleven members of cricket team **B** was 42

Using a suitable calculation, write down one comparison between the numbers of runs scored by the members of cricket team **A** and the members of cricket team **B**.
Show your working clearly.

(Total for Question 35 is 3 marks)

36 Gemara works as a taxi driver.

Last week, he recorded the following information about the distances he drove.

For the 5 days from Monday to Friday, the mean number of kilometres he drove was 104

For the 7 days from Monday to Sunday, the mean number of kilometres he drove was 127

On Saturday, Gemara drove 132 kilometres.

Work out the number of kilometres he drove on Sunday.

..... kilometres

(Total for Question 36 is 3 marks)

- 37** Akari played a computer game eleven times.
Here are her scores.

25 20 28 27 26 22 23 29 20 29 26

- (a) Find the interquartile range of her scores.

.....
(3)

Machi played the same computer game eleven times.

The interquartile range for Machi's scores was 9

- (b) Who had the more consistent scores, Akari or Machi?
Give a reason for your answer.

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

(Total for Question 37 is 4 marks)

38 Here are the test marks of 15 students.

7 10 14 15 16 17 18 19 20 20 23 25 30 39 40

Find the interquartile range of these marks.

(Total for Question 38 is 2 marks)

39 Team **A** and Team **B** take part in a quiz league.

After 11 rounds, Team **A** has a mean score per round of 17

After 9 rounds, Team **B** has a mean score per round of 18

Both teams take part in a further round.

After this round, both teams have a mean score per round of 18.5

In the further round, Team **A** scored more points than Team **B**.

How many more?

.....
(Total for Question 39 is 4 marks)
