Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Here are eight numbers written in order of size

+2 +2

h 6 7 8 j 16 k k

↑ median = 10

where h, j and k are integers.

The median of the eight numbers is 10

The mode of the eight numbers is 18

The range of the eight numbers is 13

$j = 12$

most common = 18

$k = 18$

Work out the value of h, the value of j and the value of k

Range = biggest − smallest

$13 = 18 - h$

$h = 5$

$h = 5$ $j = 12$ $k = 18$

$h =$ .....

$j =$ .....

$k =$ .....

(Total for Question 1 is 3 marks)

Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

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

median = 8

a	b	c	d	d	d
			9	9	9

The mode of the integers is 9 $d = 9$

The median of the integers is 8

The range of the integers is 4 $c = 7$

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

Range = biggest − smallest

$4 = 9 - \text{smallest}$

$a = 5$

$a = 5$

$b =$

$c = 7$

$d = 9$

$b = 6$ as $a < b < c$

$a =$ .....

$b =$ .....

$c =$ .....

$d =$ .....

(Total for Question 1 is 3 marks)

1 Here are six cards.

Five of the cards have a number written on them.

16	15	3	2	9	

Work out the number that should be written on the last card so that the mean of the six numbers will be 11

mean = $\frac{\text{total}}{\text{how many}}$

mean x how many = total

$11 \times 6 = 66$

$16 + 15 + 3 + 2 + 9 = 45$

$66 - 45 = 21$

.....

(Total for Question 1 is 3 marks)

3 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

mean = $\frac{\text{total}}{\text{how many}}$

mean x how many = total

12 x 5 = 60

15 + 7 + -2 + 23 = 43

60 - 43 = 17

x = ...

(Total for Question 3 is 3 marks)

1 x, 10 and y are three integers written in order of size, starting with the smallest integer.

The mean of x, 10 and y is 11
The range of x, 10 and y is 7

Work out the value of x and the value of y.

Mean

$$\frac{x + 10 + y}{3} = 11$$

$\times 3 \quad \times 3$

$$x + 10 + y = 33$$

$-10 \quad -10$

$$x + y = 23$$

Range

$$y - x = 7$$

$x =$ .....

$y =$ .....

(Total for Question 1 is 2 marks)

So

$$x + y = 23$$

$$y - x = 7 \quad (+)$$

$$2y = 30$$

$\div 2 \quad \div 2$

$$y = 15$$

$$x + y = 23$$

$$x + 15 = 23$$

$$x = 8$$

2 Ava writes down five whole numbers.

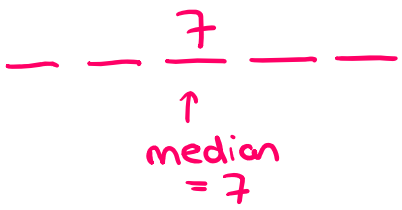
For these five numbers

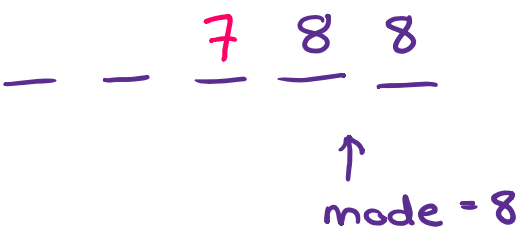
the median is 7

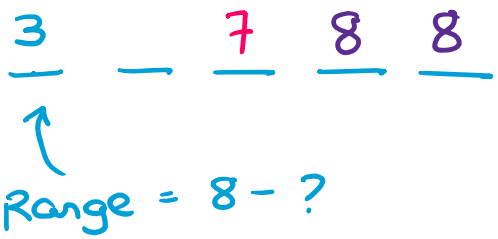
the mode is 8

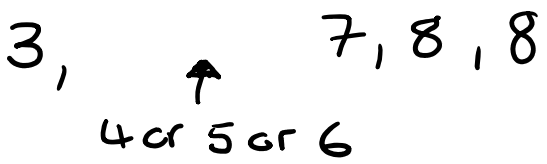
the range is 5

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









(Total for Question 2 is 3 marks)

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

$x \quad 5 \quad y \quad z \quad 10 \quad 12$

The numbers have
a range of 9
a median of 8
a mode of 10

$12 - x = 9$
$x = 3$

Find the value of x, the value of y and the value of z

3 5 y z 10 12
↑ mode = 10 $z = 10$

-2 -2

3 5 y 10 10 12
↑ median = 8

$y = 6$

$x =$ 3

$y =$ 6

$z =$ 10

(Total for Question 3 is 3 marks)

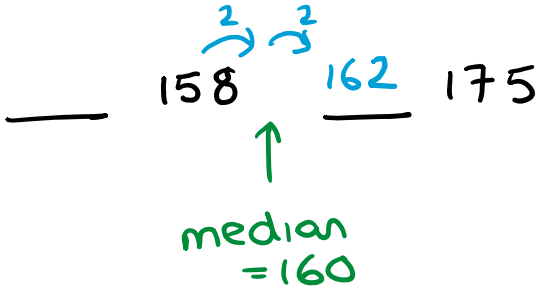
3 Alberto, Bill, Candela and Diana are four friends.

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.



Range = 175 − ?

21 = 175 − ?

so = 154

Candela 162 cm

Diana 154 cm

(Total for Question 3 is 3 marks)

3 Here is a list of four numbers written in ascending order of size

$x \quad x \quad y \quad 15$

where x and y are integers.

The numbers have

a median of 12.5
a range of 4

Find the value of x and the value of y

$\frac{x+y}{2} = 12.5$

$x + y = 25$

Range $= 15 - x$

$4 = 15 - x$

$x = 11$

$x + y = 25$

$11 + y = 25$

$y = 14$

$x =$ .....

$y =$ .....

(Total for Question 3 is 2 marks)

4 a, a, b and 40 are four numbers.

a is the least number.
40 is the greatest number.

The range of the four numbers is 14
The median of the four numbers is 30

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

a a b 40

Range = 40 − a

14 = 40 − a

a = 26

4 4

26 26 b 40

↑

median = 30

b = 34

a = ...

b = ...

(Total for Question 4 is 3 marks)

4 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

1st 2nd 3rd

5 + 10 = 15

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

5	5	8	12	15

(Total for Question 4 is 3 marks)

5 + 5 + 8 + 15 = 33

45 − 33 = 12

4 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.

median = 9

$x = 8$

mean = total / how many

mean x how many = total

11 x 6 = 66

4 + 7 + 8 + 10 + y + y = 66

29 + 2y = 66

-29 -29

2y = 37

÷2 ÷2

y = 18·5

$x =$ .....

$y =$ .....

(Total for Question 4 is 4 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

5 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.

64 68 72 73 75 77 80 80

74

80 − 16 = 64

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.....

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(Total for Question 5 is 4 marks)