

2.1) Measures of central tendency

Worked example

Calculate the mean:

2, 3, 7, 9, 1, 8, 6, 3, 0, 1

Your turn

Calculate the mean:

3, 2, 5, 9, 5, 1, 7, 0

4

Worked example

Find the median:

2, 3, 7, 9, 1, 8, 6, 3, 0, 1

Your turn

Find the median:

3, 2, 5, 9, 5, 1, 7, 0

4

Worked example

Find the median:

2, 3, 7, 9, 1, 8, 6, 3, 0, 1, 9

Your turn

Find the median:

3, 2, 5, 9, 5, 1, 7, 0, 2

3

Worked example

Find the mode:

2, 3, 7, 9, 1, 8, 6, 3, 0, 1

Your turn

Find the mode:

3, 2, 5, 9, 5, 1, 7, 0

5

Worked example

Calculate the mean height:

Height, x (cm)
0.9
1.8
2.7
3.6
4.5

Your turn

Calculate the mean height:

Height, x (cm)
4.9
3.8
2.7
1.6
0.5

$$\bar{x} = 2.7$$

Worked example

Calculate the mean score:

Score, x	Frequency
0	3
1	2
2	1
3	1
4	4

Your turn

Calculate the mean score:

Score, x	Frequency
0	6
1	4
2	2
3	2
4	8

$$\bar{x} = 2.09 \text{ (3 sf)}$$

Worked example

Find the median score:

Score	Frequency
0	3
1	2
2	1
3	1
4	4

Your turn

Find the median score:

Score	Frequency
0	6
1	4
2	2
3	2
4	11

3

Worked example

Find the median score:

Score	Frequency
0	3
1	2
2	1
3	1
4	5

Your turn

Find the median score:

Score	Frequency
0	5
1	4
2	2
3	2
4	11

3

Worked example

Find the mode of the scores:

Score	Frequency
0	3
1	2
2	1
3	1
4	4

Your turn

Find the mode of the scores:

Score	Frequency
0	6
1	4
2	2
3	2
4	3

0

Worked example

Calculate an estimate for the mean score:

Score, x	Frequency
$0 \leq x < 1$	3
$1 \leq x < 2$	2
$2 \leq x < 4$	1
$4 \leq x < 9.5$	1
$9.5 \leq x < 10$	4

Your turn

Calculate an estimate for the mean score:

Score, x	Frequency
$0 < x \leq 1$	6
$1 < x \leq 3$	4
$3 < x \leq 6$	2
$6 < x \leq 6.5$	2
$6.5 < x \leq 10$	8

$$\bar{x} = 4.48 \text{ (3 sf)}$$

Worked example

Calculate an estimate for the mean score:

Score, x	Frequency
$0 \leq x < 2$	3
$2 \leq x < 4$	2
$4 \leq x < 6$	1
$6 \leq x < 8$	1
$8 \leq x < 10$	4

Your turn

Calculate an estimate for the mean score:

Score, x	Frequency
$0 \leq x < 2$	3
$2 \leq x < 4$	0
$4 \leq x < 6$	1
$6 \leq x < 8$	1
$8 \leq x < 10$	4

$$\bar{x} = 5.67 \text{ (3 sf)}$$

Worked example

Write down the interval containing the median

Score, x	Frequency
$0 \leq x < 1$	8
$1 \leq x < 2$	2
$2 \leq x < 4$	1
$4 \leq x < 9.5$	1
$9.5 \leq x < 10$	4

Your turn

Write down the interval containing the median

Score, x	Frequency
$0 < x \leq 1$	6
$1 < x \leq 3$	4
$3 < x \leq 6$	2
$6 < x \leq 6.5$	2
$6.5 < x \leq 10$	8

$$3 < x \leq 6$$

Worked example

Write down the interval containing the median

Score, x	Frequency
$0 \leq x < 1$	3
$1 \leq x < 2$	2
$2 \leq x < 4$	1
$4 \leq x < 9.5$	1
$9.5 \leq x < 10$	4

Your turn

Write down the interval containing the median

Score, x	Frequency
$0 < x \leq 1$	11
$1 < x \leq 3$	4
$3 < x \leq 6$	2
$6 < x \leq 6.5$	2
$6.5 < x \leq 10$	8

$$1 < x \leq 3$$

Worked example

Write down the modal class

Score, x	Frequency
$0 \leq x < 1$	3
$1 \leq x < 2$	2
$2 \leq x < 4$	1
$4 \leq x < 9.5$	1
$9.5 \leq x < 10$	4

Your turn

Write down the modal class

Score, x	Frequency
$0 < x \leq 1$	11
$1 < x \leq 3$	4
$3 < x \leq 6$	2
$6 < x \leq 6.5$	2
$6.5 < x \leq 10$	8

$$0 < x \leq 1$$

Worked example

Times, x , have been rounded to the nearest minute. Find an estimate for the mean time:

Time, x	Frequency
0 – 2	5
3 – 5	2
6 – 10	3

Your turn

Times, x , have been rounded to the nearest minute. Find an estimate for the mean time:

Time, x	Frequency
0 – 3	7
4 – 8	11
9 – 10	2

$$\bar{x} = 4.8125$$

Worked example

Write down the class containing the median

Time, x	Frequency
0 – 2	5
3 – 5	2
6 – 10	3

Your turn

Write down the class containing the median

Time, x	Frequency
0 – 3	7
4 – 8	11
9 – 10	2

4 – 8

Worked example

Write down the modal class

Time, x	Frequency
0 – 2	5
3 – 5	2
6 – 10	3

Your turn

Write down the modal class

Time, x	Frequency
0 – 3	7
4 – 8	11
9 – 10	2

4 – 8

Worked example

The table shows the length of time for different people to complete a task:

Person	A	B	C	D	E	F
Time (minutes)	1	3	8	2	1	9

Calculate the mean.

Your turn

The table shows the length of time for different people to complete a task:

Person	A	B	C	D	E	F
Time (minutes)	7	3	8	2	1	3

Calculate the mean.

4 minutes

Worked example

The table shows the length of time for different people to complete a task:

Person	A	B	C	D	E	F
Time (minutes)	1	3	8	2	1	9

Find the median:

Your turn

The table shows the length of time for different people to complete a task:

Person	A	B	C	D	E	F
Time (minutes)	7	3	8	2	1	3

Find the median:

3 minutes

Worked example

The table shows the length of time for different people to complete a task:

Person	A	B	C	D	E	F
Time (minutes)	1	3	8	2	1	9

Write down the mode.

Your turn

The table shows the length of time for different people to complete a task:

Person	A	B	C	D	E	F
Time (minutes)	7	3	8	2	1	3

Write down the mode.

3 minutes

Worked example

The mean maths score of 10 pupils in class A is 26.
The mean maths score of 40 pupils in class B is 57.

- a) Find the overall mean of all the pupils' marks.
- b) The teacher realises they mismarked one student's paper; he should have received 90 instead of 95. Explain the effect on the mean and median.

Your turn

The mean maths score of 20 pupils in class A is 62.
The mean maths score of 30 pupils in class B is 75.

- a) Find the overall mean of all the pupils' marks.
- b) The teacher realises they mismarked one student's paper; he should have received 100 instead of 95. Explain the effect on the mean and median.

a) 69.8

b) Mean increased, median unaffected.