

Mean as a Fair Share

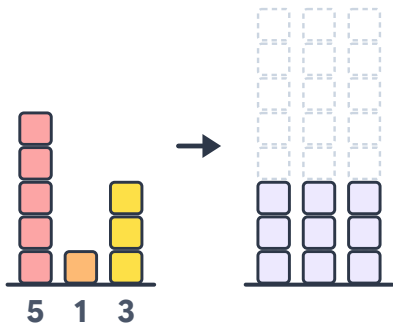
Level the towers to find the fair share. Then add and divide.

The mean is a fair share

Move cubes from the taller towers to the shorter towers until every tower is the same height. That height is the mean: each tower's fair share.

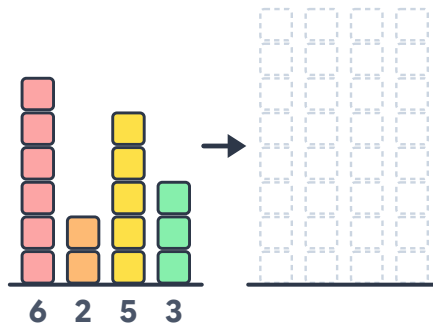
Level the towers. Draw them all the same height.

Example



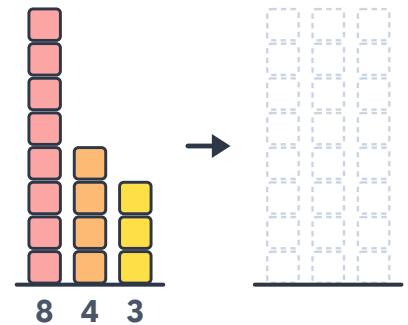
Each tower: 3 cubes

1.



Each tower: _____ cubes

2.



Each tower: _____ cubes

Share fairly: add, then divide by how many there are.

Example

Three friends pick 4, 9 and 8 apples. They share the apples fairly. How many apples does each friend get?

$$\underline{21} \div \underline{3} = \underline{7} \text{ apples}$$

3. Four tables have 5, 9, 6 and 12 cups. Cups are moved so each table has the same number. How many cups are on each table?

$$\underline{\quad} \div \underline{\quad} = \underline{\quad} \text{ cups}$$

4. Five jars hold 12, 7, 10, 9 and 7 marbles. The marbles are shared out fairly. How many marbles go in each jar?

$$\underline{\quad} \div \underline{\quad} = \underline{\quad} \text{ marbles}$$

5. Three pages hold 10, 6 and 14 stickers. Stickers are moved so every page has the same number. How many stickers are on each page?

$$\underline{\quad} \div \underline{\quad} = \underline{\quad} \text{ stickers}$$

Finding the Mean

Add the values, then divide by how many values there are.

The mean

Mean = the total of the values ÷ the number of values

The mean is a measure of center: it tells what a typical value is close to.

Find the mean of each set of data.

Example Points scored in 4 games

12, 9, 15, 8

$$\underline{44} \div \underline{4} = \underline{11} \text{ points}$$

1. Minutes Ava read each day

25, 30, 20, 35, 40

$$\underline{\hspace{2cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{2cm}} \text{ minutes}$$

2. Rainy days each month

8, 11, 7, 9, 12, 7

$$\underline{\hspace{2cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{2cm}} \text{ days}$$

3. Cans collected by 7 classes

34, 28, 41, 30, 36, 25, 37

$$\underline{\hspace{2cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{2cm}} \text{ cans}$$

4. Heights of 4 sunflowers

62, 70, 58, 66

$$\underline{\hspace{2cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{2cm}} \text{ inches}$$

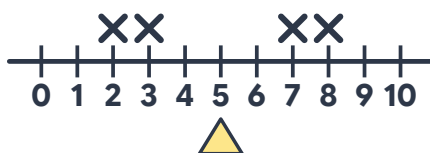
5. Movie ticket prices at 5 theaters

\$9, \$12, \$10, \$8, \$11

$$\underline{\hspace{2cm}} \div \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

Balance point: add the distances below and above the mean.

Example 2, 3, 7, 8

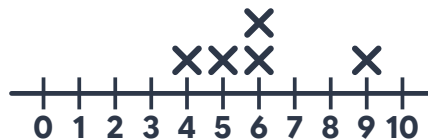


Mean: 5

Below: 2 + 3 = 5

Above: 2 + 3 = 5

6. 4, 5, 6, 6, 9

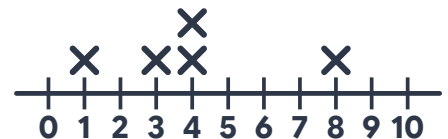


Mean:

Below:

Above:

7. 1, 3, 4, 4, 8



Mean:

Below:

Above:

Median, Mode and Range

Put the data in order. Find the median, the mode and the range.

Median

The middle value of the data in order. Two middle values? Use the number halfway between.

Mode

The value that shows up most often. If no value shows up twice, there is no mode.

Range

The greatest value – the least value. It tells how spread out the data are.

Write the data in order. Then find the median, the mode and the range.

Example

Goals scored in 7 games: 3, 1, 4, 1, 5, 2, 1

1 1 1 2 3 4 5

Median 2 Mode 1 Range 4

1. Shoe sizes of 9 students

4, 6, 5, 7, 6, 5, 6, 8, 3

Median _____ Mode _____ Range _____

2. Pages read each night

18, 25, 12, 25, 30, 22, 16

Median _____ Mode _____ Range _____

3. Spelling test scores

14, 18, 16, 20, 12, 18

Median _____ Mode _____ Range _____

4. Minutes to walk to school

8, 15, 13, 11, 6

Median _____ Mode _____ Range _____

Does it describe the center or the spread? Circle one. Name the measure.

Example

In order, the middle test score is 17.

Center

Spread Measure: median

5. The tallest plant is 9 cm taller than the shortest.

Center Spread Measure: _____

6. Shared fairly, each jar would hold 8 marbles.

Center Spread Measure: _____

7. Size 6 shows up more than any other size.

Center Spread Measure: _____

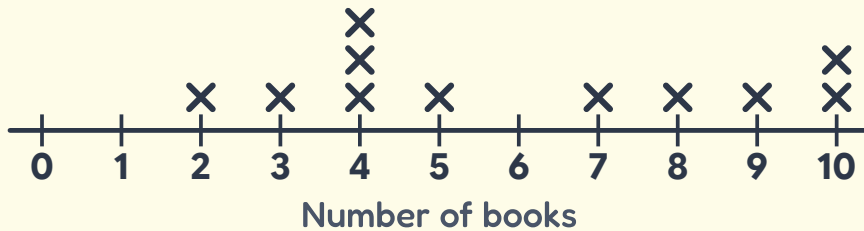
Which Measure Fits?

Find the mean, median, mode and range. Choose the best measure.

Use the line plot. Find each measure.

Books Read in May

X = 1 student



Example Students 11

1. Mean _____

2. Median _____

3. Mode _____

4. Range _____

Which measure best describes the data?

Example Points: 14, 15, 16, 17, 18. The values are close together, so the mean, **16**, fits.

5. Ages of 5 people at a skate park: 9, 10, 11, 12, 33

Mean _____ Median _____ Mode _____

Which one best describes most of the values? Mean Median Mode

Why? _____

Find the mode and the range of decimals and fractions.

Example Rain (inches): 1.25, 0.8, 1.25, 2.1. Mode: 1.25. Range: $2.1 - 0.8 = 1.3$ inches.

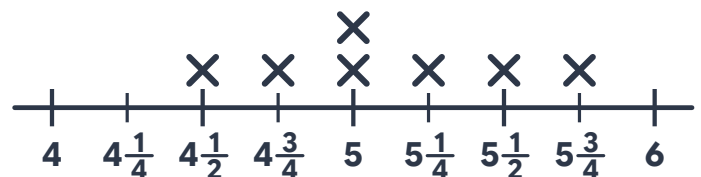
6. Seconds to run 50 meters

8.65	9.24	8.48
9.05	8.65	9.31

Mode: _____ seconds

Range: _____ seconds

7. Pencil lengths (inches)



Mode: _____ Range: _____ inches

Stem-and-Leaf Plots

Make a stem-and-leaf plot with the leaves in order. Then read one.

Make a stem-and-leaf plot. Give it a title and a key.

Example

Laps swum by 10 swimmers

23	31	18	27	35
23	19	30	26	34

Laps Swum

Stem	Leaves
1	8 9
2	3 3 6 7
3	0 1 4 5

Key: 2 | 3 means 23 laps

1. Heights of 14 tomato plants (inches)

42	57	61	45	53	48	62
57	39	50	57	44	66	51

Title: _____

Stem	Leaves

Key: _____

Read the stem-and-leaf plot. Answer the questions.

Math Test Scores

Stem	Leaves
6	5 8
7	2 4 4 9
8	0 3 5 5 5 7
9	1 4 6

Key: 7 | 2 means 72 points

Example

How many scores are there?

15

2.

What is the lowest score?

3.

What is the highest score?

4.

What is the range?

5.

What is the mode?

6.

What is the median?

7.

How many scores are 80 or more?

8.

How many more in the 80s than the 70s?

9.

Most scores are in the ...

Mean as a Fair Share

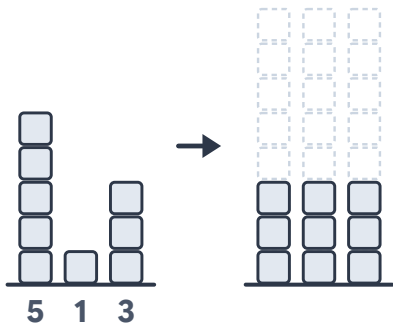
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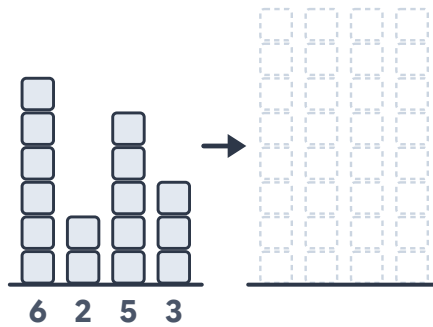
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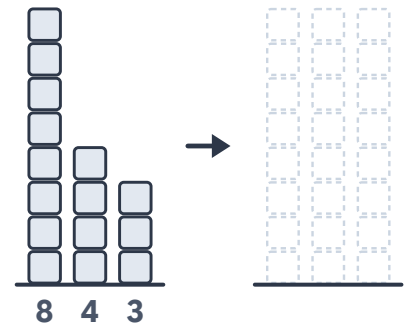
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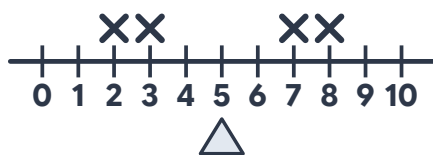
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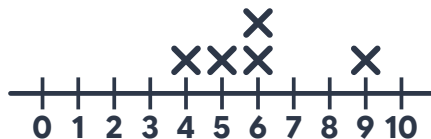


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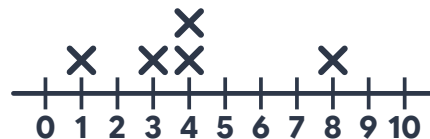


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Goals scored in 7 games: 3, 1, 4, 1, 5, 2, 1

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Median 2 Mode 1 Range 4

1. Shoe sizes of 9 students

4, 6, 5, 7, 6, 5, 6, 8, 3

Median Mode Range

2. Pages read each night

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Median Mode Range

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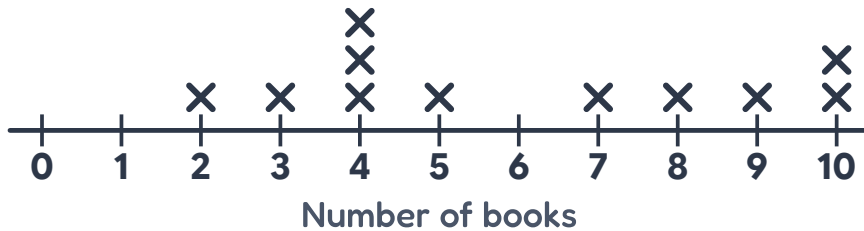
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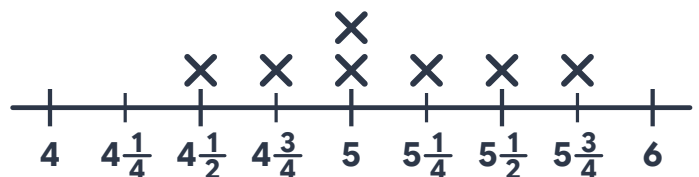
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Mode: _____ seconds

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Example

How many scores are there? 15

2. What is the lowest score? _____

3. What is the highest score? _____

4. What is the range? _____

5. What is the mode? _____

6. What is the median? _____

7. How many scores are 80 or more? _____

8. How many more in the 80s than the 70s? _____

9. Most scores are in the ... _____

Mean as a Fair Share

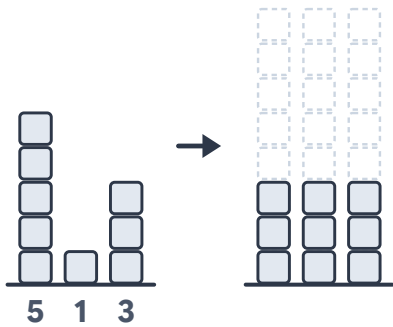
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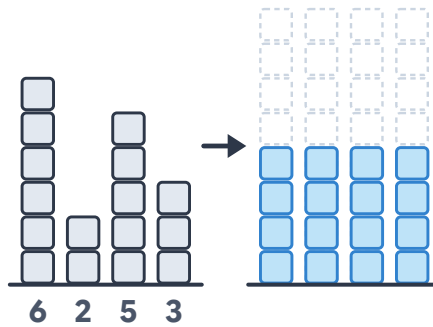
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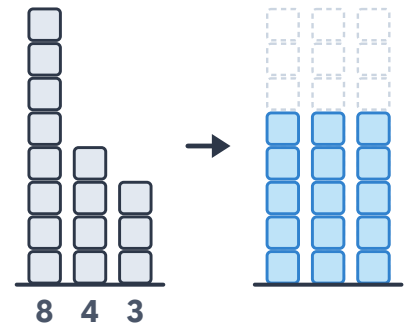
Each tower: 3 cubes

1.



Each tower: 4 cubes

2.



Each tower: 5 cubes

Share fairly: add, then divide by how many there are.

Example

Three friends pick 4, 9 and 8 apples. They share the apples fairly. How many apples does each friend get?

$$\underline{21} \div \underline{3} = \underline{7} \text{ apples}$$

3. Four tables have 5, 9, 6 and 12 cups. Cups are moved so each table has the same number. How many cups are on each table?

$$\underline{32} \div \underline{4} = \underline{8} \text{ cups}$$

4. Five jars hold 12, 7, 10, 9 and 7 marbles. The marbles are shared out fairly. How many marbles go in each jar?

$$\underline{45} \div \underline{5} = \underline{9} \text{ marbles}$$

5. Three pages hold 10, 6 and 14 stickers. Stickers are moved so every page has the same number. How many stickers are on each page?

$$\underline{30} \div \underline{3} = \underline{10} \text{ stickers}$$

Finding the Mean

Add the values, then divide by how many values there are.

The mean

Mean = the total of the values ÷ the number of values

The mean is a measure of center: it tells what a typical value is close to.

Find the mean of each set of data.

Example Points scored in 4 games

12, 9, 15, 8

$$\underline{44} \div \underline{4} = \underline{11} \text{ points}$$

1. Minutes Ava read each day

25, 30, 20, 35, 40

$$\underline{150} \div \underline{5} = \underline{30} \text{ minutes}$$

2. Rainy days each month

8, 11, 7, 9, 12, 7

$$\underline{54} \div \underline{6} = \underline{9} \text{ days}$$

3. Cans collected by 7 classes

34, 28, 41, 30, 36, 25, 37

$$\underline{231} \div \underline{7} = \underline{33} \text{ cans}$$

4. Heights of 4 sunflowers

62, 70, 58, 66

$$\underline{256} \div \underline{4} = \underline{64} \text{ inches}$$

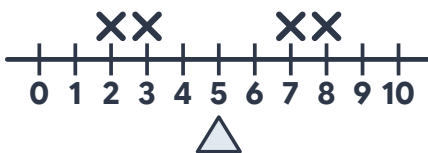
5. Movie ticket prices at 5 theaters

\$9, \$12, \$10, \$8, \$11

$$\underline{\$50} \div \underline{5} = \underline{\$10}$$

Balance point: add the distances below and above the mean.

Example 2, 3, 7, 8

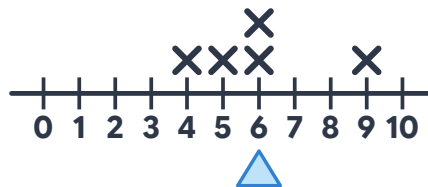


Mean: 5

Below: 2 + 3 = 5

Above: 2 + 3 = 5

6. 4, 5, 6, 6, 9



Mean: 6

Below: 1 + 2 = 3

Above: 3

7. 1, 3, 4, 4, 8



Mean: 4

Below: 1 + 3 = 4

Above: 4

Median, Mode and Range

Put the data in order. Find the median, the mode and the range.

Median

The middle value of the data in order. Two middle values? Use the number halfway between.

Mode

The value that shows up most often. If no value shows up twice, there is no mode.

Range

The greatest value – the least value. It tells how spread out the data are.

Write the data in order. Then find the median, the mode and the range.

Example Goals scored in 7 games: 3, 1, 4, 1, 5, 2, 1

1 1 1 2 3 4 5

Median 2 Mode 1 Range 4

1. Shoe sizes of 9 students

4, 6, 5, 7, 6, 5, 6, 8, 3

3 4 5 5 6 6 6 7 8

Median 6 Mode 6 Range 5

2. Pages read each night

18, 25, 12, 25, 30, 22, 16

12 16 18 22 25 25 30

Median 22 Mode 25 Range 18

3. Spelling test scores

14, 18, 16, 20, 12, 18

12 14 16 18 18 20

Median 17 Mode 18 Range 8

4. Minutes to walk to school

8, 15, 13, 11, 6

6 8 11 13 15

Median 11 Mode none Range 9

Does it describe the center or the spread? Circle one. Name the measure.

Example In order, the middle test score is 17.

Center Spread Measure: median

5. The tallest plant is 9 cm taller than the shortest.

Center Spread Measure: range

6. Shared fairly, each jar would hold 8 marbles.

Center Spread Measure: mean

7. Size 6 shows up more than any other size.

Center Spread Measure: mode

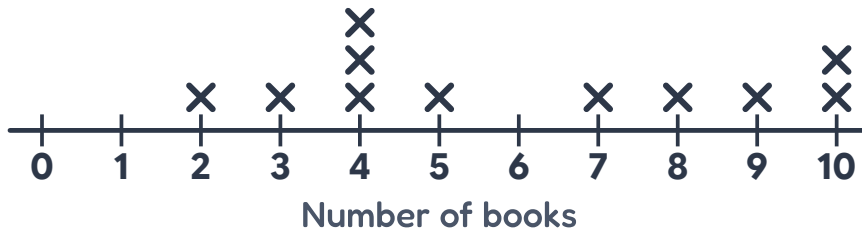
Which Measure Fits?

Find the mean, median, mode and range. Choose the best measure.

Use the line plot. Find each measure.

Books Read in May

X = 1 student



Example Students 11

1. Mean 6

2. Median 5

3. Mode 4

4. Range 8

Which measure best describes the data?

Example Points: 14, 15, 16, 17, 18. The values are close together, so the mean, **16**, fits.

5. Ages of 5 people at a skate park: 9, 10, 11, 12, 33

Mean 15 Median 11 Mode none

Which one best describes most of the values? Mean Median Mode

Why? Sample: 33 is far from the rest and pulls the mean up to 15. Most are near 11.

Find the mode and the range of decimals and fractions.

Example Rain (inches): 1.25, 0.8, 1.25, 2.1. Mode: 1.25. Range: $2.1 - 0.8 = 1.3$ inches.

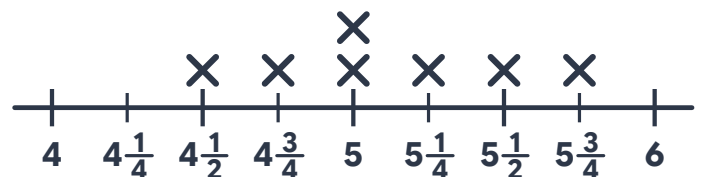
6. Seconds to run 50 meters

8.65	9.24	8.48
9.05	8.65	9.31

Mode: 8.65 seconds

Range: 0.83 seconds

7. Pencil lengths (inches)



Mode: 5 Range: $1\frac{1}{4}$ inches

Stem-and-Leaf Plots

Make a stem-and-leaf plot with the leaves in order. Then read one.

Make a stem-and-leaf plot. Give it a title and a key.

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Laps Swum

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1	8 9
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Key: 2 | 3 means 23 laps

1. Heights of 14 tomato plants (inches)

42	57	61	45	53	48	62
57	39	50	57	44	66	51

Title: Tomato Plant Heights

Stem	Leaves
3	9
4	2 4 5 8
5	0 1 3 7 7 7
6	1 2 6

Key: 4 | 2 means 42 inches

Read the stem-and-leaf plot. Answer the questions.

Math Test Scores

Stem	Leaves
6	5 8
7	2 4 4 9
8	0 3 5 5 5 7
9	1 4 6

Key: 7 | 2 means 72 points

Example How many scores are there? 15

2. What is the lowest score? 65

3. What is the highest score? 96

4. What is the range? 31

5. What is the mode? 85

6. What is the median? 83

7. How many scores are 80 or more? 9

8. How many more in the 80s than the 70s? 2

9. Most scores are in the ... 80s