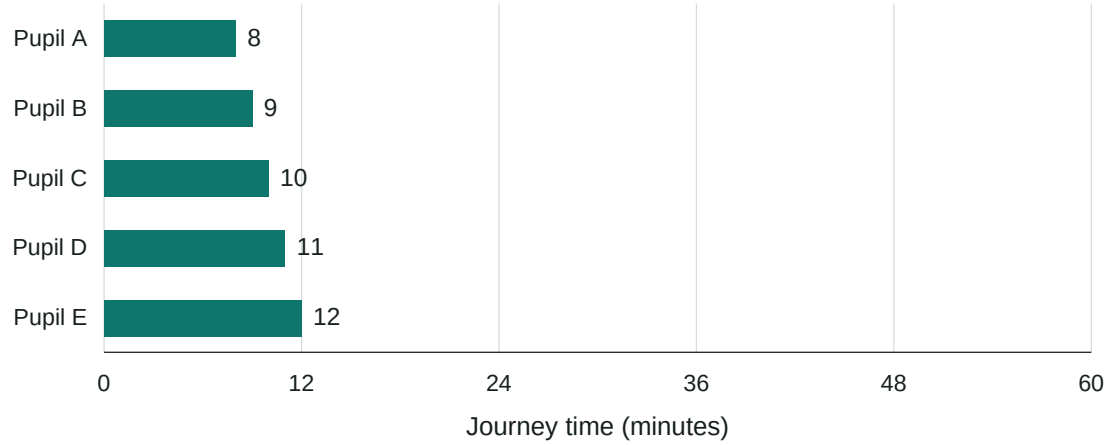
Averages: worked examples

Name: _____ Class: _____ Date: _____

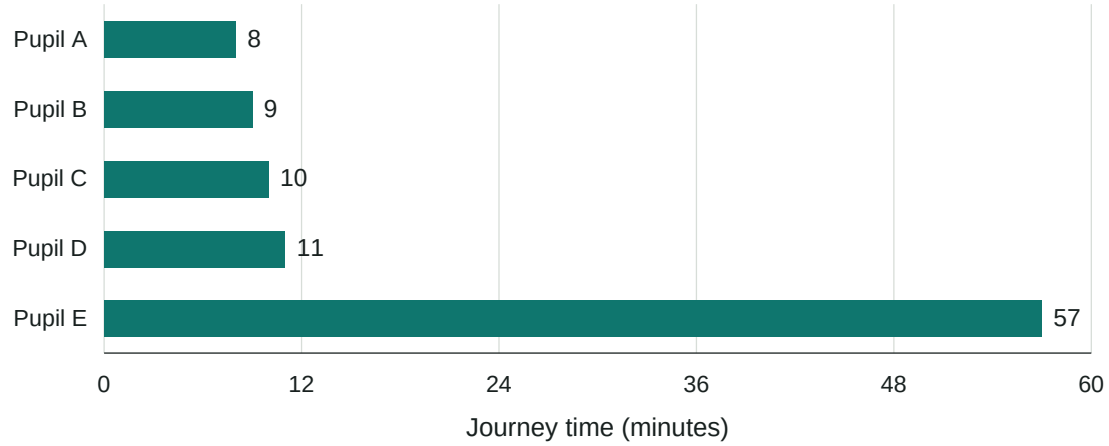
The mean is the sum of the values divided by their count. The median is the middle of the sorted values. Extreme observations can pull the mean strongly, so the median is often useful when describing a typical value in a skewed dataset.

Five similar journey times



Five fictional pupils have journey times of 8, 9, 10, 11 and 12 minutes. Each labelled bar is one pupil's measurement, rather than a histogram bin.

Change one observation



Now replace the final journey time of 12 minutes with 57 minutes. All other values stay the same. This is a second fictional dataset, shown on the same scale.

Original fictional data. Full explanations and copyable datasets: chartmaker.tools/lessons/mean-vs-median

Five practice questions

Name: _____ Class: _____

1. Find the mean of 8, 9, 10, 11 and 12 minutes.

2. Find the median of 8, 9, 10, 11 and 57 minutes.

3. How much does the mean increase when 12 is replaced by 57?

4. Find the median of 4, 7, 9 and 20.

5. For the second journey dataset, which average would you report to describe the middle pupil's journey, and what extra context would you include?

Teacher answers and working

Mean vs Median: Which Average Should You Use?

Keep this page separate when handing out student pages 1-2.

Question 1

The sum is 50 and there are 5 observations. Mean = 50 / 5 = 10 minutes.

Question 2

The values are sorted and the third value is 10. The median is 10 minutes.

Question 3

The mean increases from 10 to 19 minutes, an increase of 9 minutes. Equivalently, (57 - 12) / 5 = 9.

Question 4

There are four sorted values, so average the middle two: (7 + 9) / 2 = 8.

Question 5

Use the median of 10 minutes for the middle journey. Also report the mean of 19 minutes or the unusually long 57-minute journey so the variation is visible.

Teaching notes

Finding the median before sorting the values.

Calling the mean the most common value; that is the mode.

Deleting extreme observations without a documented reason.

All data is fictional. Accept equivalent notation and explanations. Encourage students to show calculations, units and the conventions used.