

Speed Test Lab

Analyze sample measurements and plan a fair speed investigation.

7.7.A · calculate average speed using distance and time measurements from investigations;

Name _____ Date _____

Find Average Speed

Average speed tells how much distance an object travels in each unit of time. Divide total distance by total time: average speed = distance / time. For a trip with more than one part, add all distances and all times before dividing.

Worked example

A cart travels 150 m in 30 s. What is its average speed?

- 1. Average speed = distance / time.
- 2. Average speed = 150 m / 30 s.
- 3. Average speed = 5 m/s.

5 m/s

1. Practice

These are illustrative measurements from a model cart investigation, not your own observations. Trial 1: 2 m in 4 s. Trial 2: 3 m in 5 s. Calculate each average speed. Which trial is faster? Name one condition to keep the same in a fair comparison.

Trial	Distance (m)	Time (s)
1	2	4
2	3	5

2. Practice

A runner travels 96 m in 16 s. Calculate the runner's average speed.

3. Practice

A remote-control car travels 72 m in 9 s. What is its average speed?

4. Practice

A scooter travels 132 m in 22 s. Calculate its average speed.

5. Practice

A cyclist travels 180 m in 45 s. What is the cyclist's average speed?

6. Practice

A toy car travels $\frac{3}{4}$ m in $\frac{1}{4}$ s. Calculate its average speed.

7. Apply

The table contains illustrative sample measurements for two robot carts. Calculate and compare their average speeds. Explain why the table alone does not show which cart would always be faster.

Robot Cart Investigation

Cart	Distance (m)	Time (s)
A	96	16
B	126	18

8. Apply

During a school fun run, Jada travels 1 $\frac{1}{2}$ miles in $\frac{1}{2}$ hour. What is her average speed in miles per hour?

9. Challenge

A drone travels 140 m in 20 s, then travels 210 m in 35 s. Calculate its average speed for the entire trip. Give an exact fraction in m/s and explain why you use the total distance and total time.

What to accept

Accept equivalent simplified forms with correct units. For the challenge, accept $70/11$ m/s or $6\frac{4}{11}$ m/s and an explanation that uses total distance divided by total time. Sample data are labeled illustrative. Do not record example values as students' actual measurements. For a real follow-up, measure distance and elapsed time safely, repeat trials, and record the actual values.

1. Practice

Trial 1: 0.5 m/s. Trial 2: 0.6 m/s, faster by 0.1 m/s. Keep cart, track surface and release method comparable; accept a relevant control.

2. Practice

6 m/s

3. Practice

8 m/s

4. Practice

6 m/s

5. Practice

4 m/s

6. Practice

3 m/s

7. Apply

Cart B, by 1 m/s. A single trial per cart is insufficient to establish a consistent difference.

Cart A has an average speed of $96 / 16 = 6$ m/s. Cart B has an average speed of $126 / 18 = 7$ m/s, so Cart B is faster by 1 m/s. Repeat comparable trials; timing uncertainty and conditions can affect results.

8. Apply

3 mi/h

Divide distance by time: $1\frac{1}{2} / \frac{1}{2} = 3$. Jada's average speed is 3 mi/h.

9. Challenge

$70/11$ m/s, or $6\frac{4}{11}$ m/s. Total distance is 350 m and total time is 55 s, so average speed is $350/55 = 70/11$ m/s. Average speed uses the total distance divided by the total time, not an average of the two speeds.