

Chapter 1 Linear Motion

# Example Problems

## 1.1 Speed

E1. The average human can run 60.35 meters in 9 seconds, calculate the average speed in meters per second (m/s) and in miles per hour (mph).

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

E2. The average gorilla can travel 40.23 meters in 4 seconds, calculate the average speed in meters per second (m/s) and in miles per hour (mph).

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

E3. A monkey rides his bike at a constant speed of 4.3 m/s for 5 minutes, calculate how far the monkey travels in meters and in miles.

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

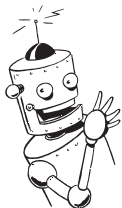
$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

© 2016 Doc Fizzix Products. Saving the world with his knowledge of science



**Chapter 1 Linear Motion**

**E4.** The total distance from Orange, TX to El Paso, TX is 855.8 miles. A monkey is driving along I-10 at an average speed of 85 mph (38 m/s). Calculate how long will it take the monkey to reach El Paso from Orange, TX in seconds and in hours.

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

**E5.** The average person walks at a rate of 3.1 mph (1.4 m/s). The circumference of the Earth along the equator is 24,902 miles (40,075,884 meters), calculate how long it will take a person to walk around the Earth in seconds and in days.

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

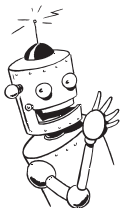
**E6.** A monkey walks 45 meters in 30 seconds then stops and rest for 20 seconds. He then walks 102 meters in 68 seconds. Calculate how far the monkey has traveled in meters and his average speed in meters per second for the entire trip.

*Show your work*

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

© 2016 Doc Fizzix Products. Saving the world with his knowledge of science



Chapter 1 Linear Motion

# Student Problems

## 1.1 Speed

1. The fastest man alive can run the 100 meter dash in 9.58 seconds, calculate the average speed in meters per second and in miles per hour.

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

2. The fastest land animal is the cheetah. A cheetah can run the 100 meter dash in 5.95 seconds, calculate the cheetah's average speed in meters per second and in miles per hour.

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

3. One mile is equal to 1,609.34 meters. The world record for the one mile run is 3 min and 43 sec, calculate the average speed in meters per second and in miles per hour.

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

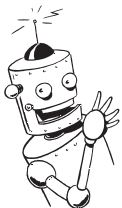
$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

© 2016 Doc Fizzix Products. Saving the world with his knowledge of science



**Chapter 1 Linear Motion**

4. You walk at a pace of 1.38 m/s for 7 minutes, how far do you travel in meters?

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

5. You travel down the highway at a steady rate of 75 mph (33.53 m/s) for a total of 25 minutes, calculate how far you traveled in meters and in miles.

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

6. A monkey sees a flash of lightning off in the distance and hears the clap of thunder 5 seconds later. Assume that the speed of sound in air is 340 m/s, how far away was the lightning bolt in meters and in miles?

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

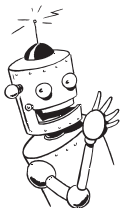
$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

© 2016 Doc Fizzix Products. Saving the world with his knowledge of science



**Chapter 1 Linear Motion**

7. A top professional baseball pitcher can throw a baseball at a speed of 100 mph (44.70 m/s). The distance from the pitchers mound to home plate is 60 feet 6 inches (18.44 meters). How much time does a batter have to react to a pitch thrown at 100 mph?

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

8. An ant can run at an average speed of 0.083 meters per second, calculate how long it would take an ant to run the 100 meter dash in seconds and in minutes.

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

9. The Moon is an average distance of 238,855 miles (382,500,000 meters) from the Earth. If you were to drive a car from the Earth to the Moon at an average speed of 100 mph (44.70 m/s), calculate how long would it take you to reach the Moon in seconds and in days.

*What are the givens and unknowns?*

*Write the formula. Substitute and solve*

$s =$

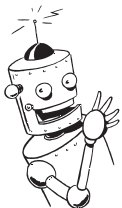
$d =$

$t =$

a) \_\_\_\_\_ ← units

b) \_\_\_\_\_ ← units

© 2016 Doc Fizzix Products. Saving the world with his knowledge of science



**Chapter 1 Linear Motion**

10. An echo is caused when a sound wave hits an object and then bouncing back. Sound travels at a speed of 340 m/s in air. If you stand at the rim of the Grand Canyon and yell down towards the bottom it will take 5.20 seconds for the sound to travel to the canyon floor and then back to your ear. What is the total distance the sound wave traveled (there and back) and how deep is the Grand Canyon at this location?

*Show all your work*

a) \_\_\_\_\_ ← units      b) \_\_\_\_\_ ← units

11. A monkey takes a trip. The monkey walks upright for 43 seconds and travels 57.62 meters. He then runs on all fours for 15 seconds and travels 46.95 meters. He then swings from vine-to-vine for 21 seconds and travels 58.59 meters. Calculate the total distance traveled and the average speed for the entire trip.

*Show all your work*

a) \_\_\_\_\_ ← units      b) \_\_\_\_\_ ← units

12. You travel 85 miles in 2 hour, you then travel 75 miles in 1.5 hours. After a 0.5 hour rest break you then travel 55 miles in 1 hours. What is the total distance you traveled in miles and what was your average speed for the trip in miles per hour?

*Show all your work*

a) \_\_\_\_\_ ← units      b) \_\_\_\_\_ ← units

© 2016 Doc Fizzix Products. Saving the world with his knowledge of science

