MATHCOUNTS®
Distance = Rate × Time

Warm-Up!

Try these problems before watching the lesson.

1. In gym class, Travis ran 95,040 inches. Mauricio ran 1.8 miles. Alex ran 11,088 feet. Who ran the farthest, given 1 mile = 5,280 feet?

2. Zola the ant walked 1 meter, then 15 cm and then 3.7 cm. How many millimeters did Zola walk?

3. Blake traveled 117 mi in 2.25 hours to come home from college. What was the average speed in miles per hour at which Blake traveled?

4. Mazen takes 8 minutes to bike 2 miles to work. What is his average speed, in miles per hour?

5. A speed of 60 miles per hour is equal to 88 feet per second. If the speed limit in a school zone is 15 miles per hour, what is the speed limit in this zone in feet per second?

The Problems

Take a look at the following problems and follow along as they are explained in the video.

6. Lindsay starts at the peak of a mountain, and it takes her 45 minutes to hike 15,840 feet. What was her average walking speed, in miles per hour, given 1 mile = 5,280 feet?

7. Brice rides his bike at a constant speed of 8 mi/h for 15 minutes, then speeds up and rides at a constant speed of 10 mi/h for 30 minutes. During these 45 minutes, how many miles did he travel?

8. How many minutes faster will Jacob complete a 100-mile drive traveling at a rate of 60 miles per hour than if he traveled at a rate of 50 miles per hour?

Piece It Together

Use the skills you practiced in the warm-up and strategies from the video to solve the following problems.

9. Carmichael's favorite race car driver completes 10 laps in 10 minutes. If one lap is 2.5 miles long, what was the average speed of the driver, in miles per hour?

10. If Tom travels 135 miles in 1 hour 30 minutes, what is his speed in feet per second, given 1 mile = 5,280 feet?

11. A pedestrian averages 3 mi/h on the streets of Manhattan, and a subway train averages 30 mi/h. If each city block is 1/20 of a mile, how many more minutes than the subway train does it take for a pedestrain to travel 60 blocks in Manhattan?

12. A hare is running at a rate of 1 m every minute, while a tortoise is crawling at a rate of 1 cm every second. In meters, how much farther than the tortoise will the hare travel in an hour?

13. A train traveling at 45 miles per hour enters a tunnel that is 1 mile long. The length of the train is 1/8 mile. How many minutes after the front of the train enters the tunnel does the back of the train exit the tunnel? Express your answer as a decimal to the nearest tenth.

Optional Extension

To extend your understanding and have a little fun with math, try the following activities.

In the problems below, you'll notice that there is not as much information provided as in the problems we've looked at so far. Even though there is "missing" information, these problems can still be solved!

If a runner who runs at a constant speed of p miles per hour runs a mile in exactly p minutes, what is the integer closest to the value of p?

Jack and Jill travel up a hill at a speed of 2 mi/h. They travel back down the hill at a speed of 4 mi/h. What is their average speed for the entire trip? Express your answer as a mixed number.