

DISTANCE, TIME, SPEED PRACTICE PROBLEMS

YOU MUST SHOW YOUR WORK.

You can use a calculator but you must show all of the steps involved in doing the problem.

SPEED = $\frac{\text{Distance}}{\text{Time}}$

1. If a car travels 400m in 20 seconds how fast is it going?
 $v = \frac{400m}{20s} = 20m/s$

2. If you move 50 meters in 10 seconds, what is your speed?
 $v = \frac{50m}{10s} = 5m/s$

3. You arrive in my class 45 seconds after leaving math which is 90 meters away. How fast did you travel?
 $v = \frac{90m}{45s} = 2m/s$

4. A plane travels 395,000 meters in 9000 seconds. What was its speed?
 $v = \frac{395,000m}{9000s} = 43.8m/s$

5. It takes Serina 0.25 hours to drive to school. Her route is 16 km long. What is Serina's average speed on her drive to school?
 $v = \frac{16km}{0.25hr} = 64km/hr$

TIME = $\frac{\text{Distance}}{\text{Speed}}$

6. How much time will it take for a bug to travel 5 meters across the floor if it is traveling at 1 m/s?
 $t = \frac{5m}{1m/s} = 5seconds$

7. You need to get to class, 200 meters away, and you can only walk in the hallways at about 1.5 m/s. (If you run any faster, you'll be caught for running). How much time will it take to get to your class?
 $t = \frac{200m}{1.5m/s} = 133.3sec = 2.2minutes = 2minutes \ 13seconds$

8. In a competition, an athlete threw a flying disk 139 meters through the air. While in flight, the disk traveled at an average speed of 13.0 m/s. How long did the disk remain in the air?
 $t = \frac{139m}{13m/s} = 13seconds$

DISTANCE Distance = Speed x Time

9. How far can you get away from your little brother with the squirt gun filled with paint if you can travel at 3 m/s and you have 15s before he sees you?

$$d = 3 \text{ m/s} \cdot 15 \text{ s} = 45 \text{ meters}$$

10. How far can your little brother get if he can travel at 2.5 m/s and in 5 seconds you will discover that his squirt gun has run out of paint?

$$d = 2.5 \text{ m/s} \cdot 5 \text{ s} = 12.5 \text{ meters}$$

11. If you shout into the Grand Canyon, your voice travels at the speed of sound (340 m/s) to the bottom of the canyon and back, and you hear an echo. How deep is the Grand Canyon at a spot where you can hear your echo 5.2 seconds after you shout?

$$d = 340 \cdot 5.2 = 1768 \text{ meters}$$

CHALLENGE PROBLEM

Bill and Amy want to ride their bikes from their neighborhood to school which is 14.4 kilometers away. It takes Amy 40 minutes to arrive at school. Bill arrives 20 minutes after Amy. How much faster (in meters/second) is Amy's average speed for the entire trip?

Be sure to show all necessary metric conversions!!

$$\text{speed} = \frac{\text{distance}}{\text{time}} \quad v = \frac{d}{t}$$

$$r = \frac{14.4}{40} = 36 \text{ km/min}$$

$$r = 36 \text{ km/min} \cdot 1000 = 36000 \text{ m/min}$$

$$36000 \text{ m/min} \div 60 = 600 \text{ m/s}$$

$$r = 24 \text{ km/min}$$

$$24 \text{ km/min} \cdot 1000 = 24000 \text{ m/min}$$

$$24000 \text{ m/min} \div 60 = 400 \text{ m/s}$$

6 - 4 = 2, Amy is 2 m/s faster than Bill

$$240 \text{ m/s} \div 60 = 4 \text{ m/s}$$

$$r = \frac{14.4}{60} = 0.24 \text{ km/min}$$

20 minutes after