

## DETERMINING SPEED AND VELOCITY

Name \_\_\_\_\_

Speed is a measure of how fast an object is moving or traveling. Velocity is a measure of how fast an object is moving or traveling in a certain direction. Both speed and velocity include the distance traveled compared to the amount of time taken to cover this distance.

$\text{Speed} = \frac{\text{distance}}{\text{time}}$	$\text{Velocity} = \frac{\text{distance}}{\text{time}} \text{ in a specific direction}$
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Answer the following questions:

1. What is the **velocity** of a car that traveled a total of 75 kilometers north in 1.5 hours?  
\_\_\_\_\_
2. What is the **velocity** of a plane that traveled 3,000 miles from New York to California in 5.0 hours? \_\_\_\_\_
3. John took 45 minutes to bicycle to his grandmother's house, a total of 4 kilometers. What was his **speed** in km/hr? \_\_\_\_\_
4. It took 3.5 hours for a train to travel the distance between two cities at a speed of 120 miles/hr. How many miles lie between the two cities? \_\_\_\_\_
5. How long would it take for a car to travel a distance of 200 kilometers if it is traveling at a speed of 55 km/hr? \_\_\_\_\_
6. A car is traveling at 100 km/hr. How many hours will it take to cover a distance of 750 kilometers? \_\_\_\_\_
7. A plane traveled for 2.5 hours at a speed of 1,200 km/hr. What distance did it travel?  
\_\_\_\_\_
8. A girl is pedaling her bicycle at a speed of 0.1 km/min. How far will she travel in 2 hours?  
\_\_\_\_\_
9. An ant carries food at a speed of 1 cm/s. How long will it take the ant to carry a cookie crumb from the kitchen table to the ant hill, a distance of 50 m? Express your answer in seconds, minutes, and hours: \_\_\_\_\_  
\_\_\_\_\_
10. The water in the Buffalo River flows at an average speed of 5 km/hr. If you and a friend decide to canoe down the river, a distance of 16 kilometers, how many hours and minutes will it take? \_\_\_\_\_

## Solutions:

1. What is the **velocity** of a car that traveled a total of 75 kilometers north in 1.5 hours?  
 **$75 \text{ km} / 1.5 \text{ hr} = 50 \text{ km/hr North}$**
2. What is the **velocity** of a plane that traveled 3,000 miles from New York to California in 5.0 hours?  **$3,000 \text{ m} / 5 \text{ hr} = 600 \text{ m/hr West}$**
3. John took 45 minutes to bicycle to his grandmother's house, a total of 4 kilometers. What was his **speed** in km/hr?  **$4 \text{ km} / 45 \text{ min} / 60 \text{ min/hr} = 5.33 \text{ km/hr}$**
4. It took 3.5 hours for a train to travel the distance between two cities at a speed of 120 miles/hr. How many miles lie between the two cities?  **$120 \text{ miles/hr} \times 3.5 \text{ hr} = 420 \text{ miles}$**
5. How long would it take for a car to travel a distance of 200 kilometers if it is traveling at a speed of 55 km/hr?  **$200 \text{ km} / 55 \text{ km/hr} = 3.63 \text{ hr}$**
6. A car is traveling at 100 km/hr. How many hours will it take to cover a distance of 750 kilometers?  **$750 \text{ km} / 100 \text{ km/hr} = 7.5 \text{ hr}$**
7. A plane traveled for 2.5 hours at a speed of 1,200 km/hr. What distance did it travel?  
 **$1,200 \text{ km/hr} \times 2.5 \text{ hr} = 3,000 \text{ km}$**
8. A girl is pedaling her bicycle at a speed of 0.1 km/min. How far will she travel in 2 hours?  **$0.1 \text{ km/min} \times 60 \text{ min/hr} = 6 \text{ km/hr} \times 2 \text{ hr} = 12 \text{ km}$**
9. An ant carries food at a speed of 1 cm/s. How long will it take the ant to carry a cookie crumb from the kitchen table to the ant hill, a distance of 50 m? Express your answer in seconds, minutes, and hours:  **$5,000 \text{ seconds} \quad 83.33 \text{ min.} \quad 1.39 \text{ hr}$**

**$(50 \text{ m} \times 100 \text{ cm/m} = 5000 \text{ cm} / 1 \text{ cm/s} = 5,000 \text{ s} / 60 \text{ s/min} = 83.33 \text{ min} / 60 \text{ min/hr} = 1.39 \text{ hr})$**

10. The water in the Buffalo River flows at an average speed of 5 km/hr. If you and a friend decide to canoe down the river, a distance of 16 kilometers, how many hours and minutes will it take?  **$16 \text{ km} / 5 \text{ km/hr} = 3.2 \text{ hours or } 3 \text{ hours } 12 \text{ minutes}$**

**$(0.2 \text{ hr} \times 60 \text{ min/hr} = 12 \text{ min})$**