

Name Key date _____ per _____ mailbox _____

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

Speed = distance / time

Ex: 50km/hr

velocity = (distance / time) in a specific direction

Ex: 50km/hr west

Answer the following questions and show all work. Include **UNITS** and write the **FORMULA** each time.

1. What is the velocity of a car that traveled a total of 75 kilometers north in 1.5 hours?

$$V = d/t \quad V = \frac{75 \text{ km}}{1.5 \text{ hr}} \quad V = 50 \text{ km/hr north}$$

2. What is the velocity of a plane that traveled 3,000 miles from New York to California in 5.0 hours?

$$V = d/t \quad V = \frac{3000 \text{ mi}}{5 \text{ hr}} \quad V = 600 \text{ mph west}$$

3. John took 45 minutes to bicycle to his grandmother's house, a total of four kilometers to the north. What was his velocity in km/hr?

$$V = d/t \quad V = \frac{4 \text{ km}}{0.75 \text{ hr}} \quad V = 5.3 \text{ km/hr} \quad 45 \text{ min} = 0.75 \text{ hr}$$

4. It took 3.5 hours for a train to travel the distance between two cities at a velocity of 120 miles/hr. How many miles are between the two cities?

$$\left(\frac{t}{1}\right)S = \frac{d}{\cancel{t}}\left(\frac{\cancel{t}}{1}\right) \quad S(t) = d \quad 120 \frac{\text{mi}}{\text{hr}} \times 3.5 \frac{\text{hr}}{1} = 420 \text{ miles} \quad \text{Find dist.}$$

5. How long would it take for a car to travel a distance of 200 kilometers if it is traveling at a velocity of 55 km/hr?

$$\text{Find time} \quad \frac{S(t)}{S} = \frac{d}{S} \rightarrow t = \frac{d}{S} \quad t = \frac{200 \text{ km}}{55 \text{ km/hr}} \rightarrow t = 3.63 \text{ hr}$$

6. A car is traveling at 100 km/hr. How many hours will it take to cover a distance of 750 km?

$$\text{Find time} \quad t = d/S \quad t = \frac{750 \text{ km}}{100 \text{ km/hr}} \quad t = 7.5 \text{ hours}$$

7. A plane traveled for about 2.5 hours at a velocity of 1200 km/hr. What distance did it travel?

$$\text{Find dist.} \quad S(t) = d \quad 1200 \frac{\text{km}}{\text{hr}} \times 2.5 \frac{\text{hr}}{1} = 3000 \text{ km}$$

8. A girl is pedaling her bicycle at a velocity of 0.10 (km/min) south. How far will she travel in two hours?

$$\text{Find dist.} \quad S(t) = d \quad 0.10 \frac{\text{km}}{\text{min}} \times 120 \frac{\text{min}}{1} = 12 \text{ km} \quad 2 \text{ hr} \rightarrow 120 \text{ min} \quad \text{Convert units}$$

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 answers in seconds, minutes and hours.

$$\text{Find time} \quad t = d/S \quad t = \frac{5000 \text{ cm}}{1 \text{ cm/s}} = 5000 \text{ s} \rightarrow 83 \frac{1}{3} \text{ min} \rightarrow 1.38 \text{ hr}$$

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?

$$\text{Find time} \quad t = d/S \quad t = \frac{16 \text{ km}}{5 \text{ km/hr}} \quad t = 3.2 \text{ hr} \rightarrow 192 \text{ min}$$