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 raveled compared to the amount of time taken to cover a distance.

| Speed = distance / time | velocity = (distance / time) in a specific direction |
|---|---|
| Ex: 50km/hr | 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?

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

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

$V = d/t \quad V = \frac{3000\,m}{5\,hr} \quad V = 600\ mph$ 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?

45 min = .75 hr

$V = d/t \quad V = \frac{4\,km}{0.75\,hr} \quad V = 5.\overline{3}\ km/hr$

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

$\left(\frac{t}{1}\right)s = \frac{d}{t}\left(\frac{t}{1}\right) \quad s(t) = d \quad 120\frac{m}{hr} \times 3.5\frac{hr}{1} = 420\ miles$ 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 55km/hr?

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

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

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

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

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

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

Find dist. $s(t) = d \quad 0.10\frac{km}{min} \times 120\frac{min}{1} = 12\ km$

2 hr → 120min convert units

9. An ant carries food at a speed of 1cm/s. How long will it take the ant to carry a cookie crumb from the kitchen table to the ant hill, a distance of 50m? Express your answers in **seconds, minutes** and **hours.**

Find time $t = d/s \quad t = \frac{5000\,cm}{1\,cm/s} = 5000\,s \xrightarrow{\div 60} 83\frac{1}{3}\,min \xrightarrow{\div 60} 1.38\,hr$

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

Find time $t = d/s \quad t = \frac{16\,km}{5\,km/hr} \quad t = 3.2\,hr \xrightarrow{\times 60} 192\,min$