

# Algebra RH

Essential Question: How do we solve word problems involving distance, rate and time?



Do Now:

1. What is the formula  $D = RT$  used for?  
to find distance

$$\text{Distance} = \text{Rate} \times \text{Time}$$

2. Solve  $D = RT$  for each of the other variables.

$$R = \frac{D}{T}$$

$$T = \frac{D}{R}$$

3. A car travels at 55mph for 4 hours.  
How far did the car go?

$$D = RT$$

$$D = 55(4)$$

$$D = 220 \text{ miles}$$

4. A 720 mile trip took a small plane 5 hours. How fast did it go?

$$R = \frac{D}{T}$$

$$R = \frac{720}{5}$$

$$R = 144 \text{ mph}$$

5. A sailboat made a 37 mile trip at 4 mph. How long did it take?

$$T = \frac{D}{R}$$

$$T = \frac{37}{4}$$

$$T = 9\frac{1}{4} \rightarrow 9 \text{ hours } 15 \text{ min.}$$

6. What is the speed, in meters per second, of a paper airplane that flies 24 meters in 6 seconds?

$$R = \frac{D}{T}$$

$$R = \frac{24}{6}$$

$$R = 4 \text{ mps}$$

7. It takes Tammy 45 minutes to ride her bike 5 miles. At this rate, how long will it take her to ride 8 miles?

$$\frac{45}{5} = \frac{x}{8}$$

$$5x = 360$$

$$x = 72 \text{ mins.}$$

8. A hiker walked 13 miles from 9am to noon. He walked an additional 19 miles from 1 pm to 6 pm. What is his average speed for the entire walk in miles per hour?

$$\text{Distance: } 13 + 19 = 32 \text{ miles}$$

$$\text{Time: } 3 + 5 = 8 \text{ hrs}$$

$$R = \frac{D}{T}$$

$$R = \frac{32}{8}$$

$$R = 4 \text{ mph}$$

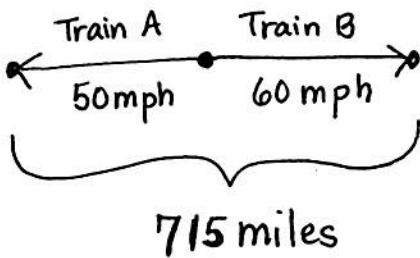
## MOTION WORD PROBLEMS

### Diagrams for Distance, Rate, Time Word Problems

A. 

2 vehicles start at the same point and go in opposite directions

Two trains start at the same time, from the same place and travel in opposite directions at 50 mph and 60 mph. How long before they are 715 miles apart?



$$x = \text{time (in hours)} \quad \boxed{6\frac{1}{2} \text{ hrs}}$$

$$\text{A's distance} + \text{B's distance} = \text{Distance apart}$$

$$50x + 60x = 715$$

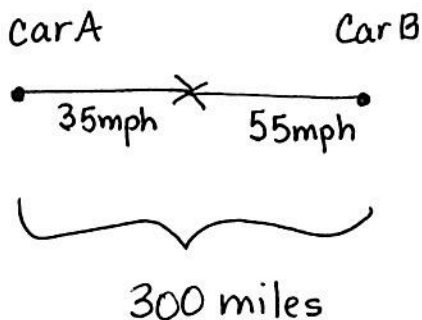
$$110x = 715$$

$$x = 6.5$$

B. 

2 vehicles start towards each other and eventually meet or bypass one another

At 8 am 2 cars start towards each other from a distance of 300 miles apart. One car travels 35 mph and the other travels at 55 mph. At what time will they meet?



$$x = \text{time (in hours)} \quad \boxed{3\frac{1}{3} \text{ hrs}}$$

$$\text{A's distance} + \text{B's distance} = \text{Total distance}$$

$$35x + 55x = 300$$

$$90x = 300$$

$$x = 3\frac{1}{3}$$

$$8\text{am} + 3\text{hrs } 20\text{min} = \boxed{11:20\text{am}}$$