

## Motion Word Problems 1

Name:

Answer this question: *If I drive at an average rate of 60 mph for 3 hours, how far have I driven?*

You probably used the handy formula to solve the problem above:

distance = rate x time or  $d = rt$

**Try these problems below:**

1) Benton knows that his upcoming car ride is a distance of 450 miles. How long will his ride take if he averages a speed of 60 miles per hour (mph)?

2) Jessica rode her bike 20 miles in 2 hours. What was her average rate?

3) Sierra walked at a rate of 4 mph for 3 hours. How far did she walk?

**But these motion problems, as they're sometimes called, can get tricky! Look at this problem.**

4) A train leaves a train station at 1 P.M. It travels at an average rate of 72 mi/h. A high-speed train leaves the same station an hour later. It travels at an average rate of 90 mi/h. The second train follows the same route as the first train on a track parallel to the first train. In how many hours will the second train catch up with the first train?

Let's look at this problem again and learn one strategy to solve it. (Of course, as is always the case in mathematics, this is just one method to solve this problem. There are many other methods to use as well.)

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**Step 1: Define variables.** Let  $t$  = the time the 1<sup>st</sup> train travels

Let \_\_\_\_\_ = the time the 2<sup>nd</sup> train travels

**Step 2: Set up a chart and use the formula  $d = rt$  to write an expression for distance.**

Train	Rate	Time	Distance
1 <sup>st</sup> train			
2 <sup>nd</sup> train			

**Step 3: Use information from the problem to set up an equation and then solve the equation.**

In this problem, the trains both traveled the SAME DISTANCE since the one train caught up to the other train. So in our equation, we can set the distances equal to each other! Set up an equation and then solve it to answer the question.

**Step 4: Answer the question.** When we finish solving the equation, go back to the original question and answer the question.