

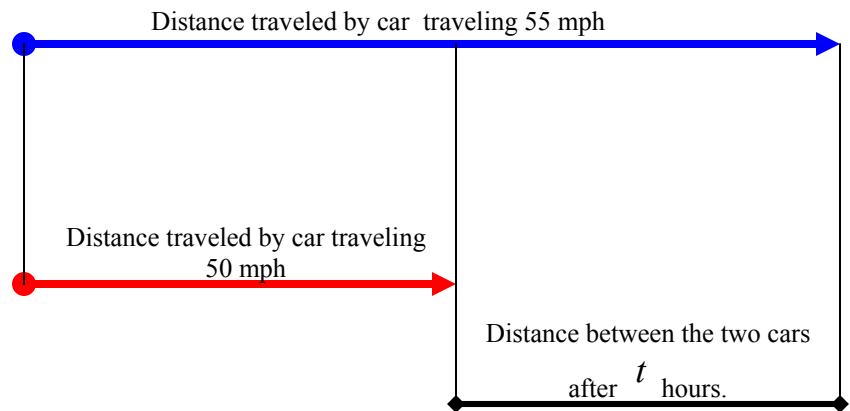
DISTANCE PROBLEMS INVOLVING TWO OBJECTS TRAVELING THE SAME DIRECTION

Problem Statement 1:

Two cars start at the same place, at the same time, traveling in the same direction. One car is traveling at a speed of 55 mph and the other car at a speed of 50 mph. How long will it take for the cars to be 35 miles apart?

Step 1:

Draw a picture and make a table



Car	Rate (Speed)	Time	Distance
A	55	t	$(55)(t) = 55t$
B	50	t	$(50)(t) = 50t$
Total distance between the two cars			35

Time is the unknown quantity in this problem.

The entries in the distance column are found by using the distance formula, $D = rt$

In other words, we simply multiply the rate by the speed and this gives us a value (or in this case expression) for distance.

Step 2:

Determine the operation to be performed.

The problem wanted us to determine when the two cars would be 35 mile apart. In other words, we want to determine when the difference between the distance traveled by Car A and Car B will be 35 miles. (See diagram above).

Step 3:

Formulate the equation to solve.

$$\begin{array}{rclcl} \text{Distance for Car A} & - & \text{Distance for Car B} & = & 35 \\ 55t & - & 50t & = & 35 \end{array}$$

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Step 4:

Find the solution.

Start by combining like terms and then simplify.

$$55t - 50t = 35$$

$$5t = 35$$

$$\frac{5t}{5} = \frac{35}{5}$$

$$t = 7$$

Thus, after 7 hours the two cars will be 35 miles apart.

Want to check your answer? (You should!)

First, determine how far each car traveled in 7 hours.

$$\text{Car A: } (55)(7) = 385 \text{ miles}$$

$$\text{Car B: } (50)(7) = 350 \text{ miles}$$

Then, find the difference between the two distances. Is it 35 miles?

