Motion Problems

Name _____

Date _____ Period _____

Show a complete solution for each problem.

1. Two cars start at the same place but travel in opposite directions. One car averages 42 miles per hour and the other averages 51 miles per hour. How many hours will it be before the cars are 651 miles apart?

Let t =
number of hours
traveled

distance first car + distance second car = 651
$$42t + 51t = 651$$
$$93t = 651$$
$$t = 7$$

2. Two cars travel in opposite directions, starting from the same place at the same time. One travels at an average rate of 48 miles per hour and the other averages at 55 miles per hour. In how many hours will they be 618 miles apart?

3. Two trains start at the same place, traveling in opposite directions for 6 hours. After 3 hours they are 414 miles apart. How fast is each traveling if the rate of one train is 8 miles per hour faster than the other?

4. Two trains travel for eleven hours, starting from the same place traveling in opposite directions. One train travels at an average rate that is 11 miles per hour faster than the other one. Find the rate of each train if they are 635 miles apart after five hours.

5. Two airplanes start at the same place and travel in opposite directions, one at 520 miles per hour and the other at 448 miles per hour. How many hours will it take for them to be 1936 miles apart?

6. Two airplanes leave the same place and fly in opposite directions. The average rate of one plane is 18 miles per hour faster than the other one. Find the rate of each plane if they are 1179 miles apart after $1\frac{1}{2}$ hours.

7. One car travels 50 miles per hour and another one travels 55 miles per hour. If they start from the same place at the same time and travel in the same direction, after how many hours will the faster car be 35 miles ahead of the slower car?

8. One car travels 62 miles per hour and another travels 48 miles per hour. If they start from the same place at the same time and travel in the same direction, after how many hours will the faster car be 42 miles ahead of the slower one?

Motion Problems

Name _____

Date _____ Period _____

Show a complete solution for each problem.

1. Two cars start at the same place but travel in opposite directions. One car averages 53 miles per hour and the other averages 59 miles per hour. How many hours will it be before the cars are 896 miles apart? *Let t = number of hours traveled*

   distance first car + distance second car = 896

   $$53t \quad + \quad 59t \quad = 896$$
   $$112t = 896$$
   $$t = 8$$

2. Two cars travel in opposite directions, starting from the same place at the same time. One travels at an average rate of 43 miles per hour and the other averages at 38 miles per hour. In how many hours will they be 405 miles apart?

3. Two trains start at the same place, traveling in opposite directions for 6 hours. After 4 hours they are 424 miles apart. How fast is each traveling if the rate of one train is 10 miles per hour faster than the other train?

4. Two trains travel for eleven hours, starting from the same place traveling in opposite directions. One train travels at an average rate that is 15 miles per hour faster than the other train. Find the rate of each train if they are 291 miles apart after three hours.

5. Two airplanes start at the same place and travel in opposite directions, one at 395 miles per hour and the other at 422 miles per hour. How many hours will it take for the planes to be 2451 miles apart?

6. Two airplanes leave the same place and fly in opposite directions. The average rate of one plane is 32 miles per hour faster than the other one. Find the rate of each plane if they are 1098 miles apart after $1\frac{1}{2}$ hours.

7. One car travels 45 miles per hour and another one travels 52 miles per hour. If they start from the same place at the same time, traveling in the same direction, after how many hours will the faster car be 42 miles ahead of the slower one?

8. One car travels 56 miles per hour and another travels 31 miles per hour. If they start from the same place at the same time and travel in the same direction, after how many hours will the faster car be 75 miles ahead of the slower car?