Unit II – First Degree Relations with One Placeholder
Part E – Problem Solving Using One Placeholder
Lesson 6 – "Motion" Problems

For each of the following story problems, answer the five analysis questions to find the open sentence needed to solve. Then solve and use common sense to check your answer.

1. A train leaves a station and travels at forty-five miles an hour. Three hours later, a second train leaves and travels at seventy-five miles an hour. How long will it take the second train to over take the first?

2. Two cars leave the same place at the same time and travel in opposite directions, one of the cars traveling ten miles per hour faster than the other. After three hours, they are two hundred forty miles apart. What is the rate of each car in miles per hour?

3. Two men on motorcycles travel toward each other from points five hundred forty miles apart. If their rates are forty-eight and sixty miles per hour, respectively, when will they meet, if they started at the same time?

4. A man travels from one city to another at the rate of forty miles per hour. He returns at the rate of sixty miles per hour. If the total trip takes eight hours, how far apart are the cities?

5. One car traveling at the rate of sixty miles per hour, is four miles behind another car travleing at fifty miles per hour. How many minutes will it take the faster car to overtake the slower?

6. Two planes which are one thousand sixty miles apart leave at the same time and fly toward each other, meeting in four hours. If their rates differ by fifteen miles per hour, what is the rate of each plane?

EXTRA PRACTICE — Answer Key

Unit II – First Degree Relations with One Placeholder
Part E – Problem Solving Using One Placeholder
Lesson 6 – "Motion" Problems

For each of the following story problems, answer the five analysis questions to find the open sentence needed to solve. Then solve and use common sense to check your answer.

1. The first train will travel 7.5 hours before being overtaken
   The second train will travel 4.5 hours before overtaking the first train

2. Rate of first car is 35 mph

   Rate of second car is 45 mph

3. The men will meet in 5 hours

4. The distance between the cities is 192 miles

5. The faster car will overtake the slower car in $\dfrac{2}{5}$ of an hour or 24 minutes

6. The rate of the slower plane is 125 mph
   The rate of the faster plane is 140 mph