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| ***Word Problem Involving Uniform Motion***  **Handout** | **Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

**Objective: Solving word problems involving uniform motion**

**Segment 1**: Solve uniform motion problems when A and B move in opposite directions starting from the same point.  
**A**’s distance **B**’s distance

Starting Point

The distance traveled by **A** added to the distance traveled by **B** is equal to the distance between **A** and **B**.

**Example:1** Two cars, one averaging 30 miles per hour and the other 40 miles per hour, start form the same point at the same time. If they travel in opposite directions, after how many hours will they be 350 miles apart?

**Segment 2**: Solve uniform motion problems when A and B move in the same direction starting from different points.  
 **A**’s distance **B**’s distance

Starting Point for **A** Starting Point for **B**

At the moment that **A** and **B** meet, the distance traveled by **A** added to the distance traveled by **B** is equal to the distance that **A** and **B** were originally apart.

**Example:2** Two cars are 140 miles apart. They travel toward each other, one traveling 10 miles per hour faster than the other. If they meet in 3 hours, find the rate of speed of each car.

**Practice:** Two planes leave LAX at approximately the same time and fly in opposite directions. Their speeds are 500 miles per hour and 600 miles per hour. How far apart will the planes be after 1.5 hours?

**Practice:** Two cities are 400 miles apart. A car leaves one of the cities traveling toward the second city at 45 miles per hour. At the same time, a bus leaves the second city at 35 miles per hour. How long will it take for them to meet?

**Segment 3**: Solve uniform motion problems when A travels from a point and returns to the same point.  
 **A**’s distance on outgoing trip

**A**’s distance on return trip

The distance on the outgoing trip equals the distance on the return trip.

**Example:3** A family drove to a beach at an average speed of 60 miles per hour and later returned on the same road at an average of 50 miles per hour. If the trip home took 30 minutes more than the trip to the beach, how far is the beach from the family’s house?

**Segment 4**: Solve uniform motion problems when A and B leave from the same point at different times.  
 **A**’s distance

**B**’s distance

At the moment that **A** overtakes **B** (or vice versa) the distance traveled by **A** is equal to the distance traveled by **B** .

**Example:4** Two cars travel the same route, both leaving from the same point. The slower car averages 45 miles per hour and the fastest care averages 60 miles per hour. If the faster care leaves 2 hours after the slower car, how long will it take for the faster car to overtake the slower car?

**Practice:** Paul drove to work at an average rate of 45 miles per hour and later returned after work on the same road at an average rate of 54 miles per hour. If the trip home took 20 minutes less than the trip to work, how far was Paul’s work place?

**Practice:** A jogger leaves a point along a fitness trail running at 5 miles per hour. 20 minutes later, a second jogger leaves from the same location running at 6 miles per hour. How long will it take the second jogger to overtake the first?