SUPPLEMENTARY SHEET 4

MOTION PROBLEMS

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(Note: You must know how to write a correct algebraic equation for each of the problems below. If you do not write a correct algebraic equation for any of the Word Problems given to you on your Test you will not get credit for your problem even if you have the correct answer!)

The formula to remember when doing *Motion Problems* is:

R•T = D

Rate • Time = Distance

A simple example is:

If a person travels at the rate of 45 miles per hour for 2 hours the distance traveled is 90 miles.

45 mph • 2 hrs = 90 miles

R • T = D

MOTION PROBLEMS

SAMPLE PROBLEMS:

1. A car left an intersection and traveled east at 32 mph. Another car left the same intersection at the same time and traveled west at 48 mph. How long will it take before the cars are 160 miles apart?
2. A train left Orlando, FL at the same time another train left Atlanta GA. The trains traveled towards each other. The rate of the Orlando train was 12 miles per hour faster than the Atlanta train. In 4 hours the trains passed each other. If the distance between Orlando and Atlanta is 408 miles, find the rate of each train.
3. Heidi and Angela started biking at the same time on opposite ends of a 53 mile trail. The rate that Heidi rode her bike exceeded the rate that Angela rode her bike by 4 mph. At the end of 2 hours, they were still 5 miles apart. Find the rate of each person.
4. A bus entered the Interstate and traveled at a constant speed of 40 mph. Two hours later a second bus followed the first bus, entering the Interstate from the same point as the first bus, and traveled at a constant speed of 60 mph. How long will it take the second bus to catch up with the first bus?
5. John drove his car down a mountain road at an average rate of 30 mph and returned over the same road at an average rate of 20 mph. If his trip took 5 hours, how far did he drive down the road before he turned around and drove back?

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1. One car traveling at 30 mph and another car traveling at 40 mph left from the same place at the same time and traveled in opposite directions. How long will it take before the cars are 630 miles apart?
2. Two people started from the same point at the same time and traveled in opposite directions. One traveled at 60 mph and the other at 50 mph. How long will it take before the two people are 440 miles apart?
3. Two jets took off from an airport at the same time using parallel runways. One flew east at 220 mph and the other flew west at 450 mph. How long will it take before the planes are 2010 miles apart?
4. Two trucks started traveling from the same place at 9:00 A.M. One truck traveled north going 45 mph and the other traveled south going 50 mph. What time will it be when the trucks are 380 miles apart?
5. Two trains began their trip from the same station at 8:00 A.M. One train traveled north at the rate of 44 mph and the other traveled south at the rate of 46 mph. What time will it be when the trains are 390 miles apart?
6. An airplane left Miami at the same time another left Santiago, Chile. The two planes flew toward each other at rates of 625 mph and 575 mph. If Miami and Santiago are 4200 miles apart, how long will it take until the planes pass each other?
7. Miami and Orlando are 210 miles apart. A truck traveled from Miami toward Orlando at the rate of 48 mph. Another truck traveled from Orlando toward Miami at the rate of 42 mph. Both trucks started traveling at the same time. How many miles did each travel before they met?

8. At 11 A.M. two trucks start traveling toward each other at average rates of 45 and 53 mph. At the beginning of their trip they were 588 miles apart. What time will it be when they pass each other?
9. Two train stations are 1000 miles apart. Two trains leave each of these stations at the same time and travel toward each other. One of the trains averages 63 mph and the other averages 57 mph. How long will it take until they pass each other?
10. Two planes started at the same time from the same airport and flew in opposite directions. One of the planes flew 70 miles per hour faster than the other. In 5 hours, the planes were 3850 miles apart. Find the rate of each plane.
11. Two buses started from the same depot at the same time and traveled in opposite directions. After traveling 4 hours, they were 480 miles apart. The rate of the fast bus exceeded the rate of the slow bus by 10 mph. Find the rate of each bus.
12. Two trains started from the same place at the same time and traveled in opposite directions. One train's speed was 8 mph faster than the other. In 6 hours, they were 552 miles apart. Find the rate of each train.
13. Two planes left at the same time from two airports that are 3600 miles apart and flew toward each other. One of planes flew twice the speed of the other. In 4 hours, they passed each other. Find the rate of each plane.
14. Two cars started from the same place and 9:00 A.M. and traveled in opposite directions. When it was 12:30 P.M. the two cars were 252 miles apart. The rate of the fast car exceeded the rate of the slow car by 8 mph. Find the rate of each car.
15. A family on vacation made a trip of 350 miles by boat and by train. They traveled 2 hours by boat and 4 hours by train. If the train averaged 20 mph more than the boat, find the rate of both the boat and the train.
16. It took an airplane 7 hours to fly 4075 miles. During the first 3 hours of the flight it had good weather. It then ran into bad weather, which decreased its rate by 75 mph for the rest of the flight. Find the rate on each part of the flight.
17. Two planes started at the same time from two airports which are 2300 miles apart and flew toward each other. One plane flew 310 mph, and the other flew 390 mph. In how many hours were the planes still 200 miles apart?
18. Two trains started toward each other from stations which were 260 miles apart at rates of 22 and 28 mph. They began their trip at 5:00 P.M. At what time were the trains still 60 miles apart?
19. Two cars started from the same town and traveled east on the same road. They began their journey at 7:00 A.M. One car averaged 41 mph, and the other car averaged 55 mph. In how many hours were the cars 84 miles apart?
20. At 10 A.M. Joyce left the shopping center driving her car at the rate of 30 mph. At 11 A.M. her brother Howie left the same shopping center, going the same direction as Joyce on the same road. He drove at the rate of 40 mph. In how many hours will Howie pass Joyce?
21. At 4 P.M. a plane took off from an airport and flew east at 300 mph. At 4:30 P.M. another plane left the same airport, flying east at 350 mph. At what time did the second plane pass the first plane?
22. David took a 5 hour hike. He walked one way at the rate of 2 mph and returned on the same road at the rate of 3 mph. How far did he walk before he turned around and walked back?
23. A hurricane plane made a round trip investigation flight. The flight took a total of 10 hours. The pilot flew into the hurricane area at a rate of 360 mph and returned over the same route at a rate of 240 mph. How many miles did the plane fly before it turned back?

Answers:

1. 9 hours	2. 4 hours.	3. 3 hours	4. 1 P.M.	5. 12:20 P.M.
6. 3🗁 hours	7. 112 miles, 98 miles	8. 5 P.M.	9. 8🗎 hours	10. 350 mph, 420 mph
11. 55 mph, 65 mph	12. 42 mph, 50 mph	13. 300 mph, 600 mph	14. 32 mph, 40 mph	15. 45 mph, 65 mph
16. 625 mph, 550 mph	17. 3 hours	18. 9 P.M	19. 6 hours	20. 3 hours
21. 7:30 P.M	22. 6 miles	23. 1440 miles		