Distance Problems

To solve distance problems, you must know the formula: D = RT

Distance = Rate x Time or Time = $\frac{\text{Distance}}{\text{Rate}}$ or Rate = $\frac{\text{Distance}}{\text{Time}}$

You should draw a picture of the movement, make a table of the given information, and write an equation based on relationships found in the diagram.

Ex: A freight train starts from Atlanta and heads for Birmingham at 40 miles per hour. Two hours later a passenger train leaves the same station for Birmingham traveling 60 miles per hour. How long before the passenger train overtakes the freight train?

Picture:

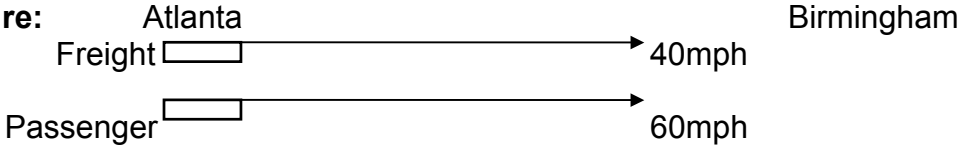

Table:

	Distance	Rate	Time
Freight Train	40(x+2)	40	x+2
Passenger Train	60x	60	x

Equation: Since the distance from Atlanta to Birmingham is expressed by the distance the freight and passenger trains travel, these distances must be equal.

$40(x+2) = 60x$

$40x + 80 = 60x$

$80 = 20x$

$4 = x$

The passenger train overtakes the freight train in 4 hours.

Sample Problems:

1. Laura leaves Atlanta for Seattle in her car, averaging 80 mph across open country. One hour later a plane leaves Seattle for Atlanta following the same route and flying 400 mph. How long before the plane overtakes the car?

2. Greg leaves home for Franklin 400 miles away. After 2 hours, he has to reduce his speed by 20 mph due to rain. If he takes 1 hour for lunch and gas, and reaches Franklin 9 hours after he left home, what was his initial speed?

3. Bill left Rome at 8am and drove his Ferrari at 80 mph from Rome to Sorrento. He then took the boat to Capri for the day, returning to Sorrento 5 hours later. On the return trip from Sorrento to Rome he averaged 60 mph and arrived at 8pm. How far is it from Rome to Sorrento?

Answers:

1) 1/4 hour or 15 minutes 2) 65 mph 3) 240 miles