Rate Problems

Algebra 1

Distance = Rate x Time

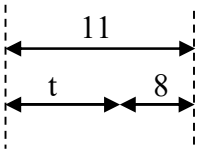
Plug the numbers into the equation. Show the steps to solve for the unknown.

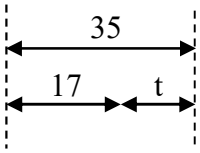
1. A car drives 55 miles per hour for 7 hours.
   How far does the car travel?

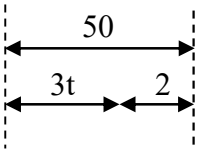
2. A runner runs 240 feet in 15 seconds.
   What is the runner's speed?

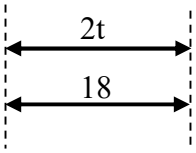
3. How long does it take a tree to grow to 48 feet
   if it grows 1.5 feet per year?

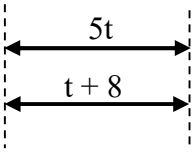
Write an equation that represents the drawing. Solve for t.

4. 

5. 

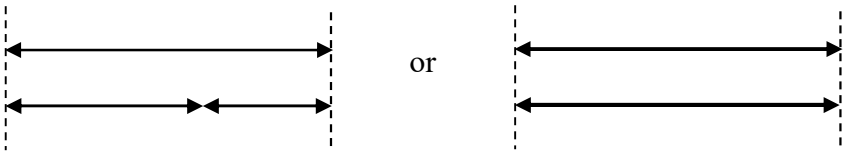
6. 

7. 

8. 

Rate Problem Practice

Every rate problem can be modeled with two sets of lines that are equal. The lines will look like:



The length of each line is equal to either a **DISTANCE** or a **RATE x TIME**.

1) Read the problem.
2) Decide which picture represents the problem and draw it.
3) On each line segment, write either a DISTANCE or a SPEED x TIME.
4) Use your picture to write the equation for solving the problem.
5) Solve for the unknown.

Practice

1. Tina and Krissy (her little sister) were running a race. Tina gave Krissy a head start of 30 meters. If Tina runs at a speed of 60 meters per minute and Krissy's speed is 45 meters per minute, how long did it take Tina to catch up to Krissy?

2. Justin and Taylor live 500 miles apart. If they both get in their cars and drive to meet each other, how long will it take if Justin drives 55 mph and Taylor drives 70 mph?

3. Bus A leaves the bus terminal and travels at an average speed of 30 mph. Two hours later, an express Bus B leaves the station and travels the same route at an average of 50 mph. How long will it take Bus B to catch up to Bus A?

4. Two bike riders start from the same place, but go in opposite directions. One rides at a speed of 10 mph and the other at 9 mph. In how many hours will they be 57 miles apart?

5. A plane travels for five hours with a wind current of 20 mph and then returns the same distance against the current in seven hours. What is the plane's speed in calm air? How far did the plane travel one way?

ANWERS:

1. $30 + 45t = 60t$; $t = 2$ minutes
2. $55t + 70t = 500$; $t = 4$ hours
3. $30(t+2)=50t$; $t = 3$ hours
4. $10t + 9t = 57$; $t = 3$ hours
5. $(r + 20)(5) = (r – 20)(7)$; plane speed = 120 mph, distance = 700 miles