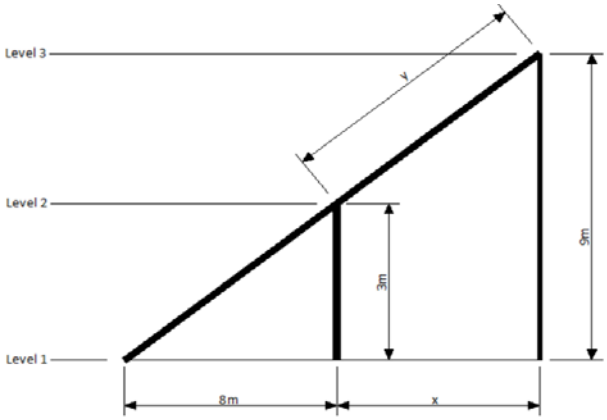
7.5 In-class Practice Math 085

1. Coffee beans from 14 trees are required to produce 7.7 kg of coffee. (This is the average amount that each person in the United States drinks each year.) The beans from how many trees are required to produce 2310 kg of coffee? On average, this amount of coffee will be a yearly supply for how many people in the United States?

2. A rope is 28 ft long. How can the rope be cut in such a way that the ratio of the resulting two segments is 3 to 5?

3. A factory is using an inclined conveyor belt to transport its products from Level 1 to Level 2 which is 3m above level 1 as shown by the figure below. The inclined conveyor is supported from one end to Level 1 and from the other end to a post located 8m away from Level 1 support point. The factory wants to extend its conveyor to reach a new Level 2 which is 9m above Level 1 while maintaining the inclination angle of the conveyor.



   a) Find the distance at which a new post is to be installed to support the conveyor at its new end at Level 2.
   b) Find the additional distance that the product has to travel to reach the new level.

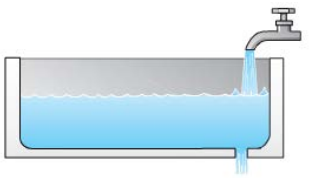
4. Karen can ride her bike from home to school in the same amount of time as she can walk from home to the post office. She rides 10 mph faster than she walks. The distance from her home to school is 7 miles, and the distance from her home to the post office is 2 miles. How fast does Karen walk?

5. The current of a river is 1 mph. A crew team rows 12 mi upriver and 12 mi downriver. If it takes the team 1 hr and 16 min round-trip, what is the rate at which the team rows in still water?

6. Bill and Bob both drive 60 miles to work. By averaging 10 miles per hour faster than Bob, Bill gets to work 12 minutes earlier than Bob. How fast does each one drive?

7. Julie can paint a fence by herself in 12 hours. With Betsy's help, it takes only 5 hours. How long would it take Betsy by herself?

8. The inlet pipe of a water tank can fill the tank in 1.5 hr. The outlet pipe can empty the tank in 1 hr. If both pipes are open, how long will it take to empty the tank?



9. Solve each formula for the indicated variable.

   a) $P = \frac{A}{1+rt}$ for A

   b) $P = \frac{A}{1+rt}$ for t

   c) $\frac{2}{x} = \frac{3}{y} - w$ for y

   d) $V = \frac{1}{3}\pi h^2(3R - h)$ for R

   e) $\frac{E}{e} = \frac{R+r}{r}$ for e

   f) $\frac{E}{e} = \frac{R+r}{r}$ for r