A carpenter is going to build and sell some tables. It costs him \$12,000 to buy the equipment needed and \$85 in materials and time to make each table.

If the carpenter sells each table for \$275 find the number of tables he need to make and sell in order to break-even.

Find the number of tables needed in order to make a \$5000 profit.

On your small boat it takes 3 hours to travel downstream 45 miles to the next city. It takes you 5 hours to return upstream. Write and solve a system of equations to find the speed of your boat and the speed of the current.

Downstream EQ: 
$$45 \text{ mi} = (b+c)3 \text{ hrs}^c = \text{speed of the boat}$$

Upstream EQ:  $45 \text{ mi} = (b+c)3 \text{ hrs}^c = \text{speed of the current}$ 

Upstream EQ:  $45 \text{ mi} = (b+c)3 \text{ hrs}^c = \frac{b+c}{2b+c}$ 

Speed of the boat =  $12 \text{ mph}$ 

Current speed =  $3 \text{ mph}$ 

Suppose it takes you 6.4 hours to fly 2800 miles into a headwind from Miami to Seattle. The return trip takes only 5.6 hours because you are flying with a tailwind. Write and solve a system of equations to find the speed of the wind and the airspeed of the plane. p = speed of the plane

d = rt 
$$W$$
 = speed of the wind  $W$  = speed of the win

On a canoe trip I paddled upstream (against the current) for 6 hours and traveled 15 miles. Later I paddled downstream (with the current) for 4 hours and traveled 34 miles. Write and solve a system of equations to find the speed of the current and the speed that I can paddle in still water.

speed of the current and the speed that I can paddle in still water.

$$d = rt$$

$$Downstream EQ:$$

$$3y = (b+c) 4$$

$$C = speed of the current$$

$$35 = b+c$$

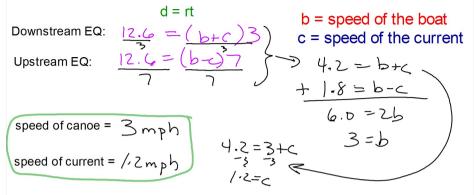
$$2.5 = b-c$$

$$11 = 2b$$
Speed of the boat = 5.5 mph
$$5 = b + c$$

$$8.5 = 5.5 + c$$

$$3 = c$$

It takes you 3 hours in your canoe to travel 12.6 miles downstream. The return trip upstream takes you 7 hours. Write and solve a system of equations to find the speed of the canoe and the speed of the current.



There is a flask with an unknown amount of solution.
This solution is 6% acid by volume.
Write an expression that gives the amount of pure acid in the flask.

x=Amount of solution



You mix togther two acid solutions to get a final solution that is 9% acid by volume. If there ends up being 15 liters of this new solution how many liters of pure acid do you have?

You mix an unknown # of liters of a 9% acid solution with an unknown # of liters of a 15% acid solution. You end up with a total of 20 liters of solution.

x = # liters of 9% solution y = # liters of 15% solution

Write an equation which represents the above information.

$$\times + y = 20$$
 solution

You want to create 8 gallons of an acid solution that is 12% acid by volume. All you have on the shelf are solutions that are 15% acid and 10% acid by volume.

How many gallons of each should you mix together? X = gallons of 15% solutionGallons of Solution

Gallons of Solution

Gallons of pure acid 15x + 10y = .90 15x + .10y = .90