Your Objective: Model a "real-life" situation with a system of equations, and then solve the system by using elimination, substitution, or graphing.

1.) 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 needs to make and sell in order to break-even.

Break-Even Point: Income = Expenses

Income: Expenses:

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

2.) 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.

3.) 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:

Upstream EQ:

4.) 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.

Downstream EQ:

Upstream EQ:

5.) 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.

Downstream EQ:

Upstream EQ:

You mix together 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?

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

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.

Write an equation which represents the above information.

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% solution y = gallons of 10% solution

Gallons of Solution

Gallons of Pure Acid