

## Algebra II Worksheet #6 Unit 2 selected solutions

Solve each of the problems algebraically. Use a system of 2 equations with 2 variables.

1. A piece of pipe that is 20 feet long is to be cut into two pieces so that the length of the longer piece is one foot more than twice the length of the shorter piece. How long is each piece? Express your answers using feet and inches.

<b>short piece : x</b>	$x + y = 20$		
<b>long piece : y</b>	$y = 2x + 1$		
	$x + (2x + 1) = 20$		$y = 2x + 1$
	$3x + 1 = 20$		$y = 38/3 + 3/3$
	$3x = 19$		$y = 41/3 \text{ feet}$
	$x = 19/3 \text{ feet}$		$y = 13 \text{ feet } 8 \text{ inches}$
	$x = 6 \text{ feet } 4 \text{ inches}$		

**One piece is 6 feet 4 inches long, and the other piece is 13 feet 8 inches long.**

4. One solution is 35% acid while another is only 20% acid. How much of each solution should be used to make 300 ml of a solution that is 30% acid?

	volume of solution	percent acid	volume of acid	
<b>sol. A</b>	<b>x</b>	<b>35%</b>	<b>.35x</b>	
<b>sol. B</b>	<b>y</b>	<b>20%</b>	<b>.2y</b>	
<b>mixture</b>	<b>300 ml</b>	<b>30%</b>	<b>90 ml</b>	
	$x + y = 300$	$-20x - 20y = -6000$		$x + y = 300$
	$.35x + .2y = 90$	$35x + 20y = 9000$		$200 + y = 300$
				$y = 100 \text{ ml}$
		$15x = 3000$		
		$x = 200 \text{ ml}$		

**You should use 200 ml of the 35% solution and 100 ml of the 20% solution.**