

**LT #6: Word Problems:**

**Directions: Define your variables, write a system of equations, solve and write a short complete sentence for your answer. (4 points each)**

1. How many liters of pure antifreeze (100%) must be added to 20 liters of a 50% antifreeze solution to produce a 75% solution?

Amount	%	Total
x	100	100x
20	50	1000
y	75	75y

$$\begin{aligned}
 x + 20 &= y \\
 100x + 1000 &= 75y \\
 100x + 1000 &= 75(x + 20) \\
 100x + 1000 &= 75x + 1500 \\
 25x &= 500 \\
 x &= 20
 \end{aligned}$$

X=20 L of 100% solution

2. When Mrs. Katdisliker swims with the current, she swims 16 km in 2 hours. Against the current, she can swim only 12 km in the same time. How fast can she swim in the still water? What is the rate of the current?

	Rate x	Time =	Distance
w/ current	R+c	2	16
against current	R-c	2	12

$$\begin{aligned}
 2(R+c) &= 16 \\
 R+c &= 8 \\
 R-c &= 6
 \end{aligned}$$

$$2R = 14$$

R = 7 km/hr

$$\begin{aligned}
 2(R-c) &= 12 \\
 R-c &= 6
 \end{aligned}$$

$$\begin{aligned}
 R+c &= 8 \\
 7+c &= 8
 \end{aligned}$$

c = 1 km/hr