

Word Problems day 2

Ex) A man requires an income of \$40 a year from an investment of \$1000. He plans to split the money between a safe stock paying 3% interest and a risky stock paying 8% interest. How much of the \$1000 can he invest in the 3% stock?

Notes: Annual Interest $I = Pr$

2 stocks

Goal - how much invested in 3%.

	I	$=$	P	r
3% stock	$3x/100$		(x)	$3\% = 3/100$
8% stock	$8x/100$		y	$8\% = 8/100$
total invested	40		1000	

$$x + y = 1000 \quad (1)$$

$$100 \left[\frac{3x}{100} + \frac{8y}{100} = 40 \right] 100 \quad (2)$$

$$3 [x + y = 1000] 3 \quad (1)$$

$$3x + 8y = 4000 \quad (2)$$

$$3x + 3y = 3000 \quad (1)$$

$$- (3x + 8y = 4000) \quad (2)$$

$$0 - 8y = -1000$$

$$y = 1000/8 = 500/4 = 250/2 = 125$$

$$x + 125 = 1000 \quad (1)$$

$$\boxed{x = 875}$$

Ex) A Chemist wishes to obtain 100 c.c. of a 25% solution of a certain acid by mixing a 20% solution and a 50% solution. How many c.c.s of the 20% solution should he use?

Notes: Goal - CC's of 20% solution
Amount of substance $A = Sp$
2 solutions 20% 50%

	A	S	P
20% Solution	$\frac{20x}{100}$	(X)	$20\% = \frac{20}{100}$
50% Solution	$\frac{50y}{100}$	Y	$50\% = \frac{50}{100}$
25% solution	100 25	100	$25\% = \frac{25}{100}$

$$100 \left[\frac{20x}{100} + \frac{50y}{100} = 25 \right] 100$$

$$x + y = 100$$

$$20x + 50y = 2500$$

$$20 [x + y = 100] 20$$

$$\begin{array}{r} 20x + 50y = 2500 \\ - (20x + 20y = 2000) \\ \hline \end{array}$$

$$30y = 500$$

$$y = \frac{500}{30} = \frac{50}{3}$$

100

$$x + \frac{50}{3} = 100$$

$$x = \frac{300}{3} - \frac{50}{3} = \frac{250}{3}$$