Adv. Mixture

2. Let x = amt of 45% algaecide
Let y = amt of 70% algaecide

$$.45x + .70y = .5(100)$$
$$x + y = 100$$
$$y = 100 - x$$

$$.45x + .7(100 - x) = .5(100)$$
$$.45x + 70 - .7x = 50$$
$$20 = .25x$$
$$80 = x$$

Henry must use 80 grams of the 45% solution and 20 grams of the 70% solution.

3. Let x = amt of salt

$$.12(100) + x = .25(100 + x)$$
$$12 + x = 25 + .25x$$
$$.75x = 13$$ $17\frac{1}{3}$
$$x = \cancel{9.75}\ g \text{ of salt}$$

The chemist must add $\cancel{9.75}$ $17\frac{1}{3}$ grams of salt.

4. Let x = # lbs of 70% coffee
y = # lbs of 90% "

$.7x + .9y = .75(10)$
$x + y = 10$ $\quad y = 10 - x$

$.7x + .9(10-x) = .75(10)$
$.7x + 9 - .9x = 7.5$
$1.5 = .2x$

a) $x = 7.5 \quad y = 2.5$

$.7x + .9(10-x) = .8(10)$
$.7x + 9 - .9x = 8$
$1 = .2x$

b) $5 = x \quad y = 5$

$.7x + .9(10-x) = .85(10)$
$.7x + 9 - .9x = 8.5$
$.5 = .2x$

c) $x = 2.5 \quad y = 7.5$

It will take 7.5 lbs of 70% Columbian and 2.5 lbs of 90% Columbian to produce 10 lbs of 75% Columbian etc

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5. $.2(10L) + .3(30) = x(40)$

$\frac{2+9}{40} = x$ x = % of acid solution

$\frac{11}{40} = x$ $x = 27.5\%$

6. $.2(6) + .6(4) = x(10)$ x = % of acid solution

$1.2 + 2.4 = 10x$

$\frac{3.6}{10} = x$ $x = 36\%$

7. $x + .3(25L) = .7(x+25)$ Let x = amt of pure antifreeze

$x + 7.5 = .7x + 17.5$

$.3x = 10$

$x = 33.3L$

8. Let x = amt of pure (100%) acid

$x + .35(50) = .7(50+x)$

$x + 17.5 = 35 + .7x$

$.3x = 17.50$

$x = 58\frac{1}{3}$ oz.

9. $.1(65) = .14(65-x)$

$6.5 = 9.1 - .14x$

$.14x = 2.6$

$x \approx 18.571$ mL

11. Let A = amt of 12% protein
B = " " 8% "

$.12A + .08B = .1(100)$

$A + B = 100$ $\quad y = 100 - x$

$.12A + .08(100 - A) = 10$

$.12A + 8 - .08A = 10$

$.04A = 2$

$A = 50$ lbs $\quad B = 50$ lbs

12. $4(12) + x = .6(12 + x)$ Let x = amt pure antifreeze.

$4.8 + x = 7.2 + .6x$

$.4x = 2.4$

$x = 6$ L

13. [illegible]

$.02(300) = .05(300 - x)$

$6 = 15 - .05x$

$.05x = 9$

$x = 180$ L water

14. $.075x + .12y = .1(1.8\text{ L})$

$x + y = 1.8$ $\quad y = 1.8 - x$

$.075x + .12(1.8 - x) = .18$

$.075x + .216 - .12x = .18$

$.036 = .045x$

.8 L of 7.5% sol. 1 L of 12%