

BE-Precalc Tuesday 4-20-10

- ① 9 yd^3 of soil containing 42% silt was mixed with 3 yd^3 of soil with 10% silt. What is the silt content of the mixture?
- ② How MANY oz. of brand X sugar which cost \$1 per oz. must be added to 60z of brand Y sugar which costs \$5 per oz. to make generic sugar which cost \$4 per oz.?
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• Homework review

$$\begin{aligned} \textcircled{1} \quad 9 \text{ yd}^3 (.42) &= 3.78 \text{ yd}^3 \text{ of silt} \\ 3 \text{ yd}^3 (.10) &= 0.30 \text{ yd}^3 \text{ of silt} \\ \hline &4.08 \text{ yd}^3 \text{ of silt} \end{aligned}$$

$$\frac{4.08 \text{ yd}^3 \text{ silt}}{12 \text{ yd}^3 \text{ total}} = .34 \therefore \boxed{\text{mix is } 34\% \text{ silt}}$$

$$\begin{array}{r} 0.34 \\ 12 \overline{) 4.08} \\ \underline{36} \\ 48 \end{array}$$

$$\begin{aligned} \textcircled{2} \quad &\left[6 \text{ oz} \cdot \frac{5 \text{ dollars}}{\text{oz}} \right] + \left[X \text{ oz} \cdot \frac{1 \text{ dollars}}{\text{oz}} \right] \\ &= \left[(6+X) \text{ oz} \cdot \frac{4 \text{ dollars}}{\text{oz}} \right] \end{aligned}$$

$$30 + X = 24 + 4X$$

$$6 = 3X$$

$$2 = X$$

$$\therefore \boxed{\text{must add 2 oz. of Brand X}}$$

More mixture problems:

- (EX) 9 lb of copper were mixed with 3 lb of tin which costs \$6/lb. to make bronze which costs \$3/lb. What is the price per lb of copper?
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$$\left[9 \text{ lb. Cu} \cdot \frac{x \text{ dollars}}{\text{lb. Cu}} \right] + \left[3 \text{ lb. Sn} \cdot \frac{6 \text{ dollars}}{\text{lb. Sn}} \right]$$

$$= \left[12 \text{ lbs. bronze} \cdot \frac{3 \text{ dollars}}{\text{lb. bronze}} \right]$$

$$9x + 18 = 36$$

$$9x = 18$$

$$x = 2$$

$\therefore$ 2 dollars per lb
is cost of Copper

③ Jimmy wants to make 18 gt. of an 18% sugar solution by mixing together a 54% sugar solution and pure water. How much of each solution must he use?

$$18 \text{ gt.} = \text{total gts.}$$

$$18(.18) = \text{total sugar} = 3.24 \text{ gt sugar}$$

$$\text{Find Amount of 54\% sugar sol} = 3.24 \text{ gt of sugar}$$

$$(.54)x = 3.24$$

$$\therefore x = \frac{3.24}{.54} = 6 \text{ gt of 54\% sugar solution has 3.24 gt sugar.}$$

$\therefore$ Need 6 gt of 54% sugar
and 12 gt of pure water

$$\begin{array}{r} 0.06. \\ .54 \overline{) 3.24.} \\ \underline{3.24} \end{array}$$

⑥ Fruit salad costs \$7/lb is made by combining sliced peaches which cost \$8/lb with sliced bananas which cost \$2/lb. Find lb of peaches & bananas to make 6 lb of fruitsalad.

$$\left[P \text{ lb} \cdot \frac{8 \text{ dollars}}{1 \text{ lb}} \right] + \left[B \text{ lb} \cdot \frac{2 \text{ dollars}}{1 \text{ lb}} \right] = \left[6 \text{ lb} \cdot \frac{7 \text{ dollars}}{1 \text{ lb}} \right]$$

$$8P + 2B = 42 \rightarrow 8P + 2B = 42$$

$$P + B = 6 \xrightarrow{(-2)} -2P - 2B = -12$$

$$6P = 30$$

$$\therefore \begin{cases} P = 5 \text{ lbs} \\ B = 1 \text{ lb} \end{cases}$$

• Classwork / Homework $\Rightarrow$ MIXTURE
Problem
Worksheet
(10 problems)

Practice - Mixtures

- 1) A metal alloy weighing 8 kg and containing 14% gold is melted and mixed with 3 kg of a different alloy which contains 36% gold. What percent of the resulting alloy is gold?
- 2) 12 gal. of a 85% acid solution was mixed with 4 gal. of a 65% acid solution. What is the concentration of the mixture?
- 3) How many kg of mixed nuts that contain 40% peanuts must Totsakan add to 11 kg of peanuts to make a mixture with 73% peanuts?
- 4) Abhasra wants to make a 55% sugar solution. She has already poured 9 qt. of a 65% sugar solution into a beaker. How many qt. of a 25% sugar solution must she add to this to create the desired mixture?
- 5) Norachai created a metal containing 62% nickel by combining two other metals. One of these other metals weighed 2 kg and contained 86% nickel. If the other weighed 4 kg then what percent of it was nickel?
- 6) Mike created a metal containing 58% gold by combining two other metals. One of these other metals weighed 10 kg and contained 64% gold. If the other weighed 3 kg then what percent of it was gold?
- 7) Asanji asked you to make 20 L of fruit punch that contains 60% fruit juice by mixing together some Sweet Tropical Fruit Punch and some apple juice. How much of each ingredient do you need if the Sweet Tropical Fruit Punch contains 20% juice?
- 8) Bill asked you to make 15 gal. of fruit punch that contains 44% fruit juice by mixing together some amount of Brand A fruit punch and some amount of Brand B fruit punch. Brand A contains 40% fruit juice and Brand B contains 50% fruit juice. How much of each do you need?
- 9) To build the garden of your dreams you need 8 m^3 of soil containing 60% silt. You have two types of soil you can combine to achieve this: soil with 20% silt and pure silt. How much of each soil should you use?
- 10) Shayna's Premium Coffee Blend which costs \$13/kg is made by combining arabica coffee beans which cost \$14/kg with robusta coffee beans which cost \$11/kg. Find the number of kg of arabica coffee beans and robusta coffee beans required to make 6 kg of Shayna's Premium Coffee Blend.