Essential Question: How can we set up an equation to solve problems about mixtures?

Do Now:

A) How much does it cost you if you purchase 3 pounds of coffee costing $5.50 per lb. and 7 pounds of coffee costing $6.00 per lb.?

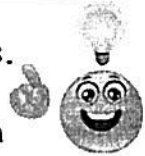$$3(5.50) + 7(6) \longrightarrow 16.50 + 42 \longrightarrow \$58.50$$

B) If the two types of coffees are mixed, how much does the mixture weigh?

$$3 \text{ pounds} + 7 \text{ pounds} \longrightarrow 10 \text{ pounds}$$

C) What is the price per pound of the mixture?

$$\frac{\$}{\text{pound}} \qquad \frac{58.50}{10} \longrightarrow \$5.85 \text{ per pound}$$

Let's use the key concept from yesterday to help us solve mixture problems.

1) Grade A seeds cost $8/lb. and Grade B seeds cost $5/lb. How many pounds of each type of seed are needed to produce a 30 pound mixture with a total value of $225?

	cost per pound (how much is 1 lb)	quantity (how many pounds)	total value (how much money)
Grade A	8	X	8X
Grade B	5	30 − X	5(30−X)

how much one pound costs / how many pounds / how much one pound costs / how many pounds

$$8X + 5(30-X) = 225$$

$$8x + 150 - 5x = 225$$

$$3x + 150 = 225$$

$$3x = 75$$

$$x = 25$$

2) A mixture weighing 10 pounds consists of coffee that sells for $6.25 per lb. and coffee that sells for $4.50 per lb. If the mixture sells for $5.20 per lb., how many pounds of each coffee was in the mixture?

	items	value	quantity	total value
4	coffee A	6.25	X	6.25 X
6	coffee B	4.50	10 - X	4.50 (10 - X)

$$6.25x + 4.50(10-x) = 5.20(10)$$
$$6.25x + 45 - 4.5x = 52$$
$$1.75x + 45 = 52$$
$$1.75x = 7$$
$$x = 4$$

3) Mark wants to make trail mix made up of almonds, peanuts and dried cranberries. He wants to mix one part almonds, two parts peanuts, and three parts cranberries. Almonds cost $5.00 per pound, peanuts cost $3.00 per pound and dried cranberries cost $7.00 per pound. Mark has $16.00 to spend. Determine how many pounds of trail mix he can purchase?

	items	value	quantity	total value
$\frac{1}{2}$ lb	almonds	5	X	5x
1 lb	peanuts	3	2x	3(2x)
$1\frac{1}{2}$ lb	cranberries	7	3x	7(3x)

$$5x + 3(2x) + 7(3x) = 16$$
$$5x + 6x + 21x = 16$$
$$\frac{32x}{32} = \frac{16}{32}$$
$$x = .5$$

Key Idea in setting up money/mixture word problems:

_____value per one_____ x _____quantity (how many)_____ = total value ($)