

Math 95--Mixture Problems Day Two--page 1

C. Money Mixture

- a. What is the value of 3 tickets at \$12 each?
What is the value of 3 paintings for \$12 each?

Think: $\$12(3) = \text{total value}$

- b. What is the value of 22 quarters?

Think: $\$.25(22) = \text{total value}$

- c. This is the beginning of a formula: \$ per item(# of items) = total value

- d. Mary has 28 more quarters than dimes. She has \$27.65. How many of each type coin does she have?

I read this in “chunks” of words and write it like this (and then write algebra):

x number of dimes $\Rightarrow .10(x)$

recall: dimes gets the x and dimes are worth \$0.10

(x + 28) number of quarters $\Rightarrow .25(x + 28)$

recall: more than is add/reverse so 28 after + and x in front; quarters are worth \$0.25

Total value \$27.65 $\Rightarrow 27.65$

So you will now have this equation:

$$.10(x) + .25(x + 28) = 27.65$$

$$.10x + .25x + 7 = 27.65$$

$$.35x + 7 = 27.65$$

$$.35x + 7 - 7 = 27.65 - 7$$

$$.35x = 20.65$$

$$x = 20.65 \div .35$$

$$x = 59 \text{ dimes}$$

$$x + 28 = 59 + 28 = 87 \text{ quarters}$$

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- e. Garry sold large paintings for \$24 each and small paintings for \$18 each. He sold 50 paintings and brought in \$972. How many of each type painting did he sell?

I read this in “chunks” of words and write it like this (and then write algebra):

large paintings for \$24 each $\Rightarrow 24(x)$

small paintings for \$18 each $\Rightarrow 18(\quad)$

Total value \$972 $\Rightarrow 972$

You need to fill in the empty parentheses that are in the middle so think: all the paintings subtract x . There are 50 total paintings so you will have $(50 - x)$.

So you will now have this equation:

$$24(x) + 18(50 - x) = 972$$

$$24x + 900 - 18x = 972$$

$$6x + 900 = 972$$

$$6x = 972 - 900$$

$$6x = 72$$

$$x = 72 \div 6$$

$$x = 12 \text{ large paintings at } \$24 \text{ each}$$

$$50 - x = 50 - 12 = 38 \text{ small paintings at } \$18 \text{ each}$$

You just need to practice to conquer these type problems **so try these**.

1. Sam has 4 more quarters than dimes. He has \$2.05 altogether. How many coins of each type does he have?
2. Helen has 9 more nickels than dimes. Altogether she has \$1.35. How many coins of each type does she have?
3. A movie theater charges \$5.75 for adults and \$3.25 for students. The total for 300 people was \$1225. How many adults and how many students bought tickets for the movie?
4. A club sold red shirts for \$12 and white shirts for \$9. If the club sold 40 shirts and made \$396, how many of each type of shirt was sold?

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Answer Key. On this answer key, I will show the three lines of how I think in pieces. Then I'll show the equation. I'll leave the solving to you, but I will show the answer(s). This should help you know how to think!

- x number of dimes $\Rightarrow .10(x)$
(x + 4) number of quarters $\Rightarrow .25(x + 4)$
total value \$2.05 $\Rightarrow 2.05$
 $.10(x) + .25(x + 4) = 2.05$
x = 3 dimes
x + 4 = 3 + 4 = 7 quarters
- x number of dimes $\Rightarrow .10(x)$
(x + 9) number of nickels $\Rightarrow .05(x + 9)$
total value \$1.35 $\Rightarrow 1.35$
 $.10(x) + .05(x + 9) = 1.35$
x = 6 dimes
x + 9 = 6 + 9 = 15 nickels
- x number of adult tickets at \$5.75 each $\Rightarrow 5.75(x)$
student tickets at \$3.25 each $\Rightarrow 3.25(\quad)$
on the empty parentheses in the middle, use (total tickets - x) so use (300 - x)
total value \$1225 $\Rightarrow 1225$
 $5.75(x) + 3.25(300 - x) = 1225$
x = 100 adult tickets
300 - x = 300 - 100 = 200 student tickets
- x number of red shirts at \$12 each $\Rightarrow 12(x)$
white shirts at \$9 each $\Rightarrow 9(\quad)$
on the empty parentheses in the middle, use (total shirts - x) so use (40 - x)
total value \$396 $\Rightarrow 396$
 $12(x) + 9(40 - x) = 396$
x = 12 red shirts
40 - x = 40 - 12 = 28 white shirts