D: Solving Equations: $ax = b + cx$; $ax + b = cx + d$ Continued

Word Problems

x - statement
Equation
Solve
Sentence

Examples:

3. A jar contains 88 more pennies than dimes. The total value is \$1.43. How many dimes & pennies are there?

Pennies = \$0.01   Dimes = \$0.10

* Use the **lesser** amount of coins as "x".

x – dimes
$x + 88$ – pennies (because there are 88 more pennies)

Value of dimes + Value of pennies = \$1.43

$(\$0.10)x$ + $\$(0.01)(x + 88) = \$1.43$

$0.10x + 0.01x + 0.88 = 1.43$ Combine "x"'s. $(0.10x + 0.01x)$

$0.11x + 0.88 = 1.43$ ("Move" the 0.88)

$0.11x + 0.88 = 1.43$
$ -0.88 \quad -0.88$

$0.11x = 0.55$ ("Get Rid" of the 0.11)

$\dfrac{0.11x}{0.11} = \dfrac{0.55}{0.11}$
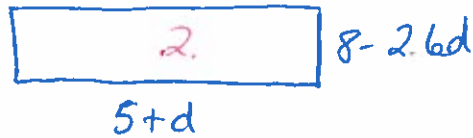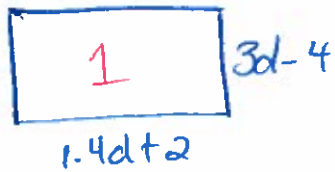
$\boxed{x = 5}$ (Dimes) $x + 88$ – pennies
$ 5 + 88 = 93$ pennies.

There are 5 dimes and 93 pennies.

2. Two rectangles have equal perimeters. What is the value of "d"?

| 1 | 3d-4 |

1.4d+2

| 2. | 8-2.6d |

5+d

* Equal   Perimeters   so:

$$P_1 = P_2$$ (Perimeters of Rectangles:
                      2×width + 2×length.

2×width + 2×length = 2×width + 2×length

$2(3d-4)$ + $2(1.4d+2)$ = $2(8-2.6d)$ + $2(5+d)$ [Bring into brackets]

$6d - 8$ + $2.8d + 4$ = $16 - 5.2d + 10 + 2d$ [Combine all d's & plain numbers on each side]

8.8d $- 4$ = 26 $- 3.2d$

+3.2d

+ 3.2d

(Move the d's to the left)

12d $- 4$ = 26

+4   +4   (Move the 4)

$\frac{12d}{12} = \frac{30}{12}$ — (Divide out

$\boxed{d = 2.5}$

"d" is 2.5.

Page 327 #13-17