Unit 2 Word Problems Review

① Let x represent the number.

$$5x + 7 = 27$$
$$5x = 27 - 7$$
$$\frac{5x}{5} = \frac{20}{5}$$
$$x = 4$$

∴ The number is 4.

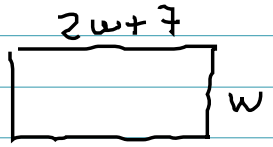
② Let b represent the # of boys
Let $30-b$ represent the # of girls
(# girls is 3 less than double boys)

$$30 - b = 2b - 3$$
$$-b - 2b = -3 - 30$$
$$\frac{-3b}{-3} = \frac{-33}{-3}$$
$$b = 11$$

$30 - b$
$= 30 - 11$
$= 19$

∴ There are 11 boys and 19 girls.

③



$$2w + 2(2w+7) = 86$$
$$2w + 4w + 14 = 86$$
$$6w = 86 - 14$$
$$\frac{6w}{6} = \frac{72}{6}$$
$$w = 12$$

$l = 2w + 7$
$= 2(12) + 7$
$= 24 + 7$
$= 31$

∴ The rectangle is 12cm by 31cm

④ Let n represent the # of nickels.
Let 32-n represent the # of dimes.

$$0.05n + 0.10(32-n) = 2.80$$
$$0.05n + 3.2 - 0.10n = 2.80$$
$$0.05n - 0.10n = 2.80 - 3.2$$
$$\frac{-0.05n}{-0.05} = \frac{-0.4}{-0.05}$$
$$n = 8$$

dimes $= 32-n$
$= 32-8$
$= 24$

∴ There are 8 nickels and 24 dimes.

⑤ Let s represent the price of small deluxe pizzas ($)
Let s+4 represent the price of a large deluxe pizza ($)

$$5s + 1(s+4) = 38.50$$
$$5s + s + 4 = 38.50$$
$$6s = 38.50 - 4$$
$$\frac{6s}{6} = \frac{34.50}{6}$$
$$s = 5.75$$

large $= s + 4$
$= 5.75 + 4$
$= 9.75$

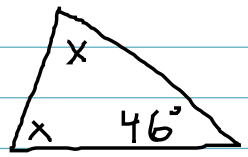
∴ The small pizza is $5.75 and the large is $9.75

⑥ Let x, $x+1$, $x+2$ represent the ages (yrs).

$$x + x+1 + x+2 = 42$$
$$x + x + x = 42 - 2 - 1$$
$$\frac{3x}{3} = \frac{39}{3}$$
$$x = 13$$

$x+1 = 14$
$x+2 = 15$

∴ Their ages are 13, 14, and 15.

(7) 

$x + x + 46 = 180$

$x + x = 180 - 46$

$\frac{2x}{2} = \frac{134}{2}$

$x = 67$

∴ The equal angles are 67°.

(8) Let q represent the # of quarters.
Let $q+5$ represent the # of nickels.

Let $40 - q - (q+5)$ represent the # of dimes.

$40 - q - q - 5$

$= 35 - 2q$

$0.25q + 0.05(q+5) + 0.10(35-2q) = 5.25$

$0.25q + 0.05q + 0.25 + 3.5 - 0.2q = 5.25$

$0.25q + 0.05q - 0.2q = 5.25 - 0.25 - 3.5$

$\frac{0.1q}{0.1} = \frac{1.5}{0.1}$

$q = 15$

Then:

nickels $q + 5 = 15 + 5$

$= 20$

dimes $= 35 - 2q$

$= 35 - 2(15)$

$= 35 - 30$

$= 5$

∴ There are 15 quarters, 20 nickels, and 5 dimes.

(9) Let x represent the # of upgrades Campbell sells.

$\$ \text{ by hours} + \$ \text{ upgrades} = 640$

$9.10(40) + 12(x) = 640$

$364 + 12x = 640$

$12x = 640 - 364$

$\frac{12x}{12} = \frac{276}{12}$

$x = 23$

∴ He needs to sell 23 upgrades.

(10) Let x represent the number.

$\frac{(2)(5x-20)}{2} = 15^{(2)}$

$5x - 20 = 30$

$5x = 30 + 20$

$5x = 50$

$x = 10$

∴ The number is 10.

(11) Let x represent the number

$3(x+4) = 2x$

$3x + 12 = 2x$

$3x - 2x = -12$

$x = -12$

∴ The number is -12.

(12) Let x represent the number

$$\frac{x}{3} = x + 9$$

$$x = 3x + 27$$

$$x - 3x = 27$$

$$\frac{-2x}{-2} = \frac{27}{-2}$$

$$x = -\frac{27}{2}$$

∴ The number is $-\frac{27}{2}$.

(13) Let x represent the smallest angle (°).
Let x+40 represent the second angle (°).
Let $\frac{x+x+40}{2}$ represent the third angle (°)

$$x + x + 40 + \frac{x+x+40}{2} = 180$$

$$2x + 40 + \frac{(2x+40)}{2} = 180$$

$$4x + 80 + 2x + 40 = 360$$

$$4x + 2x = 360 - 80 - 40$$

$$\frac{6x}{6} = \frac{240}{6}$$

$$x = 40$$

2nd angle = x + 40
= 40 + 40
= 80

3rd angle = $\frac{x+x+40}{2}$
= $\frac{40+40+40}{2}$
= 60

∴ The angles are 40°, 60° and 80°

(14) Let $2x+1$ represent the first #.
Let $2x+3$ represent the next #

$$2x+1+2x+3=160$$
$$2x+2x=160-1-3$$
$$\frac{4x}{4}=\frac{156}{4}$$
$$x=39$$

first # $= 2x+1$
$= 2(39)+1$
$= 79$

second # $= 2x+3$
$= 2(39)+3$
$= 81$

∴ The numbers are 79 and 81.

(15) Let x represent the # of dimes.
Let $200-x$ represent the # of quarters.

$$0.10x+0.25(200-x)=42.50$$
$$0.10x+50-0.25x=42.50$$
$$0.10x-0.25x=42.50-50$$
$$\frac{-0.15x}{-0.15}=\frac{-7.5}{-0.15}$$
$$x=50$$

quarters $= 200-x$
$= 200-50$
$= 150$

∴ There are 50 dimes and 150 quarters.

(16) Let x represent the # of $10 bills.
Let $125-x$ represent the # of $20 bills.

$$10x+20(125-x)=1650$$
$$10x+2500-20x=1650$$
$$10x-20x=1650-2500$$
$$\frac{-10x}{-10}=\frac{-850}{-10}$$
$$x=85$$

$20 bills $= 125-x$
$= 125-85$
$= 40$

∴ There are 85 $10 bills and 40 $20 bills.

(17) Let x represent the # of quarters.
Let x represent the # of ~~dimes~~ nickels.
Let $53-2x$ represent the # of dimes

$$0.25x + 0.05x + 0.10(53-2x) = 6.80$$
$$0.25x + 0.05x + 5.3 - 0.2x = 6.80$$
$$0.25x + 0.05x - 0.2x = 6.8 - 5.3$$
$$\frac{0.1x}{0.1} = \frac{1.50}{0.1}$$
$$x = 15$$

$$\text{dimes} = 53-2x$$
$$= 53-2(15)$$
$$= 53-30$$
$$= 23$$

∴ There are 15 quarters, 15 nickels, and 23 dimes