

Solutions to selected problems

■ [06-02-20A-P1-7] pps 83-84 [A-1] # 1,4,6,7,9,11

[1]

Let x = number of girls.

$x + 10$ = number of boys

$$x + x + 10 = 152$$

$$x = 71$$

∴ There are 81 boys and 71 girls.

[4]

Let x = amount Joe earned (\$).

$x + 10$ = amount Jerry earned (\$)

$$x + x + 10 = 152$$

$$x = 71$$

∴ Jerry earned \$81 and Joe earned \$71.

[6]

Let x = width of rectangle (inches).

$x + 10$ = Length of rectangle (inches).

$$2x + 2(x + 10) = \text{perimeter}$$

$x + x + 10$ = half of perimter

$$x + x + 10 = 152$$

$$x = 33$$

∴ The length of the rectangle is 81 inches. The width of the rectangle is 71 inches.

[7]

Let x = the number of dimes.

$2x$ = the number of quarters.

$4x$ = the number of nickels.

$10x$ = the value of the dimes (cents)

$50x$ = the value of the quarters (cents)

$20x$ = the value of the nickels (cents)

$$10x + 50x + 20x = 240$$

$$\therefore x = 3$$

She had 3 dimes, 6 quarters, and 12 nickels.

[9]

Let x = length of side of original square board (inches)

$x - 2$ = width of rectangular piece (inches)

$x + 3$ = length of rectangular piece (inches)

$$2(x - 2) + 2(x + 3) = 54$$

$$x = 13$$

∴ The original board was 13 inches by 13 inches

[11]

x = length of one side of the triangle (inches).

$y = 2x + 2$ = length of second side of the triangle (inches).

$z = 2x$ = length of third side of the triangle (inches).

$$x + (2x + 2) + (2x) = 22$$

$$x = 4$$

∴ Side z is 8 inches long.

■ [06-02-20A-P1-7] pps 84-85 [A-2] # 2,3,5,7,9,11,12,13

[2]

Let x = the number of nickels.

x = the number of dimes.

x = the number of quarters.

x = the number of half-dollars.

$5x$ = the value of his nickels (cents).

$10x$ = the value of his dimes (cents).

$25x$ = the value of his quarters (cents).

$50x$ = the value of his half-dollars (cents).

$$5x + 10x + 25x + 50x = 1080$$

$$x = 12$$

∴ He had 48 coins.

[3]

Let x = amount of money that younger brother receives (\$)

$x + 5$ = amount of money older brother receives (\$).

$$x + (x + 5) = 60$$

$$x = 32.50$$

∴ The younger brother receives \$27.50, the older gets \$32.50

[5]

Let x = the number of sheep in the second flock.

$2x - 32$ = the number of sheep in the first flock.

$$x + (2x - 32) = 265$$

$$x = 99$$

∴ The number of sheep in the first flock is 99. There are 166 sheep in the second flock.

[7]

Let c = the amount of money that C gets (\$).

$4c$ = the amount of money that B gets (\$).

$12c$ = the amount of money that A gets (\$).

$$c + 4c + 12c = 68.$$

$$c = 4$$

∴ A gets \$48, B gets \$16, C gets \$4.

[8]

Let x = width of rectangle (inches)

$3x$ = length of rectangle (inches)

$3x + 115$ = perimeter of rectangle (inches).

$$2x + 2(3x) = 3x + 115$$

$$x = 23$$

∴ The width of the rectangle is 23 inches and its length is 69 inches.

[9]

Let x = the number of Linda's nickels.

x = the number of Betsy's pennies.

$5x$ = the value of Linda's nickels (cents)

x = the value of Betsy's pennies (cents)

$$x + 5x = 210$$

$$x = 35$$

∴ Linda has \$1.75 and Betsy has \$.35.

[11]

Let x = the number of Jim's nickels.

$2x$ = the number of Tom's cents (meaning pennies).

$5x$ = the value of Jim's nickels (cents)

$2x$ = the value of Tom's cents (cents)

$$2x + 255 = 5x$$

$$x = 85$$

∴ Jim has \$4.25. [$85 \times 5 = 425$]

[12]

Let x = Dick's age now (years)

$3x$ = John's age now (years)

$x - 3$ = Dick's age 3 years ago

$3x - 3$ = John's age 3 years ago.

$$x - 3 + (3x - 3) = 22$$

$$x = 7$$

∴ Dick is 7 years old now. John is 21 years old now.

[13]

Let x = amount son earns per hour (\$)

$2x$ = amount father earns per hour (\$)

$5x$ = amount son earns in 5 hours.

$16x$ = amount father earns in 8 hours.

$$5x + 16x = 23.10$$

$$x = 1.10$$

∴ The son earns \$1.10 per hour and the father earns \$2.20 per hour.