Try These

1. If a person has three times as many quarters as dimes and the total amount of money is \$5.95, find the number of quarters and dimes.
2. A pile of 18 coins consists of pennies and nickels. If the total amount of the coins is 38¢, find the number of pennies and nickels.
3. A small child has 6 more quarters than nickels. If the total amount of the coins is \$3.00, find the number of nickels and quarters the child has.
4. A child's bank contains 32 coins consisting of nickels and quarters. If the total amount of money is \$3.80, find the number of nickels and quarters in the bank.
5. A person has twice as many dimes as she has pennies and three more nickels than pennies. If the total amount of the coins is \$1.97, find the numbers of each type of coin the person has.
6. In a bank, there are three times as many quarters as half dollars and 6 more dimes than half dollars. If the total amount of the money in the bank is \$4.65, find the number of each type of coin in the bank.
7. A person bought 12 stamps consisting of 37¢ stamps and 23¢ stamps. If the cost of the stamps is \$3.74, find the number of each type of the stamps purchased.
8. A dairy store sold a total of 80 ice cream sandwiches and ice cream bars. If the sandwiches cost \$0.69 each and the bars cost \$0.75 each and the store made \$58.08, find the number of each sold.
9. An office supply store sells college-ruled notebook paper for \$1.59 a ream and wide-ruled notebook paper for \$2.29 a ream. If a student purchased 9 reams of notebook paper and paid \$15.71, how many reams of each type of paper did the student purchase?
10. A clerk is given \$75 in bills to put in a cash drawer at the start of a workday. There are twice as many \$1 bills as \$5 bills and one less \$10 bill than \$5 bills. How many of each type of bill are there?

SOLUTIONS:

1. Let x = the number of dimes and $3x$ = the number of quarters; then the value of the dimes is $10x$ and the value of the quarters is $25 \cdot 3x$ or $75x$.

$$10x + 25 \cdot 3x = 5.95 \times 100$$

$$10x + 75x = 595$$

$$85x = 595$$

$$\frac{\cancel{85}^{1}x}{\cancel{85}^{1}} = \frac{595}{85}$$

$$x = 7 \text{ dimes}$$

$$3x = 3 \cdot 7 = 21 \text{ quarters}$$

2. Let x = the number of nickels and $18 - x$ = the number of pennies; then the value of the nickels is $5x$ and the value of the pennies is $1 \cdot (18 - x)$.

$$5x + 18 - x = 38$$

$$4x + 18 = 38$$

$$4x + 18 - 18 = 38 - 18$$

$$4x = 20$$

$$\frac{\cancel{4}^{1}x}{\cancel{4}^{1}} = \frac{20}{4}$$

$$x = 5 \text{ nickels}$$

$$18 - x = 18 - 5 = 13 \text{ pennies}$$

3. Let x = the number of nickels and $x + 6$ = the number of quarters; then the value of the nickels is $5x$ and the value of the quarters is $25(x + 6)$.

$$5x + 25(x + 6) = 3 \times 100$$

$$5x + 25x + 150 = 300$$

$$30x + 150 = 300$$

$$30x + 150 - 150 = 300 - 150$$

$$30x = 150$$

$$\frac{\cancel{30}^{1}x}{\cancel{30}^{1}} = \frac{150}{30}$$

$$x = 5 \text{ nickels}$$

$$x + 6 = 5 + 6 = 11 \text{ quarters}$$

4. Let x = the number of quarters and $32 - x$ = the number of nickels; then the value of the quarters is $25x$ and the value of the nickels is $5(32 - x)$.

$$25x + 5(32 - x) = 3.80 \times 100$$

$$25x + 160 - 5x = 380$$

$$20x + 160 = 380$$

$$20x + 160 - 160 = 380 - 160$$

$$20x = 220$$

$$\frac{\cancel{20}^{1}x}{\cancel{20}^{1}} = \frac{220}{20}$$

$$x = 11 \text{ quarters}$$

$$32 - x = 32 - 11 = 21 \text{ nickels}$$

5. Let x = the number of pennies, $2x$ = the number of dimes, and $x + 3$ = the number of nickels; then the value of the pennies is $1x$, the value of the dimes is $10 \cdot 2x$, and the value of the nickels is $5(x + 3)$.

$$x + 10 \cdot 2x + 5(x + 3) = 1.97 \times 100$$

$$x + 20x + 5x + 15 = 197$$

$$26x + 15 = 197$$

$$26x + 15 - 15 = 197 - 15$$

$$26x = 182$$

$$\frac{\cancel{26}^{1}x}{\cancel{26}^{1}} = \frac{182}{26}$$

$$x = 7 \text{ pennies}$$

$$2x = 2 \cdot 7 = 14 \text{ dimes}$$

$$x + 3 = 7 + 3 = 10 \text{ nickels}$$

6. Let x = the number of half dollars, $3x$ = the number of quarters, and $x + 6$ = the number of dimes; then the value of the half dollars is $50x$, the value of the quarters is $25 \cdot 3x$, and the value of the dimes is $10(x + 6)$.

$$50x + 25 \cdot 3x + 10(x + 6) = 4.65 \times 100$$

$$50x + 75x + 10x + 60 = 465$$

$$135x + 60 = 465$$

$$135x + 60 - 60 = 465 - 60$$

$$135x = 405$$

$$\frac{\cancel{135}^{1}x}{\cancel{135}^{1}} = \frac{405}{135}$$

$$x = 3 \text{ half dollars}$$

$$3x = 3 \cdot 3 = 9 \text{ quarters}$$

$$x + 6 = 3 + 6 = 9 \text{ dimes}$$

7. Let x = the number of 37¢ stamps and $(12 - x)$ = the number of 23¢ stamps; then the value of the 37¢ stamps is $37x$ and the value of the 23¢ stamps is $23(12 - x)$.

$$37x + 23(12 - x) = 3.74 \times 100$$

$$37x + 276 - 23x = 374$$

$$14x + 276 = 374$$

$$14x + 276 - 276 = 374 - 276$$

$$14x = 98$$

$$\frac{\cancel{14}^{1}x}{\cancel{14}^{1}} = \frac{98}{14}$$

$$x = 7 \qquad 37¢ \text{ stamps}$$

$$12 - x = 12 - 7 = 5 \qquad 23¢ \text{ stamps}$$

8. Let x = the number of sandwiches and $(80 - x)$ = the number of bars; then the cost of the sandwiches is $69x$ and the cost of the bars is $75(80 - x)$.

$$69x + 75(80 - x) = 5808$$

$$69x + 6000 - 75x = 5808$$

$$6000 - 6x = 5808$$

$$6000 - 6000 - 6x = 5808 - 6000$$

$$-6x = -192$$

$$\frac{-\cancel{6}^{1}x}{-\cancel{6}} = \frac{-192}{-6}$$

$$x = 32 \text{ sandwiches}$$

$$80 - x = 80 - 32 = 48 \text{ bars}$$

9. Let x = the number of reams of college-ruled paper and $9 - x$ = the number of reams of wide-ruled paper; then the cost of the college-ruled paper is $159x$ and the cost of the wide-ruled paper is $229(9 - x)$.

$$159x + 229(9 - x) = 1571$$

$$159x + 2061 - 229x = 1571$$

$$-70x + 2061 = 1571$$

$$-70x + 2061 - 2061 = 1571 - 2061$$

$$-70x = -490$$

$$\frac{-\cancel{70}^{1}x}{-\cancel{70}^{1}} = \frac{-490}{-70}$$

$$x = 7 \text{ reams of college-ruled paper}$$

$$9 - x = 9 - 7 = 2 \text{ reams of wide-ruled paper}$$

10. Let x = the number of \$5 bills, $2x$ = the number of \$1 bills, and $x - 1$ = the number of \$10 bills; then the value of the \$5 bills is $5x$, the value of the \$1 bills is $1 \cdot 2x$, and the value of the \$10 bills is $10(x - 1)$.

$$5x + 2x + 10(x - 1) = 75$$

$$5x + 2x + 10x - 10 = 75$$

$$17x - 10 = 75$$

$$17x - 10 + 10 = 75 + 10$$

$$17x = 85$$

$$\frac{\cancel{17}^{1}x}{\cancel{17}^{1}} = \frac{85}{17}$$

$$x = 5 \text{ five-dollar bills}$$

$$2x = 2 \cdot 5 = 10 \text{ one-dollar bills}$$

$$x - 1 = 5 - 1 = 4 \text{ ten-dollar bills}$$