





The sum of two numbers is 25 and their difference is 7. Find the numbers.

$$\begin{array}{r} x + y = 25 \\ - (x - y = 7) \\ \hline \end{array}$$

$$\begin{array}{r} 2x = 18 \\ \hline x = 9 \end{array}$$

$$\begin{array}{r} x + 9 = 25 \\ - 9 \quad 9 \\ \hline x = 16 \end{array}$$

16 and 9

Cory has \$24 more than twice as much as Stan.  
Together they have \$150. How much money does each have?

$$C = 2s + 24$$

$$C + S = 150$$

$$2s + 24 + s = 150$$

$$\begin{array}{r} 3s + 24 = 150 \\ -24 \quad -24 \\ \hline 3s = 126 \\ \underline{\quad} \\ s = 42 \end{array}$$

$$s = 42$$

$$\begin{array}{l} \text{Stan} \rightarrow \$42 \\ \text{Cory} \rightarrow \$108 \end{array}$$

$$\begin{array}{r} C + 42 = 150 \\ -42 \quad -42 \\ \hline C = 108 \end{array}$$

Sam has 30 nickels and dimes worth \$2.40  
 How many nickels does he have?

$$\begin{aligned} 5(n+d) &= (30)5 \\ 5n+10d &= 240 \end{aligned}$$

$$\begin{aligned} 5n+5d &= 150 \\ - (5n+10d) &= 240 \end{aligned}$$

$$\begin{aligned} -5d &= -90 \\ \frac{-5}{-5} \quad \frac{-90}{-5} & \quad d=18 \end{aligned}$$

18 dimes  
 12 nickels

$$\begin{aligned} 30-18 &= 12 \\ n+18 &= 30 \end{aligned}$$

A person invests \$5000 in treasury notes and bonds. The notes pay 8% annual interest and the bonds pay 10% annual interest. If the annual income is \$480, how much is invested in treasury notes?

$$8(t + b) = (5000)8$$

$$100(0.08t + 0.1b) = (480)100$$

$$\begin{array}{r} 8t + 8b = 40000 \\ - (8t + 10b = 48000) \end{array}$$

$$\begin{array}{r} -2b = -8000 \\ \underline{\quad} \\ b = 4000 \end{array}$$

bonds  $\rightarrow$  \$4000  
notes  $\rightarrow$  \$1000

$$\begin{array}{r} 5000 - 4000 \\ 1000 \end{array}$$

## HW Solutions

$$\textcircled{10} \quad 6x + 7 = -39$$

$$2(3x + 2) = (-15) \cdot 2$$

$$6x + 7 = -39$$

$$-(6x + 4y = -30)$$


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$$-3y = -9 \quad y = \textcircled{3}$$

$$6x + 3 = 39$$

$$\quad -2 = -3$$


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$$6x = 42$$

$$\quad \quad \quad 6$$


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$$x = 7$$

$$\textcircled{\begin{matrix} x = 7 \\ y = 3 \end{matrix}}$$

$$\textcircled{2} \begin{cases} (x-y) = (-8) \\ 7x+5y = 16 \end{cases} \Rightarrow$$

$$7x - 7y = -56$$

$$-(7x + 5y = 16)$$

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$$\begin{array}{r} -12y = -72 \\ \hline -12 \quad \quad -12 \\ \hline \end{array}$$

$$y = 6$$

$$\begin{array}{r} x - 6 = -8 \\ +6 \quad +6 \\ \hline \end{array}$$

$$x = -2$$

$$\begin{array}{l} x = -2 \\ y = 6 \end{array}$$

$$\begin{array}{r} -2 - y = -8 \\ +2 \quad +2 \\ \hline \end{array}$$

$$\begin{array}{r} -y = -6 \\ \hline -1 \quad -1 \\ \hline \end{array} \quad y = 6$$



$$\textcircled{18} \begin{cases} 3(-4x + 2y) = (0) \quad 3 \\ 2(10x + 3y) = (8) \quad 2 \end{cases}$$

$$\begin{aligned} -12x + 6y &= 0 \\ -(20x + 6y) &= 16 \end{aligned}$$

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$$\begin{aligned} -32x &= -16 \\ \hline -32 & \quad -32 \\ \hline x &= \textcircled{-\frac{1}{2}} \end{aligned}$$

$$\begin{aligned} x &= -\frac{1}{2} \\ y &= 1 \end{aligned}$$

$$\begin{aligned} -2 + 2y &= 0 \\ +2 & \quad +2 \\ \hline 2y &= 2 \\ \hline y &= 1 \end{aligned}$$

$$\textcircled{14} \quad 5(8x + 3y) = (41)5$$

$$3(-7x + 5y) = (-34)3$$

$$40x + 15y = 20$$

$$-(-21x + 15y = -102)$$

$$\begin{array}{r} 61x = 122 \\ \hline 61 \quad 61 \\ \hline x = 2 \end{array}$$

$$\begin{array}{r} 16 + 3y = 4 \\ -16 \quad -16 \\ \hline 3y = -12 \\ \frac{3}{3} \quad 3 \\ \hline y = -4 \end{array}$$

$$\begin{array}{l} x = 2 \\ y = -4 \end{array}$$

$$\textcircled{1} 2(3x - 3) = (-6)2$$

$$-5x + 6y = 12$$

$$6x - 6y = -12$$

$$+(-5x + 6y = 12)$$

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$$x = 0$$

$$\begin{array}{r} -3y = -6 \\ \frac{-3y}{-3} = \frac{-6}{-3} \\ y = 2 \end{array}$$

$$\begin{array}{l} x = 0 \\ y = 2 \end{array}$$

$$\textcircled{10} \quad \begin{aligned} 3(4x + 7) &= (-80) \cdot 3 \\ 4(3x + 5) &= (-58) \cdot 4 \end{aligned}$$

$$\begin{array}{r} 12x + 21 = -240 \\ - (12x + 20) = -232 \\ \hline \end{array}$$

$$y = -8$$

$$\begin{aligned} x &= -6 \\ y &= -8 \end{aligned}$$

$$\begin{array}{r} 3x - 40 = -58 \\ +40 \quad +40 \\ \hline 3x = -18 \\ \frac{3x}{3} = \frac{-18}{3} \\ x = -6 \end{array}$$