

Systems Word Problems

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$$\begin{aligned} .05x + .10y &= 12.50 \text{ penny for } y \text{ (dimes)} \\ x + y &= 150 \end{aligned}$$

Substitution $x + y = 150$

$$\begin{array}{r} x + y = 150 \\ -x = -x \\ \hline y = 150 - x \end{array}$$

$$\begin{aligned} .05x + .10(-x + 150) &= 12.50 \\ .05x - .10x + 15 &= 12.50 \\ -.05x + 15 &= 12.50 \\ +.05x & \quad -15 \quad -15.000 \\ \hline -.05x &= -2.5 \quad x = 50 \\ .05 & \end{aligned}$$

$$\begin{aligned} 50 + y &= 150 \\ -50 & \quad -50 \\ \hline y &= 100 \end{aligned}$$

answer: 100 dimes

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$$\begin{aligned} 18x + 40y &= 282 \\ (17x + 20y &= 160.50) \times 2 \end{aligned}$$

$$\begin{aligned} 18x + 40y &= 282 \\ -34x - 40y &= -321 \\ \hline \end{aligned}$$

$$\begin{aligned} -16x &= -39 \quad x = 2.44 \\ -16 & \quad -16 \end{aligned}$$

$$\begin{aligned} 18(2.44) + 40y &= 282 \\ 43.92 + 40y &= 282 \\ -43.92 & \quad -43.92 \\ \hline 40y &= 238.08 \end{aligned}$$

$$\begin{aligned} 40y &= 238.08 \\ 40 & \quad 40 \\ \hline y &= 5.95 \end{aligned}$$

$$y = 5.95$$

popcorn = \$2.44
candy bars = \$5.95