

Applications of Linear Systems:
Geometry/Money Problems

Assigned Work:

p. 40 #17

p. 55 #9

plus:

Erik has \$4.80 in nickels and quarters. If he has 6 more nickels than quarters, how many of each does he have?

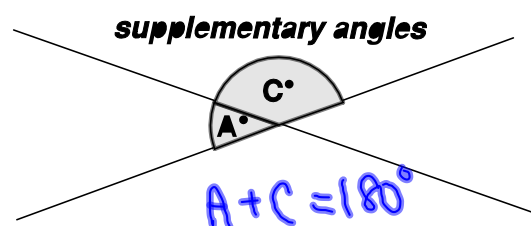
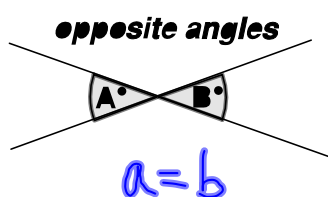
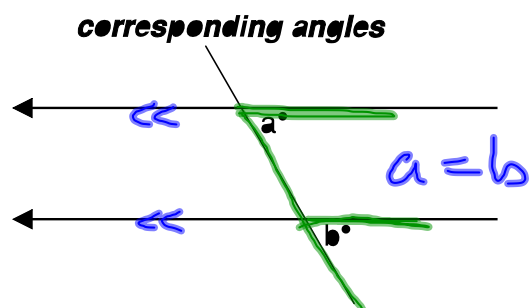
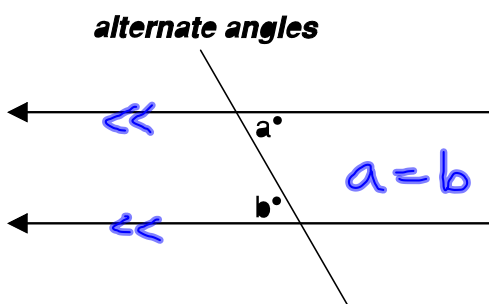
Review for Test:

p. 62 #5a, 6, 7bc, 9, 12acd, 13, 14, 16, 17, 18

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Feb 17/2011

Recall:



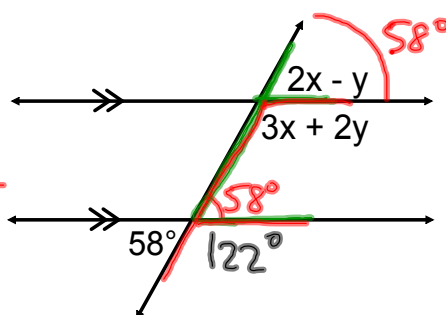
Ex.1. Determine the value of x and y .

$$\begin{array}{rcl} 2x - y & = & 58 \quad \textcircled{1} \times 2 \\ 4x - 2y & = & 116 \\ 3x + 2y & = & 122 \quad \textcircled{2} \\ \hline \text{add } 7x & = & 238 \end{array}$$

$$x = 34$$

Sub $x = 34$ into $\textcircled{1}$

$$\begin{array}{rcl} 2(34) - y & = & 58 \\ 68 - y & = & 58 \\ 10 & = & y \end{array}$$



check

$$\begin{array}{rcl} 2x - y & = & 2(34) - 10 \\ & = & 68 - 10 \\ & = & 58 \end{array}$$

$$\begin{array}{rcl} 3x + 2y & = & 3(34) + 2(10) \\ & = & 102 + 20 \\ & = & 122 \end{array}$$

Ex. 2) The coin box of a vending machine contains half as many quarters as dimes. If the total value of the coins is \$22.50, how many dimes are there?

Let x be the # of dimes
Let y be the # of quarters

$$\begin{array}{rcl} y & = & \frac{1}{2}x \quad \textcircled{1} \times 2 \\ 2y & = & x \quad \textcircled{3} \end{array}$$

$$\begin{array}{rcl} 0.10x + 0.25y & = & 22.50 \quad \textcircled{2} \times 100 \\ 10x + 25y & = & 2250 \quad \textcircled{4} \end{array}$$

Sub $\textcircled{3}$ into $\textcircled{4}$

$$\begin{array}{rcl} 10(2y) + 25y & = & 2250 \\ 20y + 25y & = & 2250 \\ 45y & = & 2250 \end{array}$$

$$y = 50$$

Sub $y = 50$ into $\textcircled{3}$

$$\begin{array}{rcl} x & = & 2(50) \\ x & = & 100 \end{array}$$

\therefore there are 100 dimes and 50 quarters

Ex. 3) A rectangle with a perimeter of 180 cm is four times longer than it is wide. What are the dimensions of the rectangle?

$$y = 4x \quad (1)$$



$$2x + 2y = 180 \quad (2)$$

Let x be width
 y length

Sub (1) into (2)

Sub $x=18$ into (1)

$$2x + 2(4x) = 180$$

$$y = 4(18)$$

$$10x = 180$$

$$y = 72$$

$$x = 18$$

\therefore the width is 18 cm
and the length is 72 cm

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