Algebra 2   Bellwork   Tue, Oct 7, 2014

Solve each system of equations. Don't use the same method twice. Write your answers as an ordered pair.

1.

$7a + 4b = 36$

$10a - 6b = 110$

2.

$12x - 3y = -36$

$5x + 2y = -15$

3. The perimeter of a rectangle is 58 cm. The width is five more than twice the length. Write and solve a system of equations to find the dimensions of the rectangle.

4. A customer brought two silver alloys to the jewelry shop to sell. The total weight of these two alloys was 75 grams. One of the alloys had 12% pure silver and the other one had 20% pure silver. When the alloys were melted down there was a total of 11.44 grams of pure silver. Write and solve a system of equations to find the number of grams of each alloy the customer brought.

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1. $(8, -5)$ ELIMINATION

$3(7a + 4b = 36)$ $21a + 12b = 108$

$2(10a - 6b = 110)$ $20a - 12b = 220$

 $41a = 328$

$\boxed{a = 8}$

$7(8) + 4b = 36$

$56 + 4b = 36$

$4b = -20$

$\boxed{b = -5}$

2.   SUBSTITUTION $(-3, 0)$

$12x - 3y = -36 \rightarrow -3y = -36 - 12x \rightarrow y = 12 + 4x$

$5x + 2y = -15$

$5x + 2(12 + 4x) = -15$

$5x + 24 + 8x = -15$

$13x = -39$ $\boxed{x = -3}$

$y = 12 + 4(-3)$

$y = 12 + -12$

$\boxed{y = 0}$

3. The perimeter of a rectangle is 58 cm. The width is five more than twice the length. Write and solve a system of equations to find the dimensions of the rectangle.

Perimeter $\rightarrow$ $58 = 2L + 2W$ EQ

WIDTH $\rightarrow$ $W = 2L + 5$

$W = 2L + 5$

$2(8) + 5 = 16 + 5$ $W = 21$

$58 = 2L + 2(2L + 5)$

$58 = 2L + 4L + 10$

$48 = 6L$

$\boxed{L = 8}$

$\boxed{8 \times 21}$

4. A customer brought two silver alloys to the jewelry shop to sell. The total weight of these two alloys was 75 grams. One of the alloys had 12% pure silver and the other one had 20% pure silver. When the alloys were melted down there was a total of 11.44 grams of pure silver. Write and solve a system of equations to find the number of grams of each alloy the customer brought.

$x = \#g$ of 12% alloy

$y = \#g$ of 20% alloy
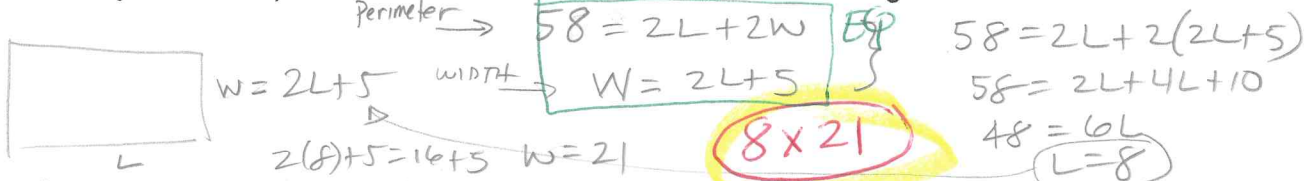
EQ $x + y = 75$ $\rightarrow$ mult by .20 $\rightarrow$ $.20x + .20y = 15$

EQ $.12x + .20y = 11.44$ $\rightarrow$ $-.12x + .20y = 11.44$

$.08x = 3.56$ $x = 44.5g$

$\boxed{44.5\,g \text{ of } 12\% \text{ alloy}}$

$30.5\,g$ of 20% alloy