

SECTION 5.3

#12, 22, 30, 41, 42

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2/15/20

PER 3

$$12) \begin{aligned} 2x + 7y &= 1 \\ -1(2x - 4y) &= (12)(-1) \end{aligned}$$

$$\begin{array}{r} 2x + 7y = 1 \\ + -2x + 4y = -12 \\ \hline 11y = -11 \\ \hline y = -1 \end{array}$$

$$\begin{array}{r} 2x + 7(-1) = 1 \\ 2x - 7 = 1 \\ +7 \quad +7 \\ \hline 2x = 8 \\ \hline x = 4 \end{array}$$

 $(4, -1)$

CHECK

$$\begin{array}{ll} 2x + 7y = 1 & 2x - 4y = 12 \\ 2(4) + 7(-1) = 1 & 2(4) - 4(-1) = 12 \\ 8 - 7 = 1 & 8 + 4 = 12 \\ 1 = 1 \text{ ☺} & 12 = 12 \text{ ☺} \end{array}$$

$$22) \begin{aligned} 2x - 6 &= 4y \\ 7y &= -3x + 9 \end{aligned}$$

$$\begin{array}{l} 3(2x - 6) = (4y)3 \\ 2(-3x + 9) = (7y)2 \end{array}$$

$$\begin{array}{r} 6x - 18 = 12y \\ + -6x + 18 = 14y \\ \hline 0 = 26y \\ \hline 26 \quad 26 \end{array}$$

$$y = 0$$

$$2x - 6 = 4(0)$$

$$2x - 6 = 0$$

$$+6 \quad +6$$

$$\hline 2x = 6 \\ \hline x = 3$$

$$x = 3$$

 $(3, 0)$

$$30) \begin{aligned} 8x + 5y &= 6 \\ 8x &= 3 - 2y \\ \hline +2y \quad +2y \end{aligned}$$

$$\begin{array}{r} 8x + 5y = 6 \\ -1(8x + 2y) = (3)(-1) \end{array}$$

$$\begin{array}{r} 8x + 5y = 6 \\ + -8x - 2y = -3 \\ \hline 3y = 3 \\ \hline y = 1 \end{array}$$

$$\begin{array}{r} 8x + 5(1) = 6 \\ 8x + 5 = 6 \\ \hline -5 \quad -5 \\ \hline 8x = 1 \\ \hline x = \frac{1}{8} \end{array}$$

I NOTICED THEY BOTH HAD 8X SO I PUT BOTH IN STANDARD FORM INTENDING TO CANCEL THE Xs.

41, 42

41) (V) LET x = THE AMOUNT OF 90% GOLD ALLOY (IN GRAMS).
 LET y = THE AMOUNT OF 50% GOLD ALLOY (IN GRAMS).

(E) $x + y = 8$
 $0.9x + 0.5y = 0.75(8)$

(S) $x + y = 8$ $0.9x + 0.5(8 - x) = 6$ $y = 8 - x$
 $\frac{-x}{-x}$ $\frac{-0.5x}{-0.5x}$ $y = 8 - (5)$
 $y = 8 - x$ $0.9x + 4 - 0.5x = 6$ $y = 3$
 $\frac{-4}{-4}$ $\frac{-4}{-4}$

$0.4x = 2$
 $\frac{0.4x}{0.4} = \frac{2}{0.4}$

$x = 5$

(I) THE JEWELER SHOULD USE
 5 GRAMS OF THE 90% GOLD
 ALLOY & 3 GRAMS OF THE
 50% GOLD ALLOY.

42) (V) LET x = THE SPEED OF THE BOAT IN STILL WATER (IN MILES / MINUTE).
 LET y = THE SPEED OF THE CURRENT

(E) WITH CURRENT AGAINST CURRENT
 $d = r \cdot t$ $d = r \cdot t$
 $\frac{10}{30} = \frac{(x+y)30}{30}$ $\frac{10}{50} = \frac{(x-y)50}{50}$
 $\frac{1}{3} = x + y$ $\frac{1}{5} = x - y$

(S) $\frac{1}{3} = x + y$ $\frac{1}{3} = \frac{8}{30} + y$
 $+ \frac{1}{5} = x - y$ $\frac{-8}{30} \quad \frac{-8}{30}$

(I) THE SPEED
 OF THE CURRENT
 IS 4 mph.

$\frac{8 - 2x}{15} = \frac{2x}{2}$

$x = \frac{8}{30} \text{ mi/min}$

$y = \frac{1}{15} \text{ mi/min}$

$\frac{8 \text{ mi}}{30 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hr}} = 16 \text{ mph}$

$\frac{1 \text{ mi}}{15 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hr}} = 4 \text{ mph}$