

Show all necessary steps Clearly, Neatly, and Systematically to receive full credit. Any Incorrect statement will be penalized.

1. Find the equation of the line passes through the points $\left(1, \frac{1}{2}\right)$ and $\left(2, \frac{1}{3}\right)$. Write the result in standard form.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{\frac{1}{3} - \frac{1}{2}}{2 - 1}$$

$$= \frac{\frac{2}{6} - \frac{3}{6}}{1}$$

$$= -\frac{1}{6}$$

$$y - y_1 = m(x - x_1)$$

$$y - \frac{1}{2} = -\frac{1}{6}(x - 1)$$

$$y - \frac{1}{2} = -\frac{1}{6}x + \frac{1}{6}$$

$$\frac{1}{6}x + y - \frac{1}{2} = \frac{1}{6}$$

$$\frac{1}{6}x + y = \frac{1}{6} + \frac{1}{2}$$

$$\frac{1}{6}x + y = \frac{4}{6}$$

$$\frac{1}{6}x + y = \frac{2}{3} // \text{ or}$$

$$x + 6y = 4 //$$

2. Solve: $\frac{x-1}{6} + x = \frac{2}{3} - \frac{x+2}{6}$.

$$6\left(\frac{x-1}{6} + x\right) = 6\left(\frac{2}{3} - \frac{x+2}{6}\right)$$

$$1(x-1) + 6x = 4 - 1(x+2)$$

$$x - 1 + 6x = 4 - x - 2$$

$$7x - 1 = -x + 2$$

$$8x - 1 = 2$$

$$8x = 3$$

$$x = \frac{3}{8}$$

$$\left\{\frac{3}{8}\right\} //$$

3. A pile of sand is in the shape of a cone whose radius is 10 feet and whose height is 6 feet. Find the amount of sand in the pile.

$$r = 10$$

$$h = 6$$

$$V = ?$$

$$V = \frac{1}{3} \pi r^2 h$$

$$= \frac{1}{3} \cdot \pi \cdot (10)^2 \cdot (6)$$

$$= 200 \pi \text{ ft}^3 //$$

4. Solve: $I = a + (n-1)d$ for n .

$$I - a = (n-1)d$$

$$\frac{I - a}{d} = n - 1$$

$$\frac{I - a}{d} + 1 = n //$$

or

$$\frac{I}{d} - \frac{a}{d} + 1 = n //$$

5. Simplify: $10 \left[\frac{3}{5}(2s+2t) - \frac{5}{4}(s-t) + 1 \right]$

$$= 10 \left[\frac{6}{5}s + \frac{6}{5}t - \frac{5}{4}s + \frac{5}{4}t + 1 \right]$$

$$= 10 \left[-\frac{1}{20}s + \frac{49}{20}t + 1 \right]$$

$$= -\frac{1}{2}s + \frac{49}{2}t + 10 //$$

side

$$\frac{6}{5} - \frac{5}{4}$$

$$\frac{24}{20} - \frac{25}{20}$$

$$\frac{6}{5} + \frac{5}{4}$$

$$\frac{24}{20} + \frac{25}{20}$$

6. Solve: $6 - (x-3) - 5x = 3[1 - 2(x+2)]$

$$6 - x + 3 - 5x = 3[1 - 2x - 4]$$

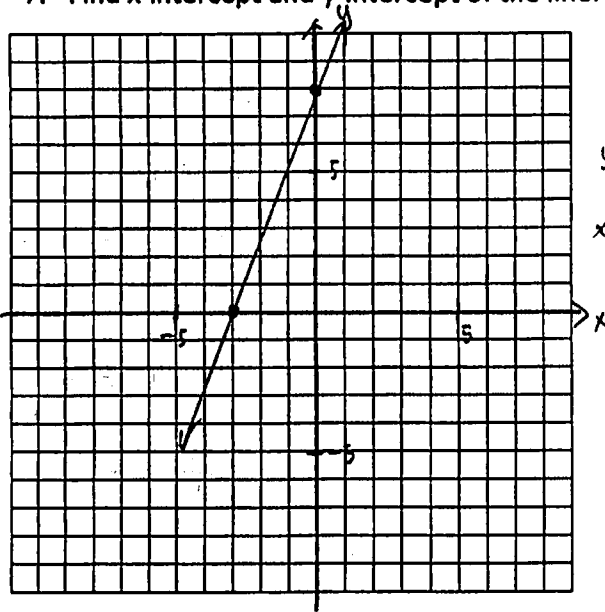
$$-6x + 9 = 3[-2x - 3]$$

$$-6x + 9 = -6x - 9$$

$$9 = -9 \leftarrow \text{False}$$

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7. Find x-intercept and y-intercept of the line: $\frac{2}{3}x - \frac{1}{4}y = -2$. Then graph.



	x	y
y-intercept	0	8
x-intercept	-3	0

$$\begin{aligned} \frac{2}{3}(0) - \frac{1}{4}y &= -2 & \frac{2}{3}x - \frac{1}{4}(0) &= -2 \\ -\frac{1}{4}y &= -2 & \frac{2}{3}x &= -2 \\ y &= 8 & x &= -3 \end{aligned}$$

8. A large warehouse stores 150 more computers than printers. The monthly storage cost for a computer is \$2.50 and a printer is \$1.50. If storage for the computers and printers is \$2775 per month, how many printers and computers are in the warehouse? (make sure to show in 3-step format)

$$\# \text{ of computers} = x + 150$$

$$\# \text{ of printers} = x$$

$$2.50(x + 150) + 1.50(x) = 2775$$

$$2.5x + 375 + 1.5x = 2775$$

$$4x + 375 = 2775$$

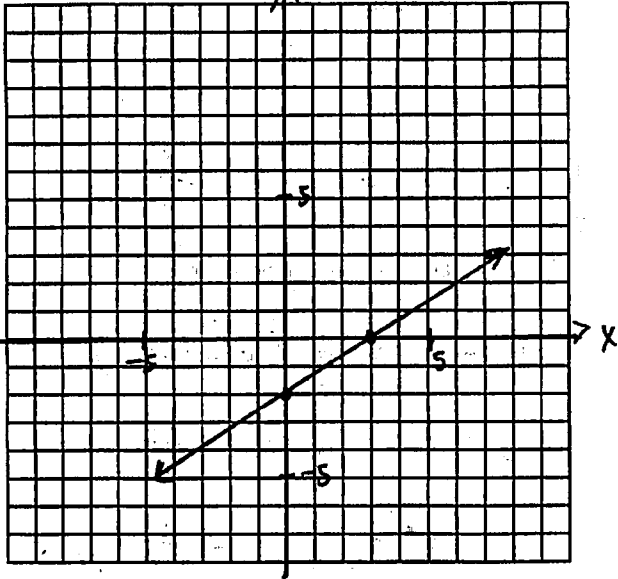
$$4x = 2400$$

$$x = 600$$

$$\begin{array}{r} \text{side} \\ \hline 3 \overline{) 150} \\ \underline{ 90} \\ 60 \\ \underline{ 45} \\ 15 \\ \underline{ 15} \\ 0 \end{array}$$

There are 750 computers and 600 printers.

9. Find the slope and y-intercept of the line: $0.4x - 0.6y = 1.2$. Then graph.



$$10 \cdot (0.4x - 0.6y) = (1.2) \cdot 10$$

$$4x - 6y = 12$$

$$-6y = -4x + 12$$

$$y = \frac{-4x + 12}{-6}$$

$$y = \frac{2}{3}x - 2$$

$$m = \frac{2}{3}$$

$$y\text{-intercept} = (0, -2)$$

10. The measure of one angle is 15° less than half of the other angle. Find the measure of each angle if they are supplementary. (make sure to show in 3-step format)

$$\text{measure of one angle} = \frac{1}{2}x - 15$$

$$\text{measure of other angle} = x$$

$$\left(\frac{1}{2}x - 15\right) + x = 180$$

$$\frac{3}{2}x - 15 = 180$$

$$\frac{3}{2}x = 195$$

$$x = 130$$

$$\begin{array}{r} \text{side} \\ \hline 65 \\ 195 \cdot \frac{2}{3} \\ \hline 130 \end{array}$$

measure of other angle is 130° and measure of one angle is 50°

11. Find the equation of the line which passes through the point $(-2, 3)$ and parallel to the line $-4x + 6y + 10 = 0$. Write the result in slope-intercept form.

$$\begin{aligned} \underline{d_2} \quad -4x + 6y + 10 &= 0 \\ 6y &= 4x - 10 \\ y &= \frac{4x - 10}{6} \\ y &= \frac{2}{3}x - \frac{5}{3} \end{aligned}$$

$$m = \frac{2}{3}$$

$$\begin{aligned} \underline{d_1} \quad (-2, 3), m &= \frac{2}{3} \\ y - y_1 &= m(x - x_1) \\ y - 3 &= \frac{2}{3}(x - (-2)) \\ y - 3 &= \frac{2}{3}x + \frac{4}{3} \\ y &= \frac{2}{3}x + \frac{13}{3} // \end{aligned}$$

$$\begin{aligned} \underline{\text{side}} \\ \frac{4}{3} + \frac{3}{1} \\ \frac{4}{3} + \frac{9}{3} \end{aligned}$$

12. A 186-foot television cable is to be cut into four pieces. Find the length of each piece if each successive piece is 3 feet longer than the previous one. (make sure to show in 3-step format)

$$\begin{aligned} \text{length of 1}^{\text{st}} \text{ piece} &= x \\ \text{|| 2}^{\text{nd}} \text{ ||} &= x + 3 \\ \text{|| 3}^{\text{rd}} \text{ ||} &= x + 6 \\ \text{|| 4}^{\text{th}} \text{ ||} &= x + 9 \end{aligned}$$

$$x + (x + 3) + (x + 6) + (x + 9) = 186$$

$$4x + 18 = 186$$

$$4x = 168$$

$$x = 42$$

$$\begin{aligned} \text{length of 1}^{\text{st}} \text{ piece} &= 42 \text{ ft} \\ \text{|| 2}^{\text{nd}} \text{ ||} &= 45 \text{ ft} \\ \text{|| 3}^{\text{rd}} \text{ ||} &= 48 \text{ ft} \\ \text{|| 4}^{\text{th}} \text{ ||} &= 51 \text{ ft} \end{aligned}$$