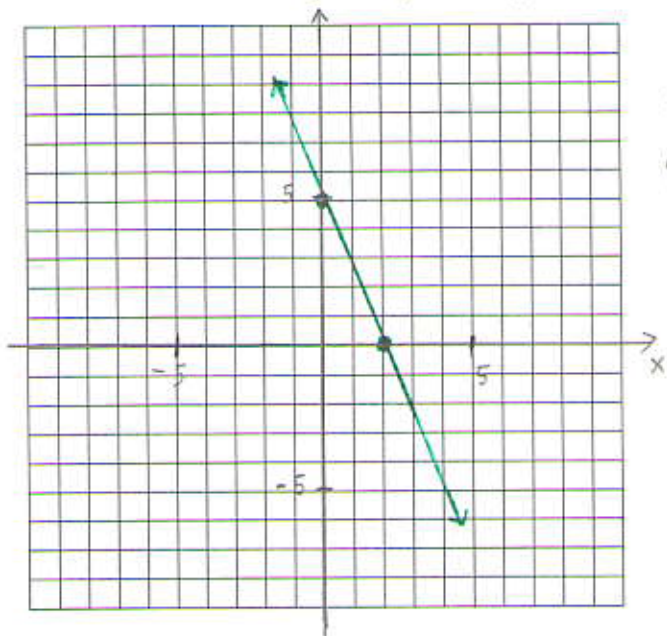


Show all necessary steps Clearly, Neatly, and Systematically to receive full credit. Any incorrect statement will be penalized.

1. Find the x-intercept and y-intercept of the line: $\frac{1}{2}x + \frac{1}{5}y = 1$. Then use those points to graph.



	x	y
x-intercept	2	0
y-intercept	0	5

$$\frac{1}{2}x + \frac{1}{5}(0) = 1$$

$$\frac{1}{2}x = 1$$

$$x = 2$$

$$(2, 0) //$$

$$\frac{1}{2}(0) + \frac{1}{5}y = 1$$

$$\frac{1}{5}y = 1$$

$$y = 5$$

$$(0, 5) //$$

2. A sports foundation deposited a total of \$24000 into two simple interest accounts. The annual simple interest rate on one account is 7%. The annual simple interest rate on the second account is 11%. How much is invested in each account if the total annual interest earned is 10% of the total investment? (make sure to set up in 3-steps format.)

	P	r	t	I
acc 1	x	0.07	1	0.07x
acc 2	24000-x	0.11	1	0.11(24000-x)

- ③ \$6000 is invested at 7% and \$18000 is invested at 11% //

$$0.07x + 0.11(24000 - x) = 0.10(24000)$$

$$0.07x + 2640 - 0.11x = 2400$$

$$2640 - 0.04x = 2400$$

$$-0.04x = -240$$

$$x = \frac{-240}{-0.04}$$

$$x = 6000$$

3. Solve by substitution method:
$$\begin{cases} \frac{x}{2} + \frac{y}{3} = \frac{7}{6} \\ \frac{x}{4} - \frac{3y}{2} = \frac{9}{4} \end{cases} \cdot 6$$

$$\begin{cases} 3x + 2y = 7 \\ x - 6y = 9 \end{cases}$$

$$y = -1$$

$$x = 6y + 9$$

$$x - 6y = 9$$

$$x = 6(-1) + 9$$

$$x = 6y + 9$$

$$x = -6 + 9$$

$$3x + 2y = 7$$

$$x = 3$$

$$3(6y + 9) + 2y = 7$$

$$(3, -1) //$$

$$18y + 27 + 2y = 7$$

$$27 + 20y = 7$$

$$20y = -20$$

4. A hair stylist combines 12 oz of shampoo that is 20% conditioner with an 8-oz bottle of pure shampoo. What is the percent concentration of conditioner in the 20-oz mixture? (make sure to set up in 3-steps format.) (conditioner)

	concentration	quantity	amount
① Type 1	12	0.20	12(0.2)
pure shampoo	8	0	8(0)
mixture	20	x	20(x)

$$\textcircled{2} \quad 12(0.2) + 8(0) = 20(x)$$

$$2.4 = 20x$$

$$\frac{2.4}{20} = x$$

$$0.12 = x$$

- ③ There is 12% conditioner in the 20-oz mixture. //

5. Write the equation of the line which passes through $(2, -3)$ and parallel to the line $3x = 4y + 5$. Write the result in slope-intercept form.

l_1

$$(2, -3), m = \frac{3}{4}$$

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

$$y - (-3) = \frac{3}{4}(x - 2)$$

$$y + 3 = \frac{3}{4}x - \frac{3}{2}$$

$$y = \frac{3}{4}x - \frac{3}{2} - 3$$

$$y = \frac{3}{4}x - \frac{9}{2} //$$

l_2

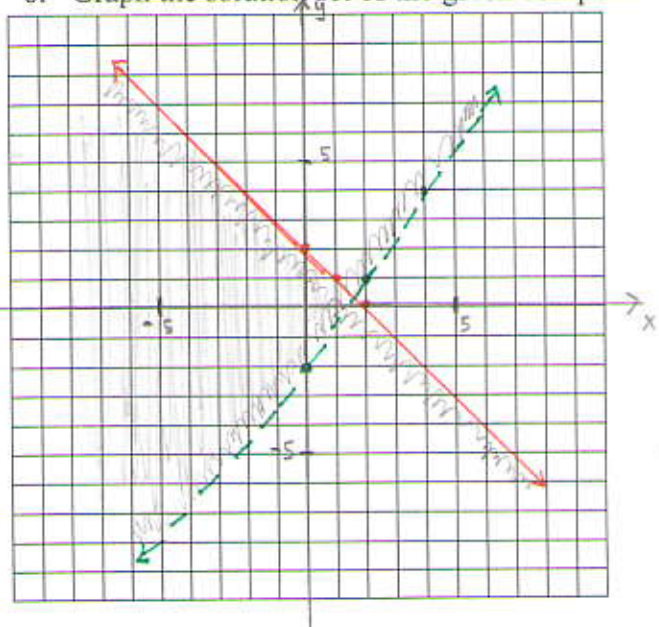
$$3x = 4y + 5$$

$$3x - 5 = 4y$$

$$\frac{3}{4}x - \frac{5}{4} = y$$

$$m = \frac{3}{4}$$

6. Graph the solution set of the given compounded inequality: $6x - 4y < 8$ and $x + y \leq 2$. ↙ intersection.



$$6x - 4y < 8 \quad -l_1$$

$$-4y < -6x + 8$$

$$y > \frac{-6}{-4}x + \frac{8}{-4}$$

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

Test pick $(0, 0)$

$$6(0) - 4(0) < 8$$

$$0 < 8$$

↑
True.

$$x + y \leq 2 \quad -l_2$$

$$y \leq -x + 2$$

Test pick $(0, 0)$

$$(0) + (0) \leq 2$$

$$0 \leq 2$$

↑
True.

7. An executive drove from home at an average speed of 30 mph at an airport where helicopter was waiting. The executive boarded the helicopter and flew to the corporate offices at an average speed of 60 mph. The entire distance was 150 miles. The entire trip took 3 hrs. Find the distance from the airport to the corporate offices. (make sure to set up in 3-steps format.)

①

	r	t	d
H to A	30	x	$30x$
A to O	60	$3-x$	$60(3-x)$

②

$$30x + 60(3-x) = 150$$

$$30x + 180 - 60x = 150$$

$$180 - 30x = 150$$

$$-30x = -30$$

$$x = 1$$

side

$$d = 60(3-1)$$

$$60(2)$$

$$120$$

③ distance from airport to corporate office is 120 miles. //

8. Let $f(x) = 2x - 3$.

a. Find $f(-2)$

$$f(-2) = 2(-2) - 3$$

$$= -4 - 3$$

$$= -7 //$$

b. Find $f(x+h)$

$$f(x+h) = 2(x+h) - 3$$

$$= 2x + 2h - 3 //$$

9. Solve:
$$\begin{cases} 2x + 3y - 4z = 4 & \text{--- } \varepsilon_1 \\ x - 6y + z = -16 & \text{--- } \varepsilon_2 \\ -x + 3z = 8 & \text{--- } \varepsilon_3 \end{cases}$$

$$2. \begin{cases} 2x + 3y - 4z = 4 \\ x - 6y + z = -16 \end{cases}$$

$$\begin{array}{r} 4x + 6y - 8z = 8 \\ + \quad x - 6y + z = -16 \\ \hline \end{array}$$

$$5x - 7z = -8 \quad \text{--- } \varepsilon_4$$

$$2x + 3y - 4z = 4$$

$$2(4) + 3y - 4(4) = 4$$

$$8 + 3y - 16 = 4$$

$$3y = 12$$

$$y = 4$$

$$(4, 4, 4) //$$

$$5. \begin{cases} -x + 3z = 8 \\ 5x - 7z = -8 \end{cases}$$

$$\begin{array}{r} -5x + 15z = 40 \\ + \quad 5x - 7z = -8 \\ \hline \end{array}$$

$$8z = 32$$

$$z = 4$$

$$-x + 3z = 8$$

$$-x + 3(4) = 8$$

$$-x = -4$$

$$x = 4$$

10. Find the equation of the line which passes through the points $(-9, 2)$ and $(-4, -7)$. Write the result in standard form.

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

$$= \frac{-7 - 2}{-4 - (-9)}$$

$$= \frac{-9}{5}$$

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

$$y - 2 = -\frac{9}{5}(x - (-9))$$

$$y - 2 = -\frac{9}{5}(x + 9)$$

$$y - 2 = -\frac{9}{5}x - \frac{81}{5}$$

$$5y - 10 = -9x - 81$$

$$9x + 5y = -71 //$$

11. The manager of a specialty food store combined almonds that cost \$4.50 per pound with walnuts that cost \$2.50 per pound. How many pounds of each were used to make a 100 lb mixture that costs \$3.24 per pound? (make sure to set up in 3-steps format.)

①

	unit price	quantity	total \$
almonds	4.50	x	$4.50x$
walnuts	2.50	$100-x$	$2.50(100-x)$
mix	3.24	100	$3.24(100)$

③ 37 lb of almonds and
63 lb of walnuts. //

②

$$4.50x + 2.50(100-x) = 3.24(100)$$

$$4.50x + 250 - 2.50x = 324$$

$$2.50 + 2.00x = 324$$

$$2x = 74$$

$$x = 37$$

12. Solve by elimination method:

$$\begin{cases} \frac{3}{4}x - \frac{1}{3}y = \frac{5}{6} \\ \frac{2}{3}x + \frac{1}{6}y = -\frac{3}{4} \end{cases} \cdot 12$$

$$2 \cdot \begin{cases} 9x - 4y = 10 \\ 8x + 2y = -9 \end{cases}$$

$$+ \begin{cases} 9x - 4y = 10 \\ 16x + 4y = -18 \end{cases}$$

$$25x = -8$$

$$x = -\frac{8}{25}$$

$$8x + 2y = -9$$

$$8\left(-\frac{8}{25}\right) + 2y = -9$$

$$-\frac{64}{25} + 2y = -9$$

$$2y = -\frac{161}{25}$$

$$y = -\frac{161}{50}$$

$$\left(-\frac{8}{25}, -\frac{161}{50}\right) //$$

side

$$-9 + \frac{64}{25}$$

$$-\frac{225}{25} + \frac{64}{25}$$

$$-\frac{161}{25}$$