

$$1. a) 4x + 2 - (3 + 3x) = 7$$

$$\underline{4x + 2 - 3 - 3x = 7}$$

$$x - 1 = 7$$

$$\begin{array}{r} +1 \\ +1 \end{array}$$

$$\boxed{x = 8}$$

$$b) \frac{3}{4}(8x - 6) - 2 = \frac{1}{2} - x$$

$$6x - \frac{9}{2} - 2 = \frac{1}{2} - x$$

$$6x - \frac{17}{2} = \frac{1}{2} - x$$

$$\begin{array}{r} +x \\ +\frac{17}{2} \\ +\frac{13}{2} \end{array}$$

$$7x = 7$$

$$\boxed{x = 1}$$

2. Solve the equation $E = v + lr$ for r .

$$\begin{array}{r} -v \\ E - v = lr \\ \hline \end{array}$$

$$\frac{E - v}{l} = r$$

$$\boxed{\frac{E - v}{l} = r}$$

3. Solve the inequality.

$$5(x + 1) - 10 \geq 2x + 3(x + 2)$$

$$5x + 5 - 10 \geq 2x + 3x + 6$$

$$\begin{array}{r} 5 \\ -5x \end{array} - 5 \geq \begin{array}{r} 5x \\ -5x \end{array} + 6$$

$$5 \geq 6 \quad \text{No Sol.}$$

4. Solve the compound inequality

$$\boxed{x \leq 1 \text{ or } 3 \leq x}$$

$$9 - 4x \geq 5 \quad \text{or} \quad 4(-1 + x) - 6 \geq 2$$

$$\begin{array}{r} -5 \\ +4x \end{array} \quad \begin{array}{r} +5 \\ +4x \end{array} \quad \begin{array}{r} -4 \\ +4x \\ -6 \end{array} \geq 2$$

$$\frac{4}{4} \geq \frac{4x}{4}$$

$$\underline{\underline{1 \geq x}}$$

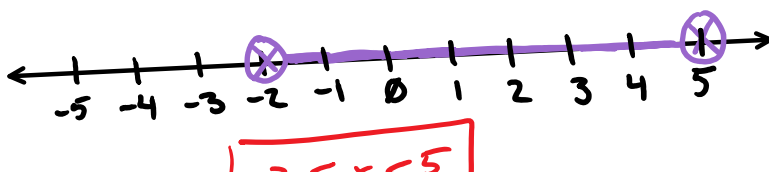
$$4x - 10 \geq 2$$

$$\begin{array}{r} +10 \\ +10 \end{array}$$

$$\frac{4x}{4} \geq \frac{12}{4}$$

$$\underline{\underline{x \geq 3}}$$

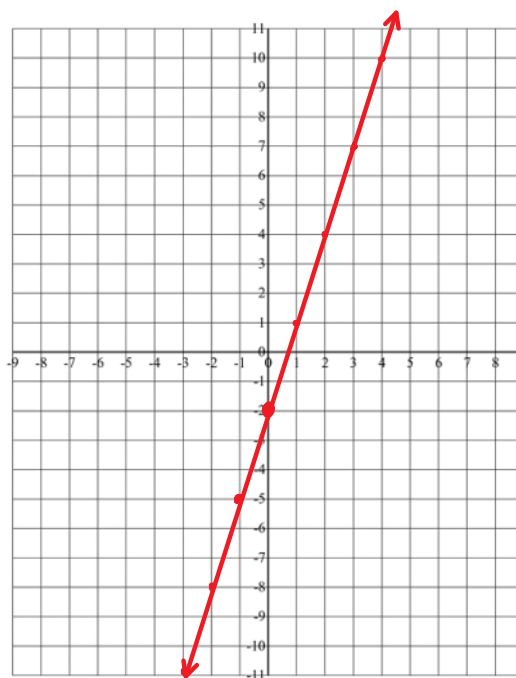
5. Write a compound inequality for the graph below



$-5 \quad -4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5$

$$\boxed{-2 < x < 5}$$

6. Graph the equation $y = 3x - 2$



7. Find the equation of the line that passes through $(-5, 0)$ and $(4, 3)$.

$$-1 \left[\begin{array}{l} 4, 3 \\ -5, 0 \end{array} \right] - 3$$

$$\frac{-3}{-9} = \frac{1}{3} = m$$

Point-slope

$$y - 3 = \frac{1}{3}(x - 4)$$

$$\text{or } y = \frac{1}{3}(x + 5)$$

Slope-intercept

$$y = \frac{1}{3}x + \frac{5}{3}$$

Standard

$$-x + 3y = 5$$

8. What are the x-intercept and the y-intercept of the graph of $12x - 4y = 48$?

x-intercept

$$12x - 4(0) = 48$$

$$12x = 48$$

$$x = 4$$

$$\boxed{(4, 0)}$$

y-intercept

$$12(0) - 4y = 48$$

$$-4y = 48$$

$$y = -12$$

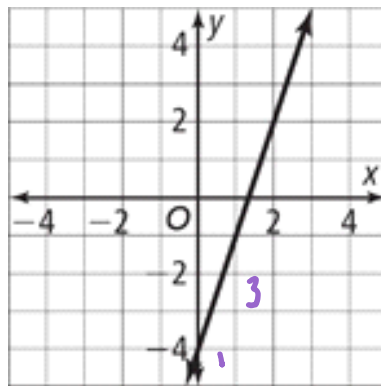
$$\boxed{(0, -12)}$$

9. Denzel must practice the piano for 210 minutes each

week. He practices 30 minutes each day. Write a linear equation to represent the number of minutes Denzel still has to practice after x days. $y = 210 - 30x$ or $y = -30x + 210$

10. What is an equation of the line shown on the graph in point-slope form, using the point $(1, -1)$?

$$y + 1 = 3(x - 1)$$



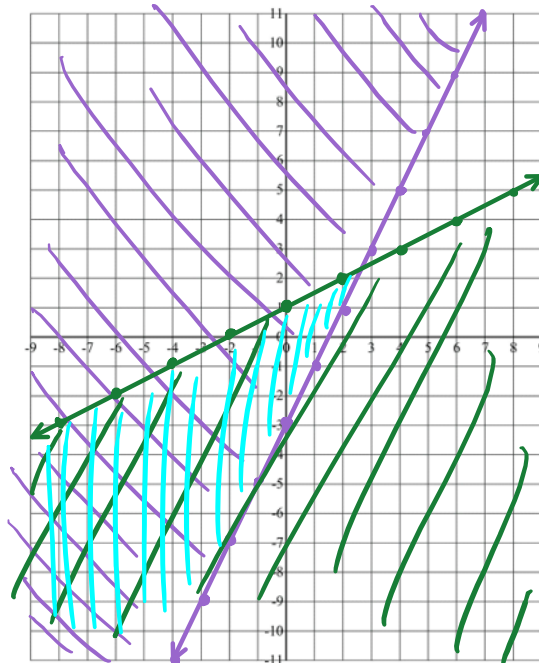
11. Graph the system of inequalities.

$$\begin{cases} 2x - y \leq 3 \\ x - 2y \geq -2 \end{cases} \quad 2x - 3 \leq y$$

$$x - 2y \geq -2$$

$$x + 2 \geq 2y$$

$$\frac{1}{2}x + 1 \geq y$$



12. What is an equation, in point-slope form, of the line that passes through $(-3, 1)$ and has a slope of 2?

$$y - 1 = 2(x + 3)$$

13. Determine whether the lines are parallel, perpendicular, or neither.

$$2x + 4y = 32 \quad y = -\frac{1}{2}x + 16$$

$$4y = -2x + 32$$

$$y = -\frac{1}{2}x + 8$$

Lines are parallel (same slope)

14. Dwayne has \$80 to spend on video games. Used video games cost \$10 each, and new video games cost \$20 each. What equation in standard form determines the number x for used video games and the number y of new video games he can buy?

$$10x + 20y \leq 80$$

15. Ten granola bars and twelve bottles of water cost \$23. Five granola bars and four bottles of water cost \$10. How much do one granola bar and one bottle of water cost?

$$10x + 12y = 23 \rightarrow 10x + 12y = 23$$

$$5x + 4y = 10 \rightarrow \begin{array}{r} -2 \\ + \\ \hline -10x - 8y = -20 \end{array}$$

$$4y = 5$$

$$y = 1.25$$

$$5x + 4(1.25) = 10$$

$$5x + 5 = 10$$

$$5x = 5$$

granola bars cost \$1.00

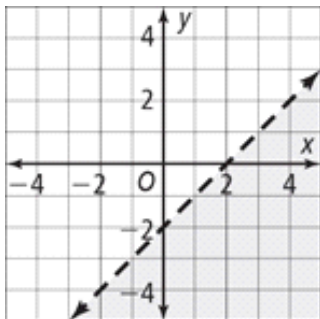
$$5x + 5 = 10$$

$$5x = 5$$

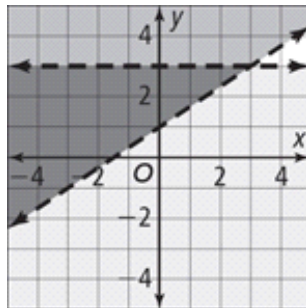
$$\underline{\underline{x = 1}}$$

granola bars cost \$1.00
H₂O costs \$1.25

16. What is the equation of the graphs below?



$y = x - 2$ $y < x - 2$



$y = \frac{2}{3}x + 1$

$y > \frac{2}{3}x + 1$

$y = 3$
 $y < 3$

17. A hardware store rents vacuum cleaners that customers may use for part or all of a day before returning. The store charges a flat fee plus an hourly rate. Write a linear function, f , for the total rental cost of a vacuum cleaner.

a) What is the flat fee the store charges? \$17

b) Using your equation, what would be the cost to a customer to rent the vacuum for 7 hours?

$f(7) = 3(7) + 17$

$f(7) = 21 + 17$

$f(7) = 38$

$f(x) = 3x + 17$

Hours	1	1.5	2	2.5	3
Cost (\$)	20	23	26	29	32

18. Each day, Amaya studies language flashcards and then reads some pages in a novel, as shown in the table below.

18. Each day, Amaya studies language flashcards and then reads some pages in a novel, as shown in the table below.

Pages	4	6	8	10	12
Time (min)	27	32	39	45	51

a) make a scatter plot of the total time she studies as a function of the number of pages she reads.

b) Draw a trend line

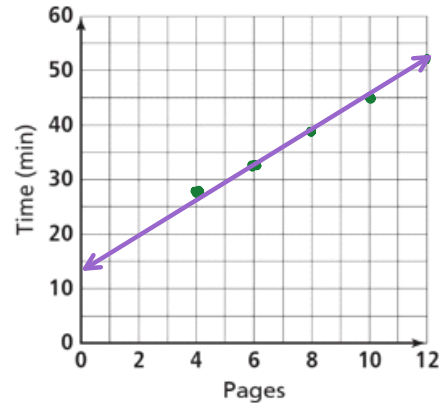
c) which of the following equations is closest to your trend line?

A $y = 4x + 12$

B $y = 5x + 12$

C $y = 6x + 10$

D $y = 3x + 14$



19. what is the solution to the following systems of equations.

a) $y = \frac{2}{3}x + 5$
 $7x - 3y = 15$

$$7x - 3\left(\frac{2}{3}x + 5\right) = 15$$

$$7x - 2x - 15 = 15$$

$$5x = 30$$

$$\underline{x = 6}$$

$$y = \frac{2}{3}(6) + 5$$

$$y = 4 + 5 = 9$$

$(6, 9)$

b) $y = -\frac{7}{2}x + 11$

$$7x + 2y = 20$$

$$7x + 2\left(-\frac{7}{2}x + 11\right) = 20$$

$$7x - 7x + 22 = 20$$

$$22 \neq 20$$

No sol.

c) $\begin{cases} 4x + 2y = -1 \\ 3x + 4y = 3 \end{cases} \cdot -2$

$$3x + 4y = 3$$

$$+ -8x - 4y = 2$$

$$\hline -5x + 0 = 5$$

$$-5x = 5$$

$$\underline{x = -1}$$

$(-1, \frac{3}{2})$

$$3(-1) + 4y = 3$$

$$-3 + 4y = 3$$

$$4y = 6$$

$$\underline{y = \frac{3}{2}}$$