

1.) Write the explicit form the table below.

n	1	2	3	4	5
$g(n)$	10	15	20	25	30

$\underbrace{\quad}$ $\underbrace{\quad}$ $\underbrace{\quad}$ $\underbrace{\quad}$
 $+5$ $+5$ $+5$ $+5$
 $a_n = d(n-1) + a_1$
 $a_n = 5(n-1) + 10$
 $a_n = 5n + 5$

$d = 5$
 $a_1 = 10$

2.) What is the approximate average rate of change for $f(x) = -5x + 6$ for the interval $-2 \leq x \leq 2$?

linear!

-5

3.) Write the explicit form for the arithmetic sequence and identify the 12th term.

$-4, 1, 6, 11$
 $a_n = 5(n-1) - 4$
 $= 5n - 5 - 4$
 $a_n = 5n - 9$
 $a_{12} = 5(12) - 9 = 51$

$d = 5$
 $a_1 = -4$

What are linear inequalities?

$<, >, \leq, \geq$

LINEAR INEQUALITY	<i>similar to linear equations but with an inequality symbol</i>
SOLUTION to a Linear Inequality	<i>any coordinate point that makes the inequality true</i>

Algebraically

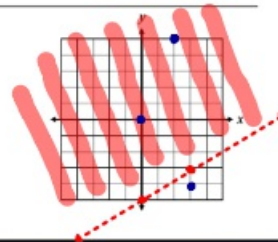
EXAMPLE	Determine which ordered pairs are solutions to the linear inequality below: $2x - 3y < 15$			
	(2, 5)	(-1, -7)	(3, -4)	(0, 0)
	$-11 < 15$ YES!	$19 < 15$ NO!	$18 < 15$ NO!	$0 < 15$ YES!

Graphically

GRAPHING Linear Inequalities	Graphing linear inequalities is a way to show ALL the ordered pairs that are solutions! Steps to graph:	
	Step 1	Put the inequality in <u>slope-intercept</u> form. <u>Be sure to flip the inequality symbol</u> if you multiply or divide by a negative number!
	Step 2	Graph the line! • Use a <u>solid</u> line for \leq or \geq symbols. • Use a <u>dotted</u> line for $<$ or $>$ symbols.
Step 3	Shade! • Shade <u>above</u> the line for $>$ or \geq symbols. • Shade <u>below</u> the line for \leq or $<$ symbols.	

Example: $2x - 3y < 15$

$$\begin{aligned} -2x & \quad -2x \\ \hline -3y & < -2x + 15 \\ \hline -3 & \quad -3 \quad -3 \\ y & > \frac{2}{3}x - 5 \end{aligned}$$



$$2x - 3y < 15$$

$$(2, 5)$$

$$2(2) - 3(5) < 15$$

$$4 - 15 < 15$$

$$-11 < 15 \checkmark$$

$$(-1, -7)$$

$$2(-1) - 3(-7) < 15$$

$$-2 + 21 < 15$$

$$19 < 15 \times$$

$$(3, -4)$$

$$2(3) - 3(-4) < 15$$

$$6 + 12 < 15$$

$$18 < 15$$

$$(0, 0)$$

$$2(0) - 3(0) < 15$$

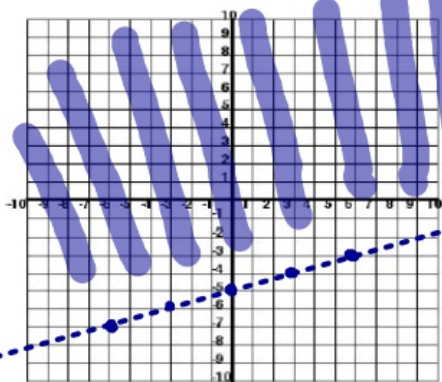
$$0 < 15$$

Graph the inequalities. Write three possible solutions.

1. $y > \frac{1}{3}x - 5$

shade above!

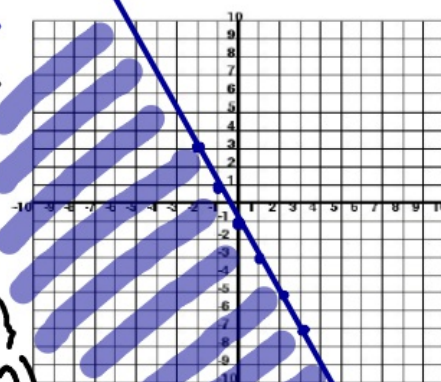
- (1, 3)
- (5, 4)
- (0, 0)



2. $y \leq -2x - 1$

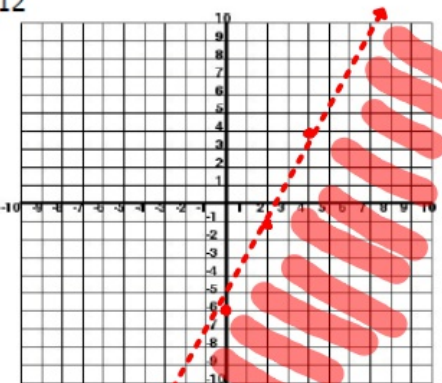
shade below

- (-1, 1)
- (-3, 2)
- (-5, 2)



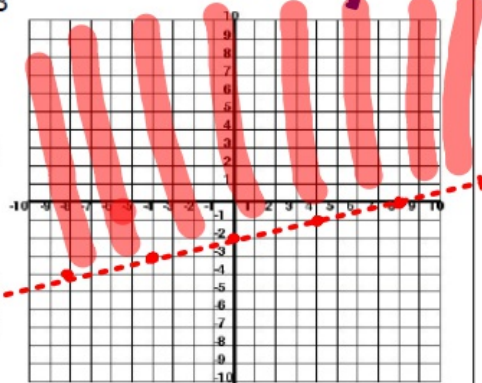
3. $5x - 2y > 12$

- (5, 2)
- (4, 1)
- (5, -4)



4. $x - 4y < 8$

- (0, 0)
- (-4, 2)
- (-10, 7)

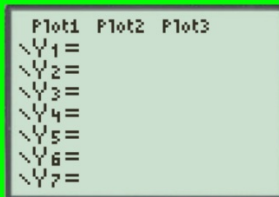


$$\begin{array}{r} 5x - 2y > 12 \\ -5x \quad -5x \\ \hline -2y > -5x + 12 \\ \frac{-2y}{-2} > \frac{-5x + 12}{-2} \\ y < \frac{5}{2}x - 6 \end{array}$$

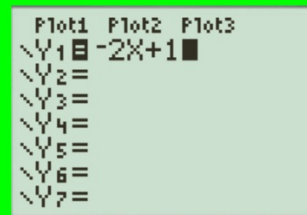
$$\begin{array}{r} x - 4y < 8 \\ -x \quad -x \\ \hline -4y < -x + 8 \\ \frac{-4y}{-4} < \frac{-x + 8}{-4} \\ y > \frac{1}{4}x - 2 \end{array}$$

Calculator Steps!

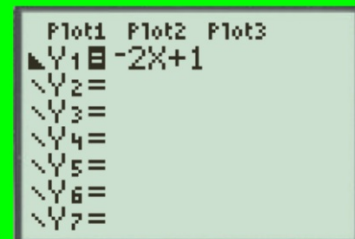
Y=



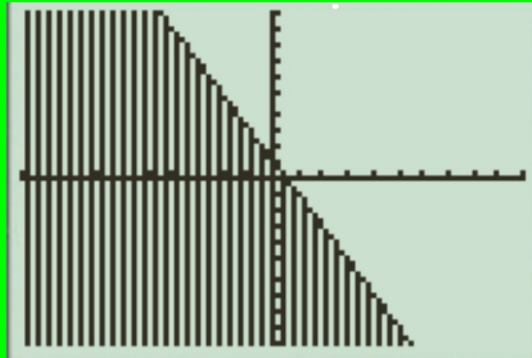
Enter the inequality:



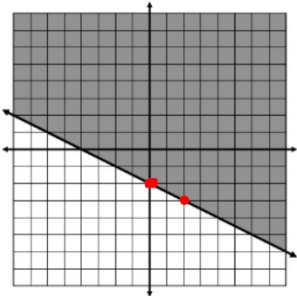
We need to tell the calculator where to shade!
Use the left arrow to highlight the diagonal line on the left.



Press enter until the correct triangle is created.
Hint: Shade up or down?



1



<

Inequality:

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

$$b = -2$$
$$m = -\frac{1}{2}$$

\leq OR \geq

\geq
→ above!

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