(A) Lesson Context

BIG PICTURE of this UNIT:	• What is meant by the term FUNCTIONS and how do we work with them? • mastery with working with basics & applications of linear functions • mastery with working with basics & applications of linear systems • understanding basics of function concepts and apply them to lines & linear systems		
CONTEXT of this LESSON:	Where we've been In Gr 8, you developed skills and understandings related to linear relations	Where we are Writing equations of lines in multiple forms & graphing linear relations with graphing technology	Where we are heading Mastery of working with multiple representations of f(x) = mx + b

(B) Lesson Objectives:

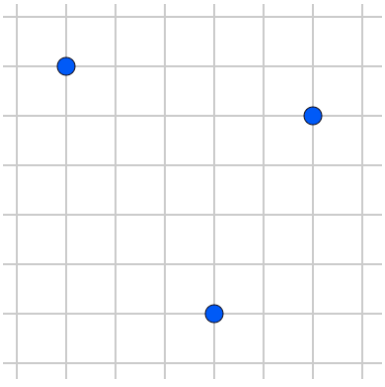
a. Review skills associated with equations of linear relations written in the form of $y = mx + b$
b. Review skills associated with equations of linear relations written in the form of $y - y_1 = m(x - x_1)$
c. Introduce how we can work with equations of linear relations using graphing technology

(C) FAST FOUR: Four 4s

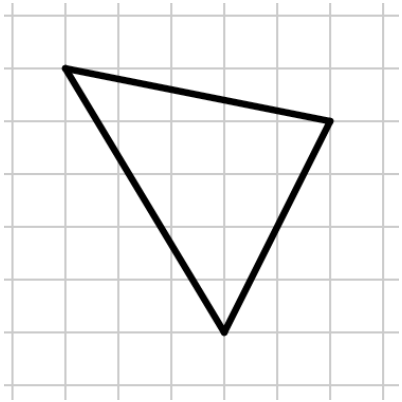
Write the numbers from 1 through 20 on a sheet of paper. Can your group develop an expression for every number between 1 and 20 using only four 4's and any operation? (ex: $4 \times 4 + 4 + 4 = 24$ or $4! \div (4 + 4 + \sqrt{4}) = ??$)

(D) Opening DISCUSSION

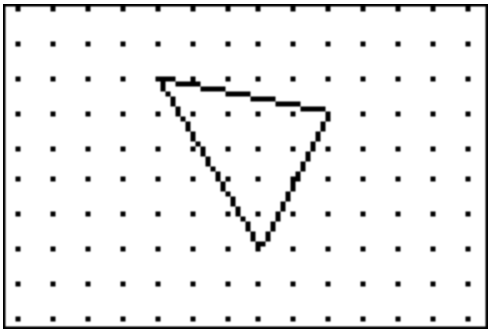
Using graphing technology, can you start with ….



….. and finish with this ……



…. Or this ……



If the task assigned to you is to reproduce this image using linear relations and technology, what skills and concepts would you need to know in order to reproduce this image. BE SPECIFIC!!

(E) Skills Practice Exercise #1 – Given 2 points:

(a) Determine the equation of the line that passes through A(3,-2) and B(-1,-6). Write the equation in slope-intercept as well as slope-point form. Verify using technology – first your TI-84 then on DESMOS

(b) Determine the equation of the line that passes through the point A(-1,2) and B(4,-2). Write the equation in slope-intercept as well as slope-point form. Verify using technology – first your TI-84 then on DESMOS

(F) Skills Practice Exercise #2 – Given slope & point

(a) Determine the equation of the line that passes through A(3,-2) and has a slope of -2. Write the equation in slope-intercept as well as slope-point form. Verify using technology – first your TI-84 then on DESMOS

(b) Determine the equation of the line that passes through the point B(4,-2) and has a slope of $\frac{2}{3}$. Write the equation in slope-intercept as well as slope-point form. Verify using technology – first your TI-84 then on DESMOS

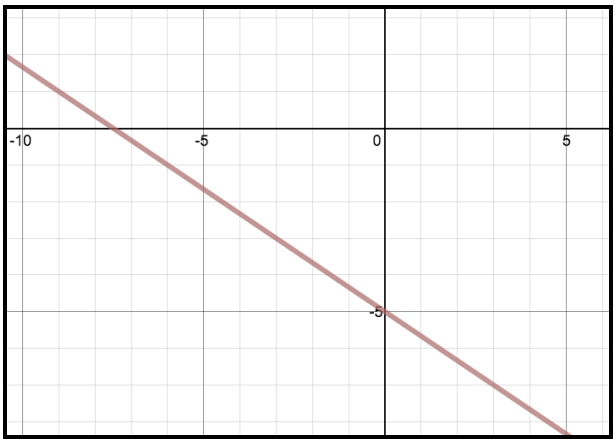
(G) Skills Practice Exercise #3 – Changing Forms:

(a) Change the equation $y-4=\frac{1}{3}(x+2)$ into slope-intercept form and standard form. Provide a sketch of the line.

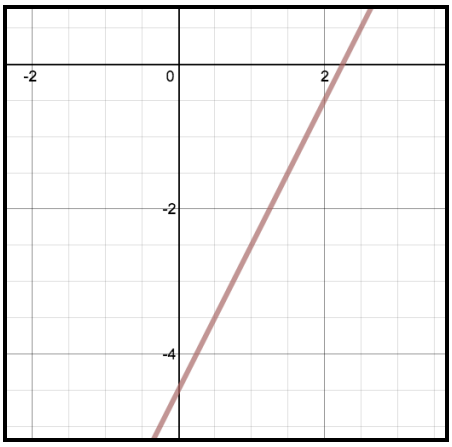
(b) Change the equation $4x-2y-12=0$ into slope-intercept form and slope-point form. Provide a sketch of the line.

(H) Review Exercise #3 – Given a Graph:

(a) Determine the equation of the line that is shown in the diagram. Write the equation in slope-intercept as well as slope-point form & standard form. Verify using technology – first your TI-84 then on DESMOS

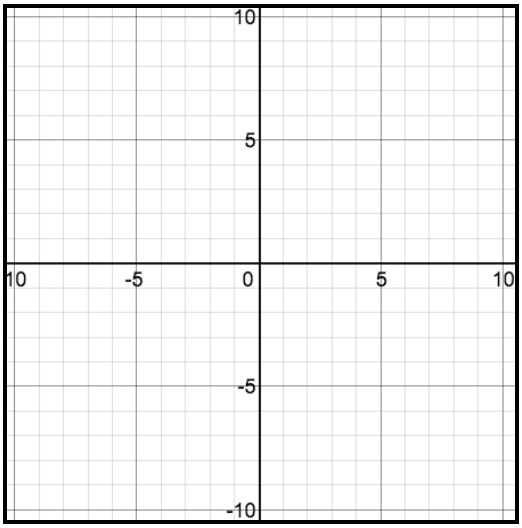


(b) Determine the equation of the line that is shown in the diagram. Write the equation in slope-intercept as well as slope-point form & standard form. Verify using technology – first your TI-84 then on DESMOS

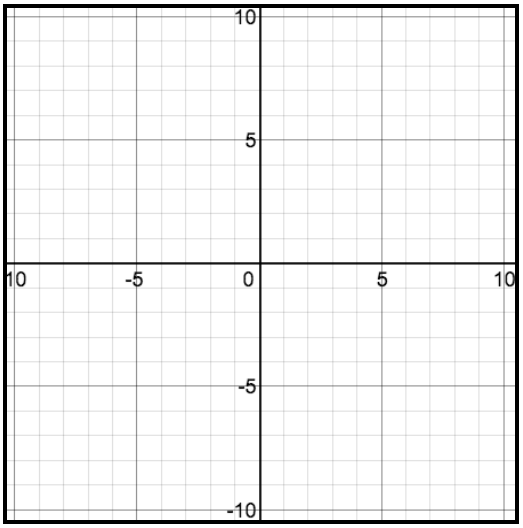


(I) Review Exercise #4 – Prepare a Graph (use mini-boards):

(a) Graph the linear equation $y = \frac{3}{2}x - 3$ on the grid below. Verify using technology – first your TI-84 then on DESMOS



(b) Graph the linear equation $y + 4 = \frac{3}{4}(x - 6)$ on the grid below. Verify using technology – first your TI-84 then on DESMOS



(J) Applications of Linear Relations

1. Mr. Santowski was mowing lawns to make money for a video game! Mr. Santowski has 5 dollars in the bank. And for every lawn that he mows, he earns 3 dollars!

Equation in Slope Intercept Form:

_____

Slope = _____

What does the slope mean in the context of the problem:_____

_____

_____

Y:intercept = _____

Real world meaning of the y-intercept: ____

_____

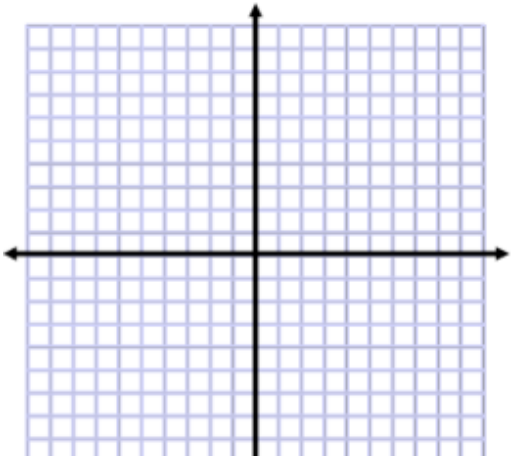
What does x represent? _____

_____

What does y represent?_____

_____

_____



If Mr. S bought a videogame for 62 dollars… how many lawns did he mow? Show your work!

Does the point (4,17) lie on this graph? What does that point mean in the real world? Show your work!

Is there a part of the graph we should not include?

2. Mr. Smith is going BALD!!! Today, he has 7,000 hairs left on his head. If he looses 100 hairs every 4 days, then create a linear equation to model this situation!

Equation in Slope Intercept Form:

_____

Slope = _____

What does the slope mean in the context of the problem:_____

_____

_____

Y:intercept = _____

Real world meaning of the y-intercept: ____

_____

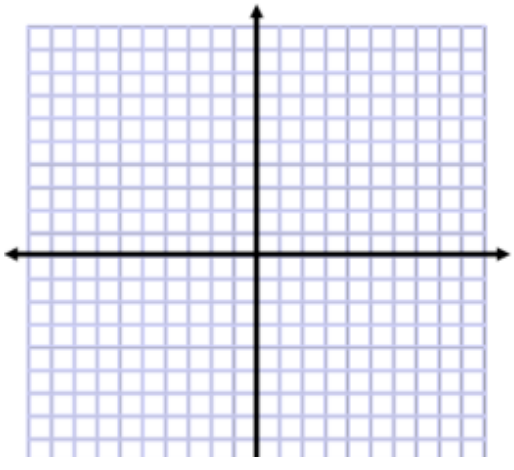
What does x represent? _____

_____

What does y represent?_____

_____

_____



On what day can Mr. Smith expect to be Bald… give me the exact calendar day! Show work

Does the point (150, 3250) lie on the graph. What is the real world meaning of this point? Show work!

How did you have to change your graph to make this one fit?...

Put the following equation into y = mx + b form. Then write a story problem that goes with the numbers of the equation.

$$y - 1500 = 25(x - 20) \rightarrow y = mx + b$$

y = _____

Story: _____

_____

_____

_____

_____

Equation in Slope Intercept Form:

_____

Slope = _____

What does the slope mean in the context of the problem:_____

_____

_____

Y:intercept = _____

Real world meaning of the y-intercept: ____

_____

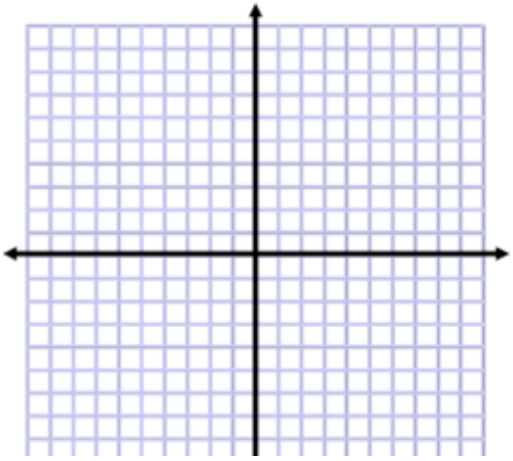
What does x represent? _____

_____

What does y represent?_____

_____

_____



Create a problem for other students to solve based off of your story problem

Create a problem that deals with a point lying on the graph… and the real world meaning of that point.

Draw a picture or a comic strip that explains your problem in detail!