Name: _____ Date:_____

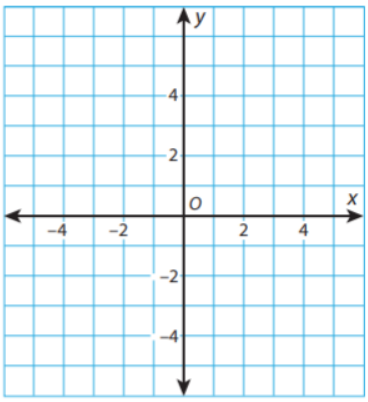
Ms. Streffacio Class: _____

I can:

Do Now (3 minutes to complete):

Use the equation $y = 2x + 1$ to complete the table of values. Then use the table of values to make a graph. Does the equation $y = 2x + 1$ represent a linear function?

x	y
−2	
−1	
0	
1	
2	



Teacher Model (10 minutes) You Watch, Listen, Copy:

The equation $y = 20x + 500$ models the relationship between the number of video games, x, a company manufactures and the cost in dollars, y, to manufacture that number.

Part A Fill in the cost in dollars to manufacture different numbers of video games.

Number of Video Games, x	Cost (in dollars), y
0	
50	
100	
150	
200	

Part B
Plot the points on this coordinate grid.

Part C
Does the equation $y = 20x + 500$ represent a linear function? Explain your answer.

_____

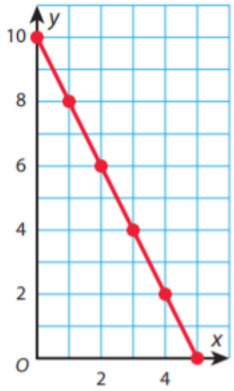
_____

_____

_____

Check for Understanding- Did you understand the Model? (2 minutes) Teacher will check!

Emma: $y = 10 - 2x$ is not a linear function because the graph has a negative rate of change.



Georgia: $y = 10 - 2x$ is a linear function because it can be written in the form $y = mx + b$.

$y = 10 - 2x$

$y = 10 + (-2x)$ Subtracting a positive is the same as adding a negative.

$y = -2x + 10$ commutative property

Who do you agree with? Explain why.

_____

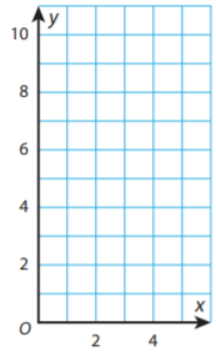
_____

_____

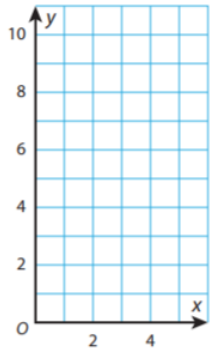
We Do Together (10 minutes):

Graph each pair of functions on the same grid using x values of 0, 1, 2, 3, and 4.

Function Pair A
$y = x + 1$ and $y = 2x + 1$



Function Pair B
$y = x + 3$ and $y = x + 4$



Part A Answer these questions about Function Pair A.

i Are the functions linear or nonlinear? _____

ii Do the functions have the same or different rates of change and initial values?

_____

iii How can you describe graphs of other pairs of linear functions with the same similarities and differences in the rates of change and initial values?

_____

_____

_____

Part B Answer the questions in A.i, A.ii, and A.iii for Function Pair B.

_____

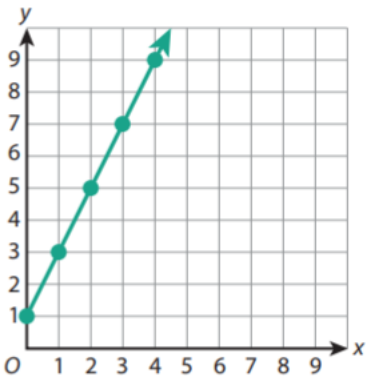
_____

_____

_____

Final Check for Understanding before I send you to Independent Practice! Teacher will Check (4 minutes):

The graph shows a function. Write an equation with the same initial value and a rate of change that is less than the rate of change of the function shown in the graph.



Independent Practice (on your own):

The ordered pairs below represent a linear function.

$$\left(\frac{3}{4}, 6\frac{1}{4}\right), \left(1\frac{1}{4}, 7\frac{3}{4}\right), (x, y)$$

Which values could be the values of x and y?

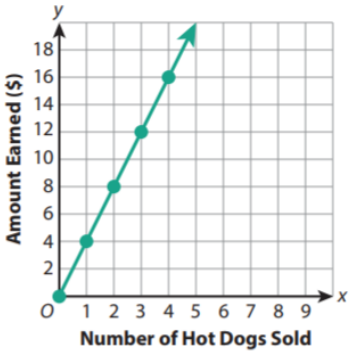
Show your work.

The table shows how much money a concession stand earns selling hamburgers. The graph shows how much money the stand earns selling hot dogs. Find and compare the rates of change for these two functions.

Hamburger Sales

Number of Hamburgers Sold	Amount Earned ($)
1	8
2	16
3	24
4	32

Hot Dog Sales



Four equations are shown below.

Equation 1: $y = 2^x$

Equation 2: $y = 2x - 5$

Equation 3: $y = x^2 + 6$

Equation 4: $y = \frac{x}{2}$

Identify one linear equation and one nonlinear equation from the list. State a reason why each equation you identified is linear or nonlinear.

Linear equation _____

_____

_____

_____

Write an equation of a function that is not linear.

Answer _____

Use your equation to explain why your function is not linear.

Answer

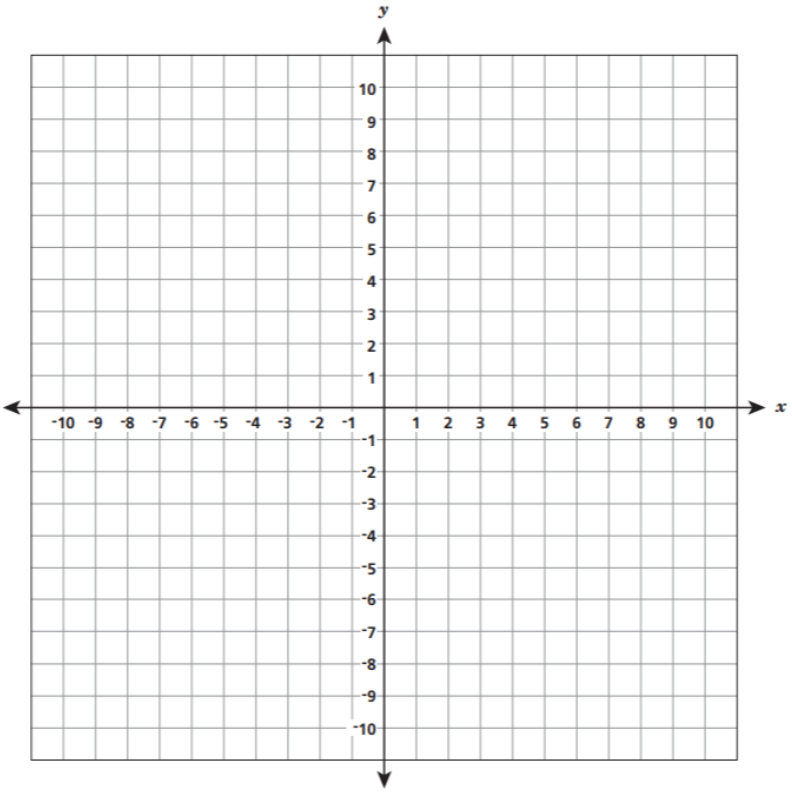
_____

_____

_____

A certain function is defined as "multiply the input by $-\frac{3}{4}$, then add 2."

Graph the function on the coordinate plane below.



Two companies charge differently for canoe rentals, as shown below. What is the rate of change for each function? What is the cost to rent a canoe for 4 hours from each company?

Company A: $c = 8h + 10$, where c = total cost (in dollars) and h = number of hours

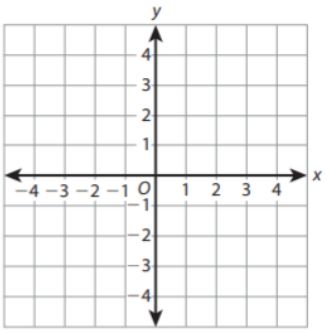
Company B: $15 per hour

Which of these equations are linear functions that go through the point (0, 6)? Explain your reasoning.

$y = 6x$ $y = x + 6$

$y = x^2 + 6$ $y = 2x + 6$

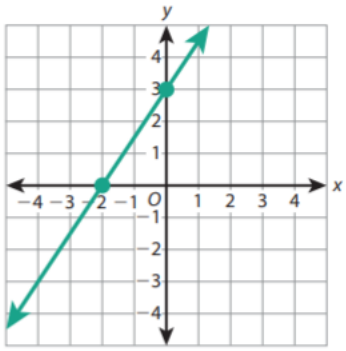
Graph each of the equations below on the coordinate grid. Describe each graph and tell whether or not the equation represents a linear function.



a. $y = 2x + 2$

b. $y = x^2 + 2$

The graph of an equation is shown at the right. Explain why the equation is a linear function. Then explain how to write an equation for the function.



Write the letter for each equation shown in the box into the correct category to show whether the equation represents a linear or non-linear function.

Linear	Non-Linear

A $y = 2x^3$

B $y = 0.5x - 1$

C $y = 5x + 3$

D $y = 3x^2 + 2$

E $y = 6x$