

Day 7 - Comparing Linear Functions - Practice

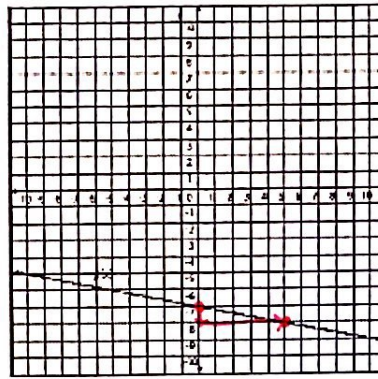
1. Which function has the greater slope? Which function has the greater y-intercept?

Function A

x	f(x)
-8	1
0	2
4	2.5
8	3

$\frac{\Delta y}{\Delta x} = \frac{1}{8}$ y-int (0,2)

Function B



$\frac{\Delta y}{\Delta x} = -\frac{1}{5}$ y-int (0,-7)

Function A has greater y-int ($2 > -7$)

Function B has greater slope ($1/5 > 1/8$)

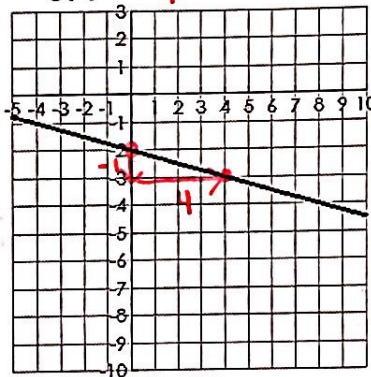
2. For the following two functions, write the equations of each and complete the chart using $<$, $>$, or $=$ to compare them.

$f(x) = -2x + 5$

x	f(x)
-3	11
-1	7
0	5
1	3
3	-1
5	-5

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

$g(x) = -\frac{1}{4}x - 2$



Characteristic of f(x)	$<$, $>$, or $=$	Characteristic of g(x)
y-intercept of f(x)	$>$	y-intercept of g(x)
f(4)	$=$	g(4)
Rate of Change of f(x)	$>$	Rate of Change of g(x)

3. You and a friend are trying to decide which theater to go to for a Friday night movie. NCG charges \$7 for the movie ticket and \$3 per food item. Regal's prices are represented by the table.

x	f(x)
0	4
1	8
2	12
3	16
4	20

a. Write an equation for NCG and Regal. Compare their slopes and initial cost.

NCG:

$y = 3x + 7$

Regal:

$y = 4x + 4$

b. Which theater is cheaper if you want to see the movie and also get a drink and popcorn?

$y = 3(2) + 7$
 $y = 13$

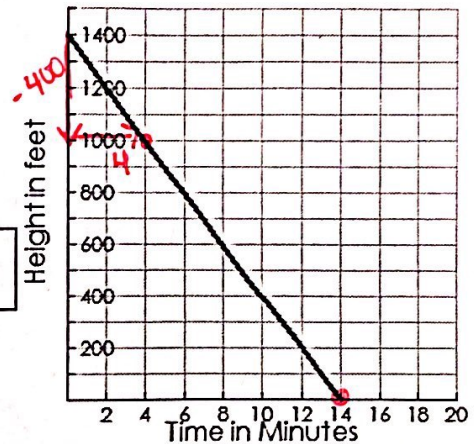
$y = 4(2) + 4$
 $y = 12$

2 items

Regal is cheaper by \$1.

4. Two helicopters are headed toward a landing spot. Hank's helicopter is currently at an altitude of 1250 feet and approaching the ground at a rate of 75 feet per minute. Bill's helicopter is approaching the ground at a rate illustrated by the graph.

Bill's Helicopter



a. Write an equation for both helicopters.

Hank:

$$y = -75x + 1250$$

Bill:

$$y = -100x + 1400$$

b. Which helicopter is descending faster?

Bill's helicopter is descending faster than Hank's.

c. Which helicopter will land first? How long will it take?

Bill - 14 minutes

Hank: $0 = -75x + 1250$

$75x = 1250$

$x = 16.67 \text{ min}$

Bill's helicopter landed first.

5. Answer the following questions about the functions:

Function A

A newspaper began with a circulation of 1,300 readers in its first year. Since then, its circulation has increased by 150 readers per year.

$$y = 150x + 1300$$

Function B

The function $g(x) = 225x + 950$ represents the circulation of another newspaper where $g(x)$ represents total subscriptions and x represents the number of years since its first year.

a. Which function has the larger rate of change? Explain why.

Function B increases by 225 readers whereas Function A only increases by 150.

b. Which function has the higher starting amount? Explain why.

Function A started with 1300 readers whereas Function B started with 950 readers.

6. Answer the following questions about the functions:

Function A

A rental store charges \$40 to rent a steam cleaner, plus an additional \$4 per hour.

$$y = 4x + 40$$

Function B

The table below shows the total cost in dollars to rent a steam cleaner at a different rental store. $g(x)$ represents the total cost after x hours.

Hours (x)	Total cost ($g(x)$)
3	46
4	53
5	60
6	67

0 25
1 32
2 39

$$y = 7x + 25$$

a. Which function charges more per hour? Explain why.

Function B charges \$7 per hour and Function A only charges \$4.

b. Which function has the higher rental fee? Explain why.

Function A charges \$40 and Function B charges \$25.