Find the following measure of central tendency:

23, 64, 155, 225, 175, 195, 90, 225

23, 64, 90, 155, 175, 195, 225, 225

Mean = $\frac{1152}{8} = 144$

Median = $\frac{155+175}{2} = 165$

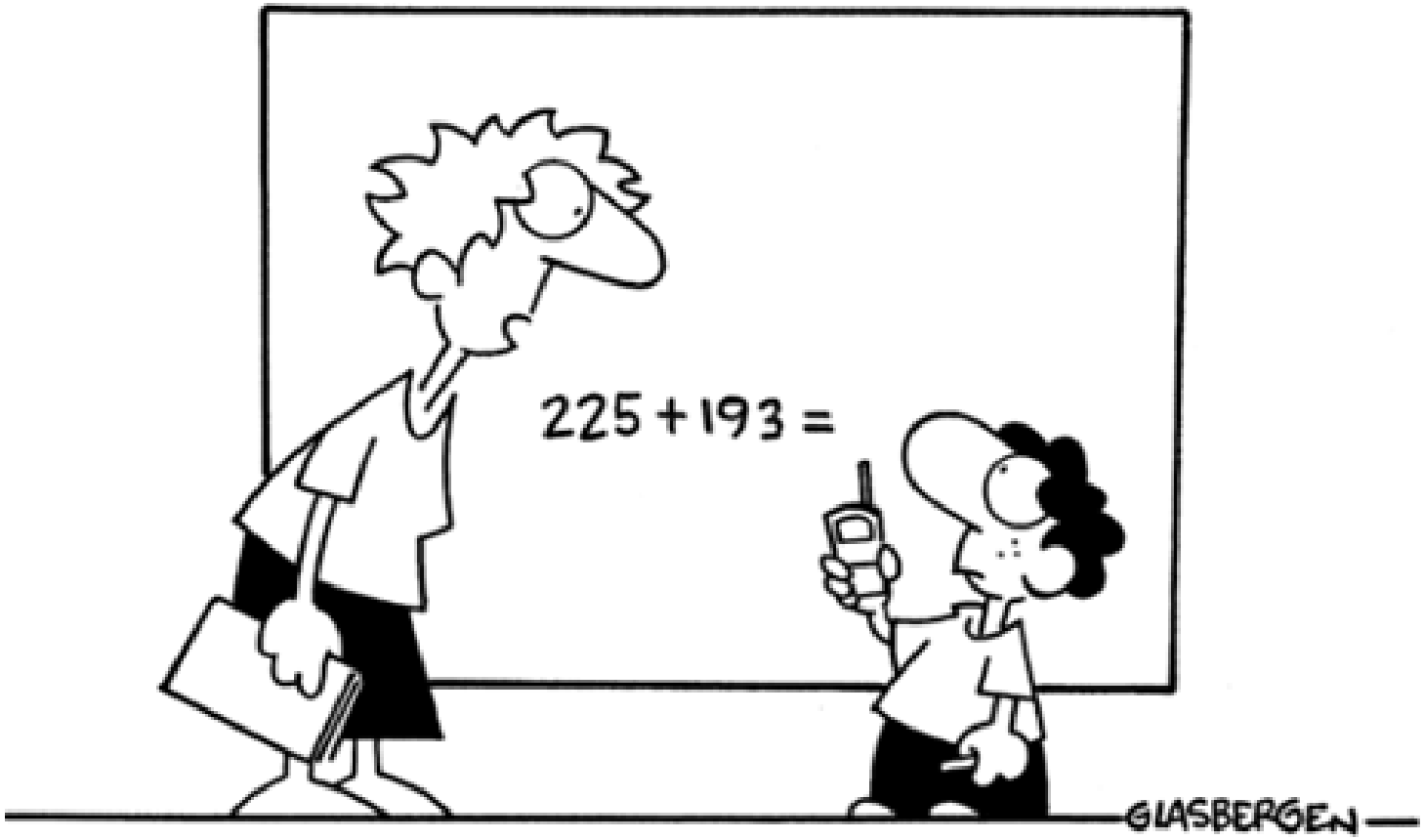
Mode = 225

Range = 225 - 23 = 202

Warm-up

Unit 2: Linear Equations

Slope



"You have to solve this problem by yourself. You can't call tech support."

Compare the roofs

bxp36998 www.fotosearch.com

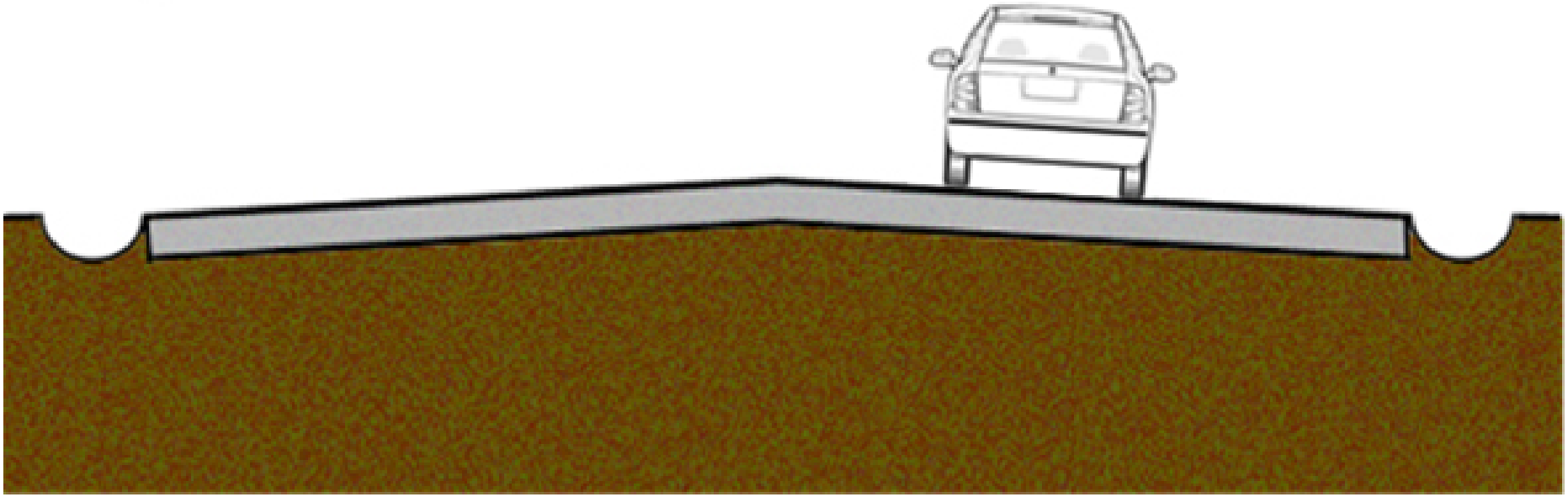
Houses in
Stonington, Maine

Buildings in
Guanajuato, Mexico

road crown
about 1/2" per foot

agcoauto.com

Roads have the above slope starting from the center. Why is this necessary?



Goals aligned to common core standards:

- You will understand the meaning of slope:
  - definition and formulas
  - how to solve
  - compare slopes
  - real-life situations

What is Slope??

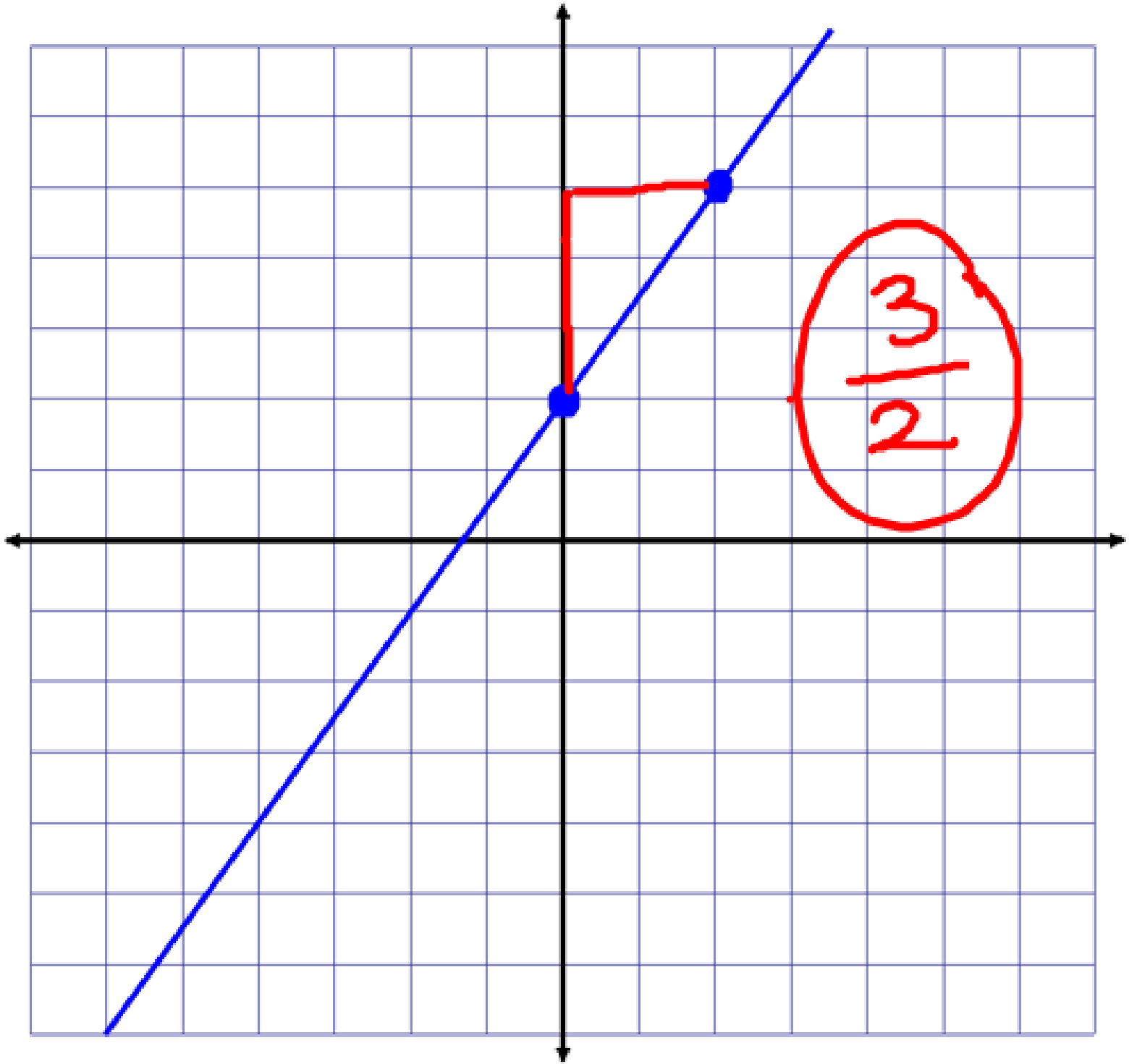
- The measure of steepness of a straight line.
- Change in y over change in x.
- Rise over run

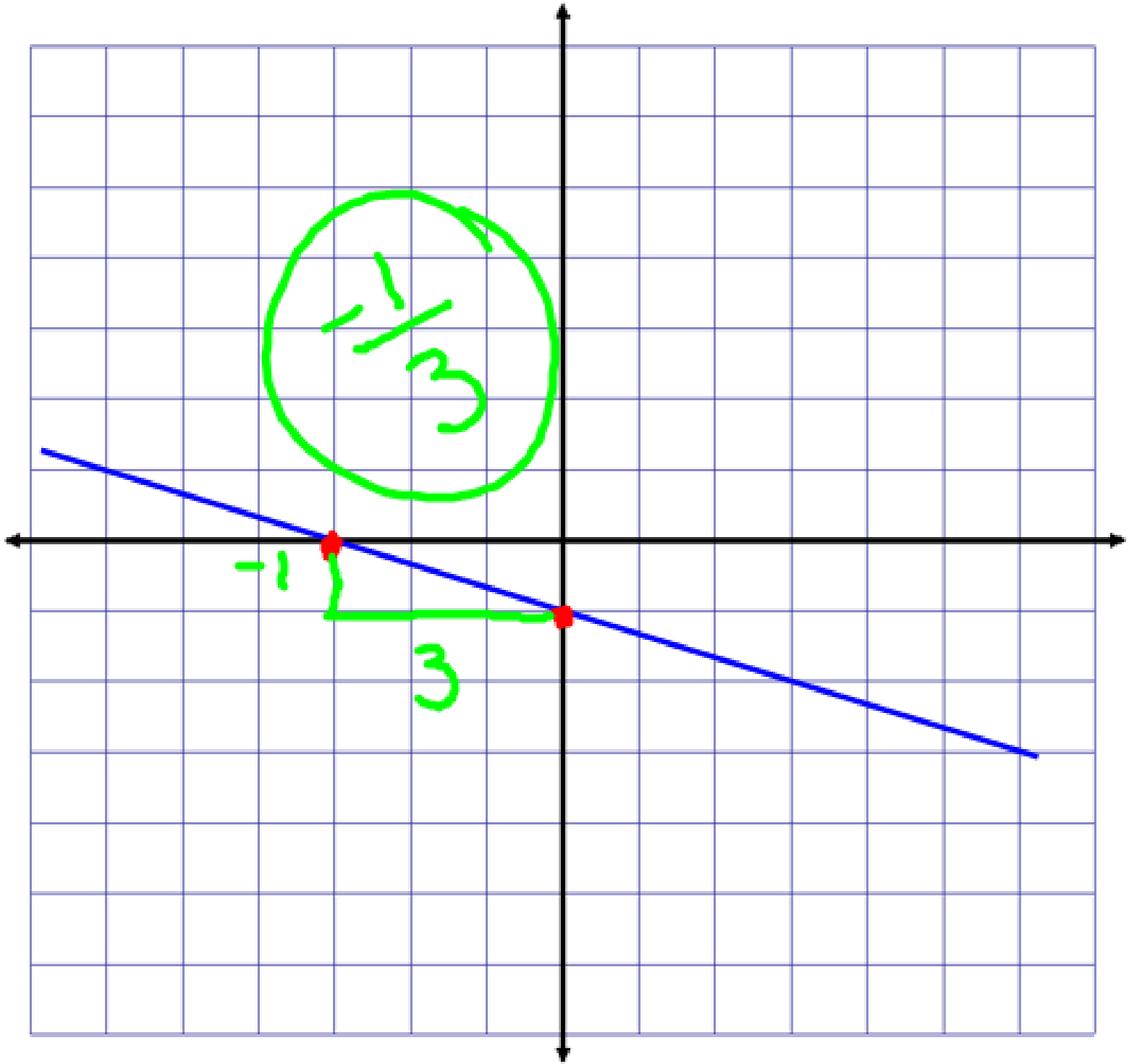
Finding the slope of a line from a graph

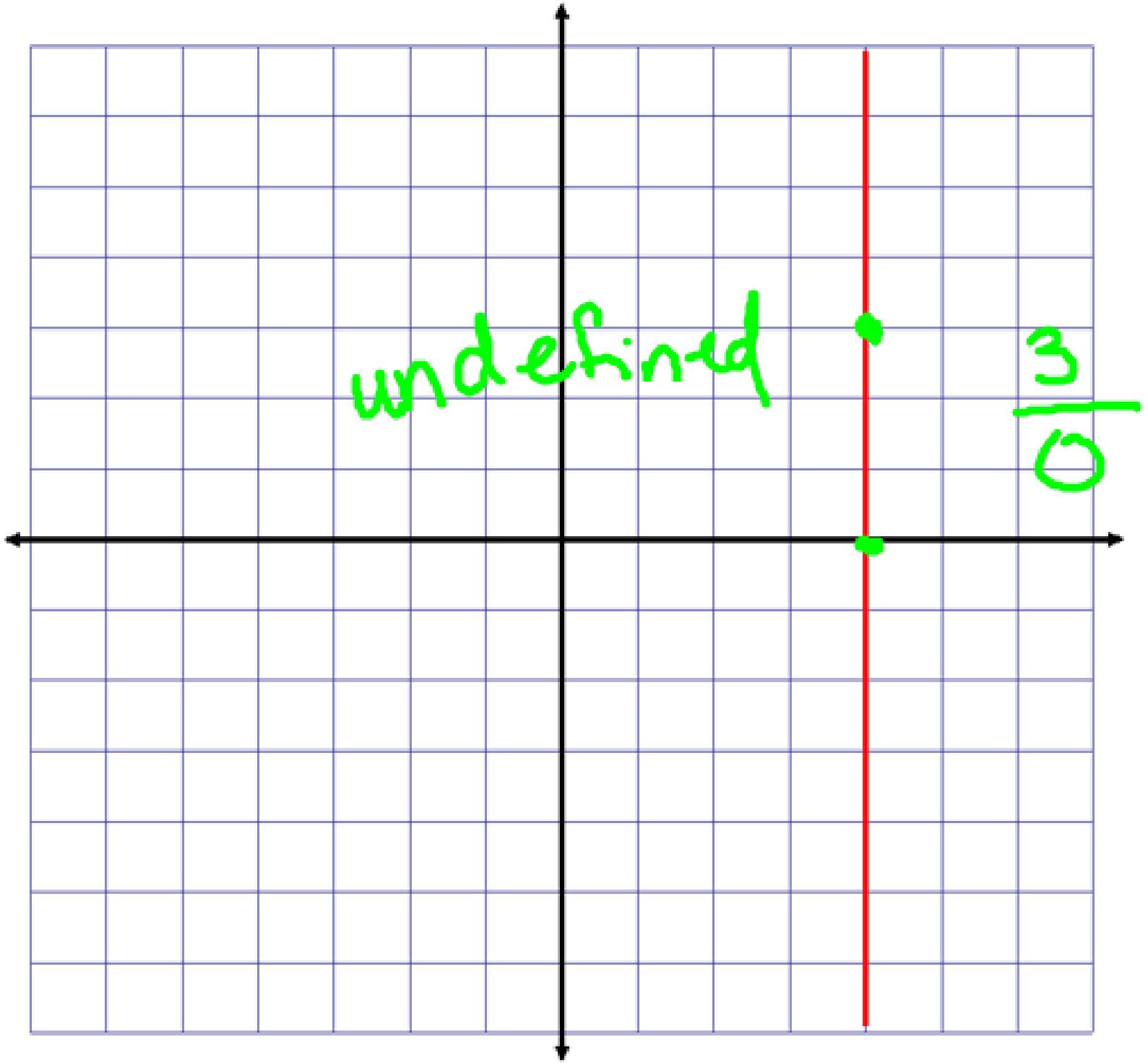
$$\frac{\Delta y}{\Delta x} \qquad \frac{\text{Change in y}}{\text{Change in x}}$$

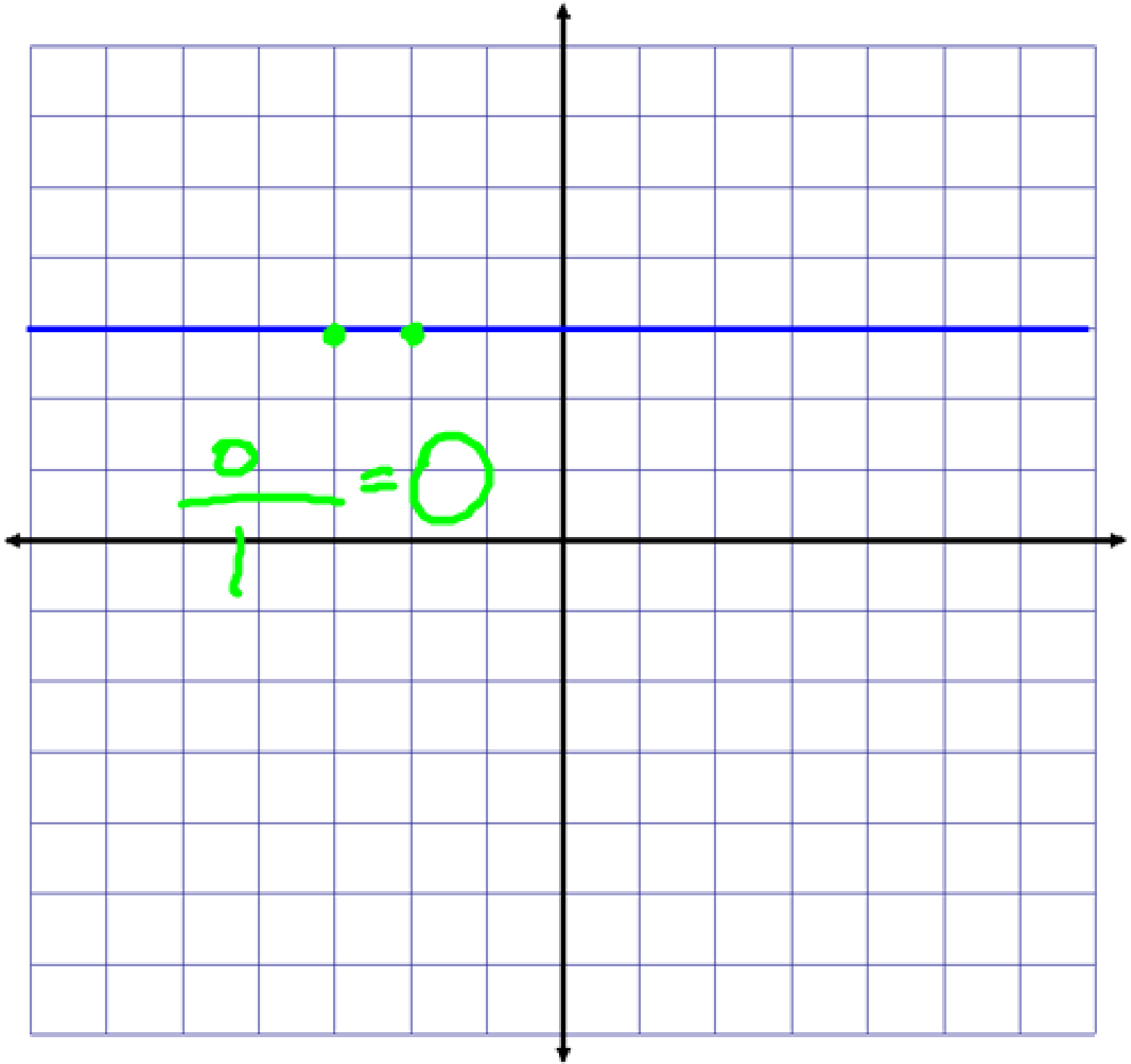
Reminder:

1. Pick two coordinate points that fall on whole numbers and pick one of the coordinates to start.
2. The numerator will represent how much you go up or down from one coordinate to the next.
3. The denomenator will represent how much you go left or right from one coordinate to the next.


3/2

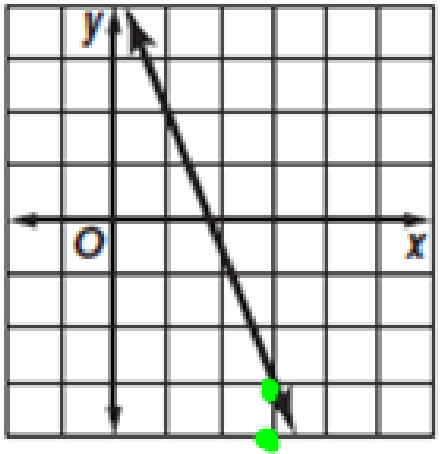

-1/3
-1
3


undefined
0/3

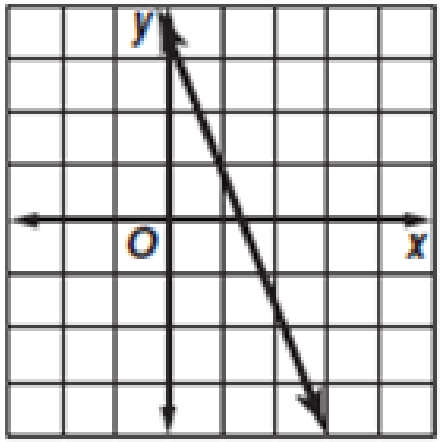

$\frac{0}{1} = 0$

Which of these is the graph of the line passing through $(3, -4)$ with slope $-\frac{5}{2}$?

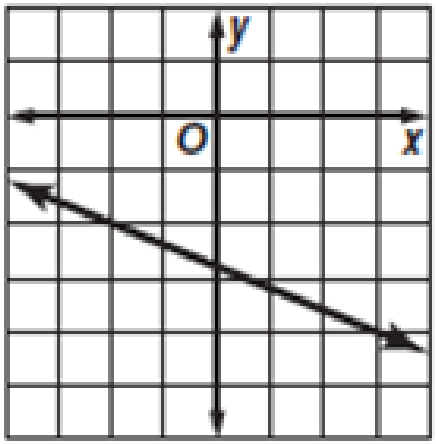
A



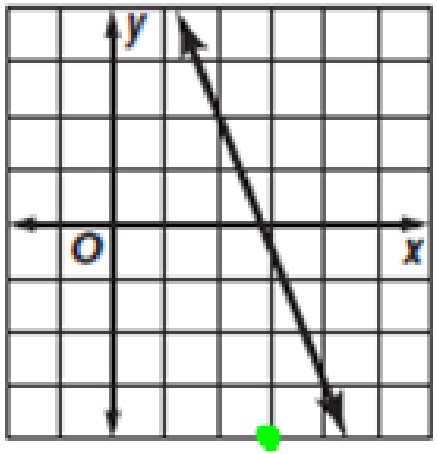
B



C



D



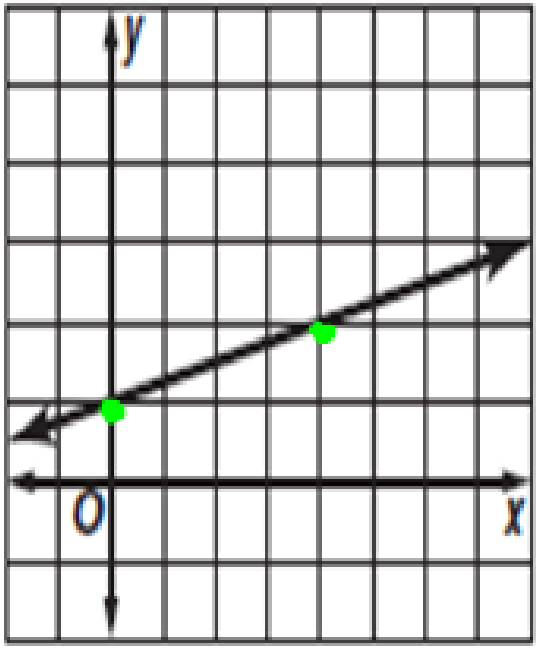
What is the slope of the line?

A 4

B $\frac{1}{2}$

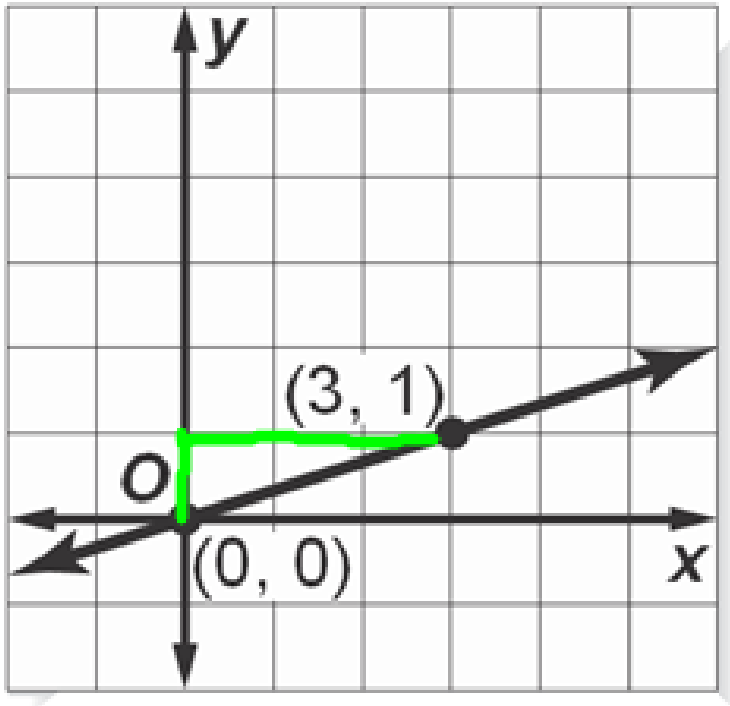
C $\frac{1}{4}$

D $-\frac{1}{2}$

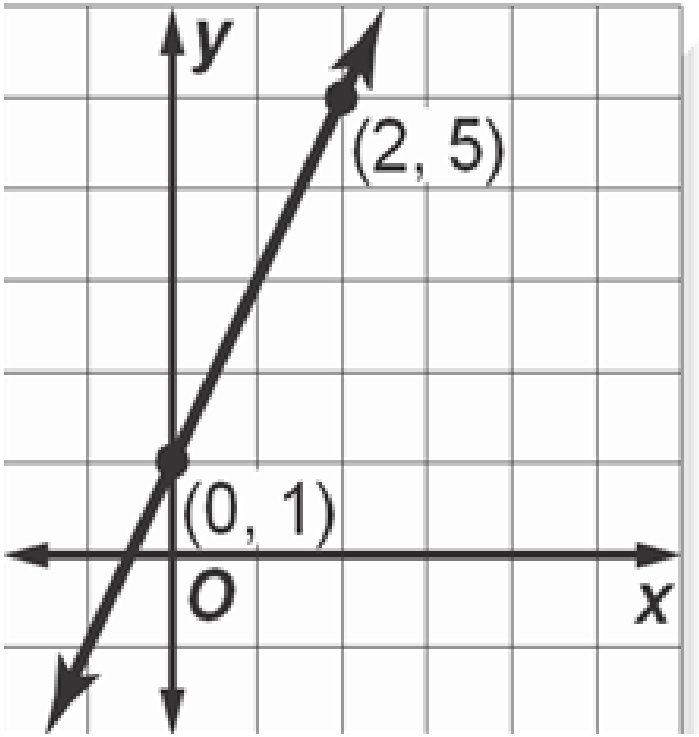


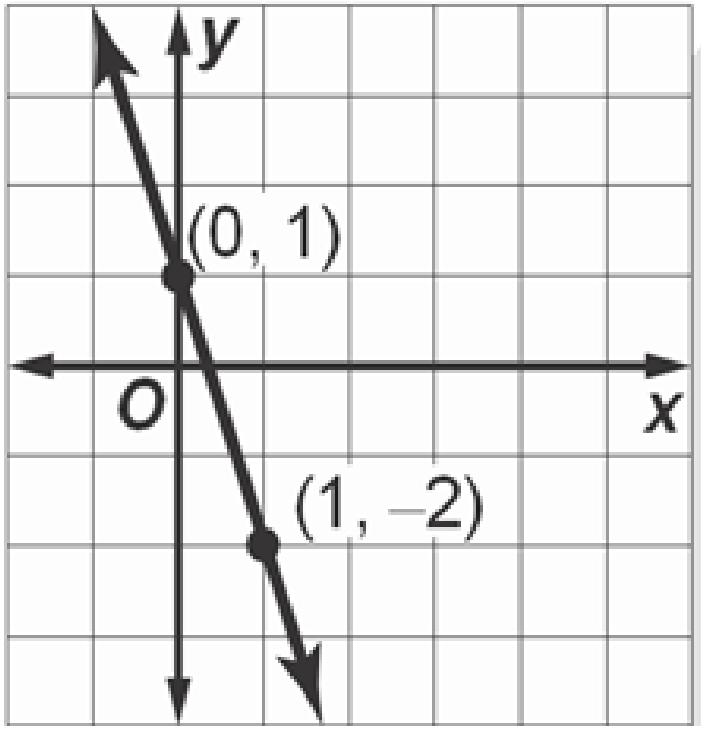
Slope?

$\frac{1}{3}$



When you find your answer, check your answer with a neighbor and discuss what you did right or wrong.





Finding the slope...

-when you are given two points...

Slope Formula:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Remember, slope is rise over run

The order of the terms doesn't matter!!

$x_1\ y_1 \quad x_2\ y_2$

$(3, 5)\ (-2, -8)$

$$m = \frac{-8-(5)}{-2-3}$$

$$= \frac{-13}{-5}$$

$$= \frac{13}{5}$$

$(-9, 6)\ (3, 5)$

$$\frac{5-6}{3+9} = \frac{-1}{12}$$

$(4, 8)\ (4, -3)$

YOU TRY!

(8, 3) (-4, 3)

How can we find slope from a table?

X	2	4	6	8	10
Y	-1	2	5	8	11

+2 +2 +2

+3 +3

$$\frac{2+(+1)}{4-2}$$

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

X	-8	-7	-6	-5	-4
Y	4	3	2	1	0

+1 +1

-1 -1

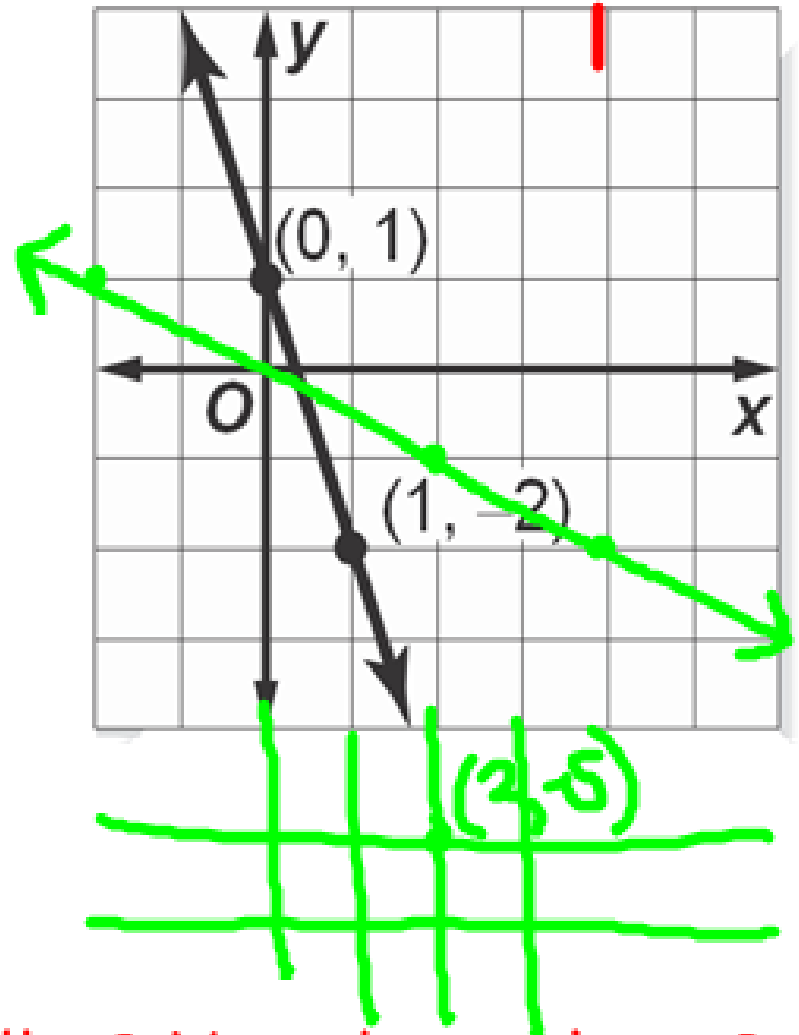
$$m = \frac{-1}{1} = -1$$

Compare the slopes.

X	-5	-1	3	7	11
Y	6	4	2	0	-2

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

$\frac{-2}{4} = \frac{-1}{2}$



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

Which one is steeper?

When x = 3, which y-value is smaller? How do you know?

(3, 2)

Which set of data is linear?

A

x	-1	0	1	2
y	18	20	22	24

B

x	-1	0	1	2
y	1	3	7	11

C

x	-1	0	1	2
y	2	4	8	16

D

x	-1	0	1	2
y	50	45	35	25

Which set of data is nonlinear?

A

x	0	1	2	3
y	20	25	30	35

B

x	−1	0	1	2
y	−5	−3	−1	1

+1 +1 +1 +2 +2 +2

C

x	0	2	4	6
y	12	15	17	20

D

x	1	3	5	7
y	1	0	−1	−2

use the table to find the rate of change.

$$m = \frac{22.50}{3}$$

$$m = \frac{7.5}{1}$$

Number of Movie Tickets	Total Cost ($)
x	y
3	22.50
6	45.00
9	67.50

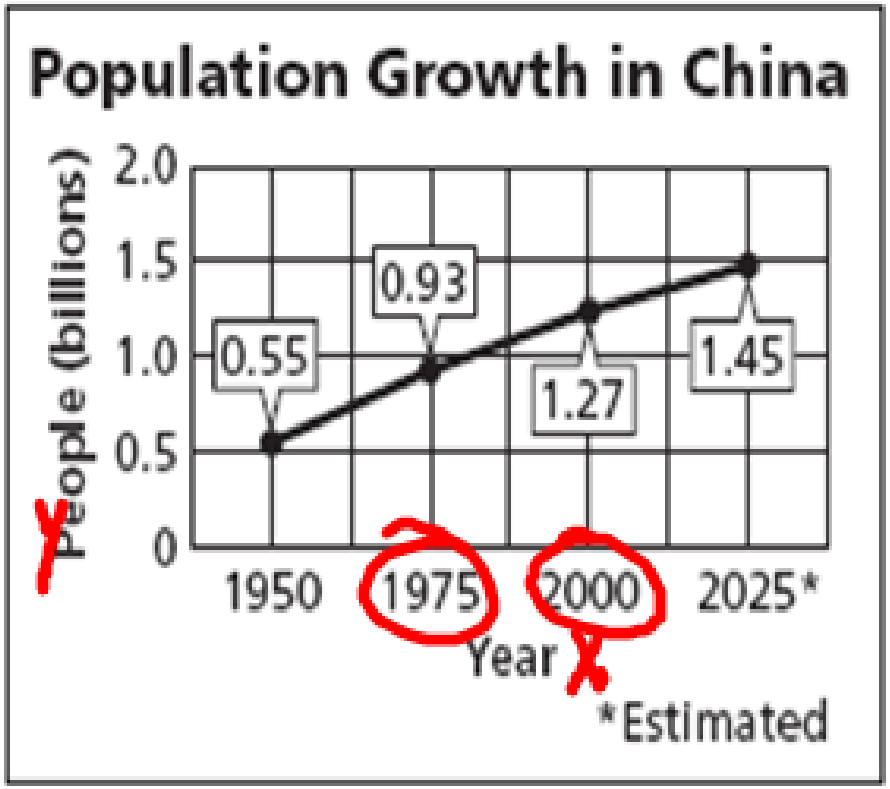
What is the meaning of the rate of change in this case?

Use the graph to find the rate of change for

1950 1975.

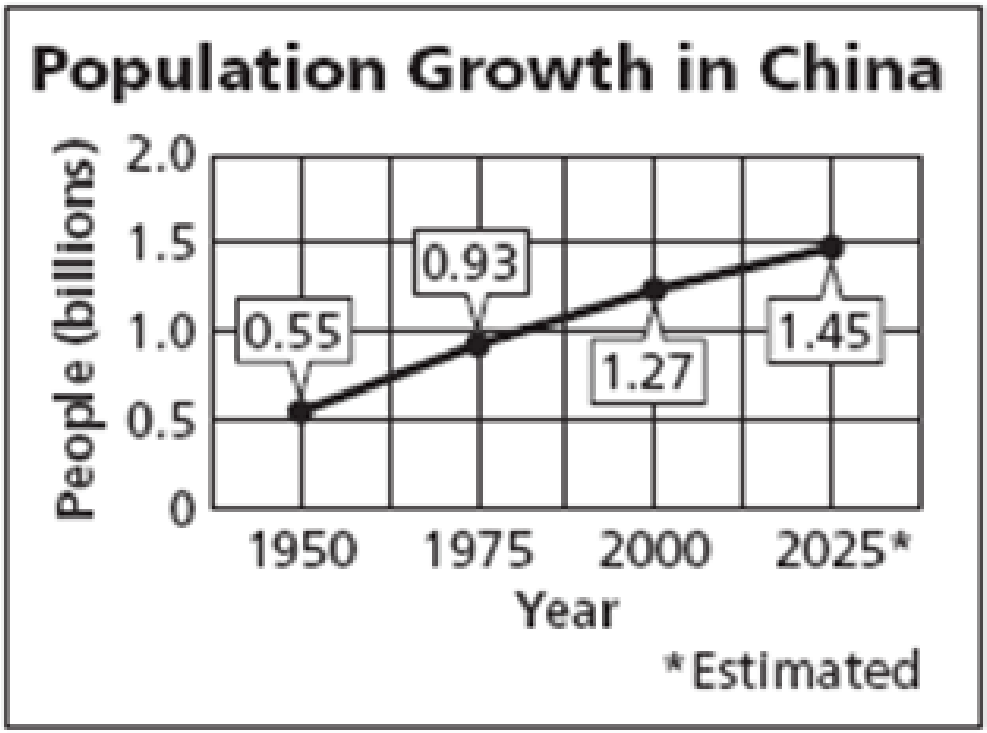
$$m = \frac{1.27 - 0.93}{2000 - 1975}$$

$$= \frac{.34}{25} = \frac{.0136}{1}$$



What is the meaning of the rate of change in this case?

Use the graph to find the rate of change for 2000-2025.

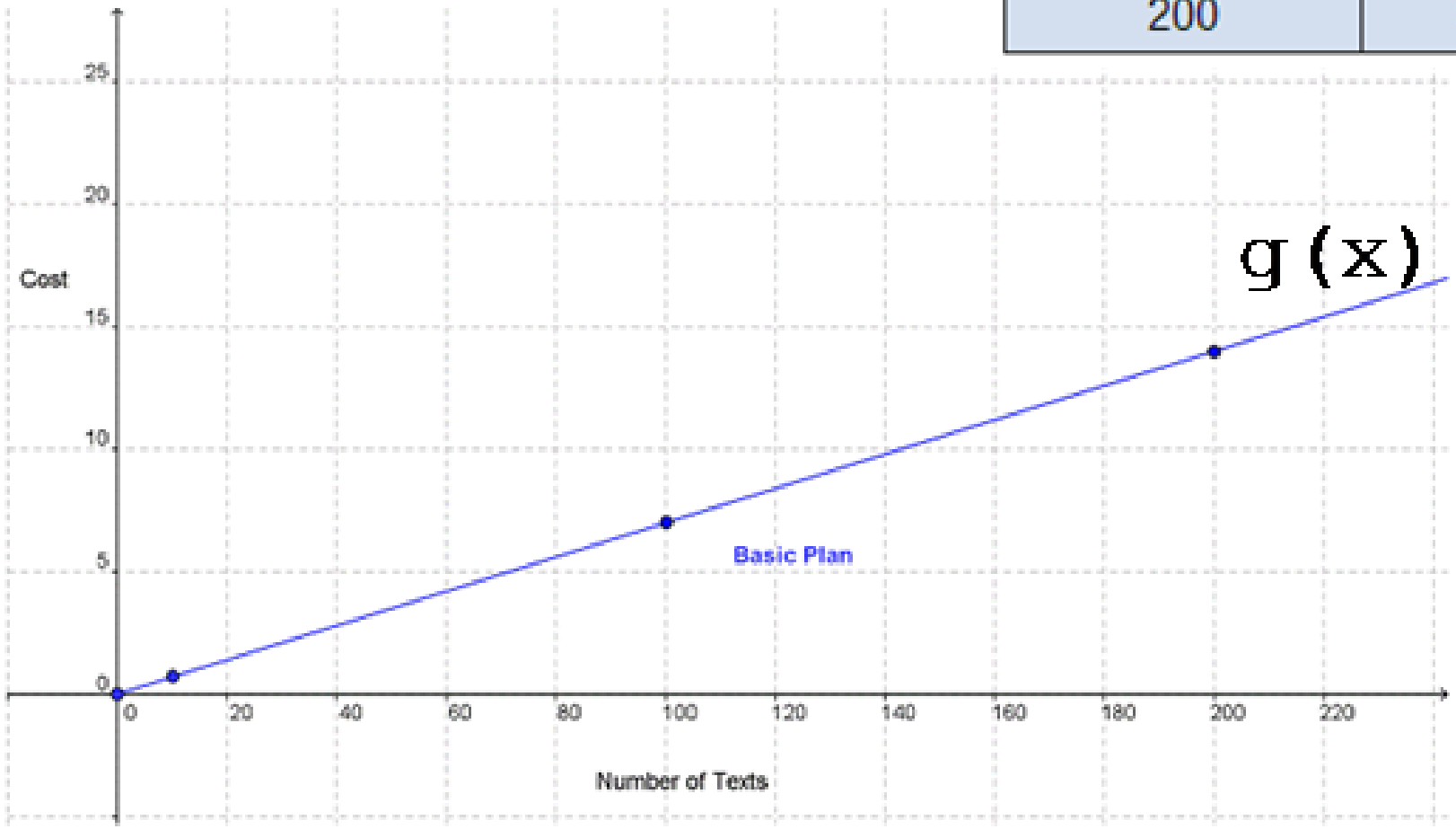


What is the meaning of the rate of change in this case?

Find the rate of change for f(x) & g(x).

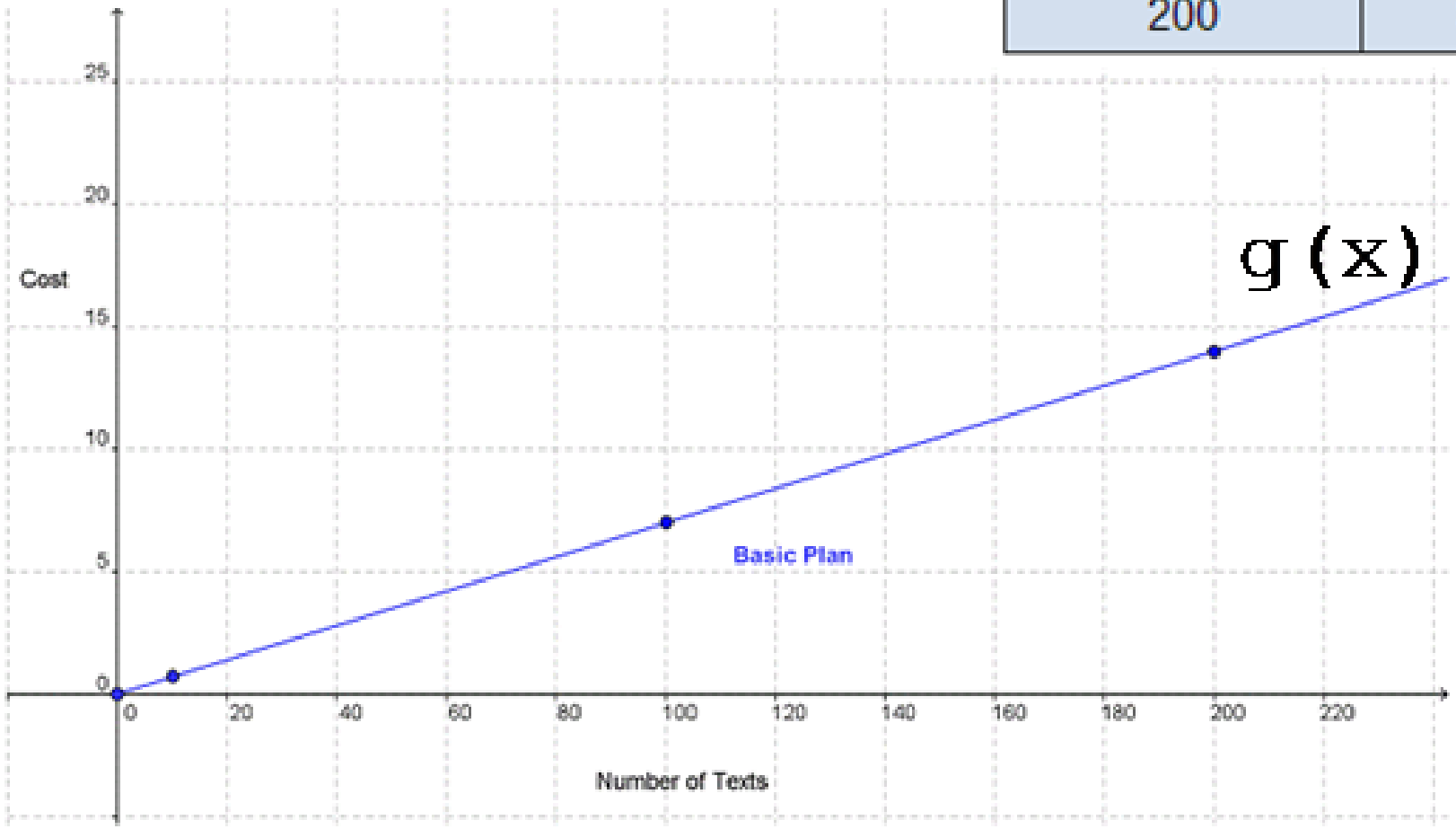
x f(x)

# of Texts	Cost
0	$10.00
10	$10.20
100	$12.00
200	$14.00



Which function, f(x) or g(x), has a steeper slope?

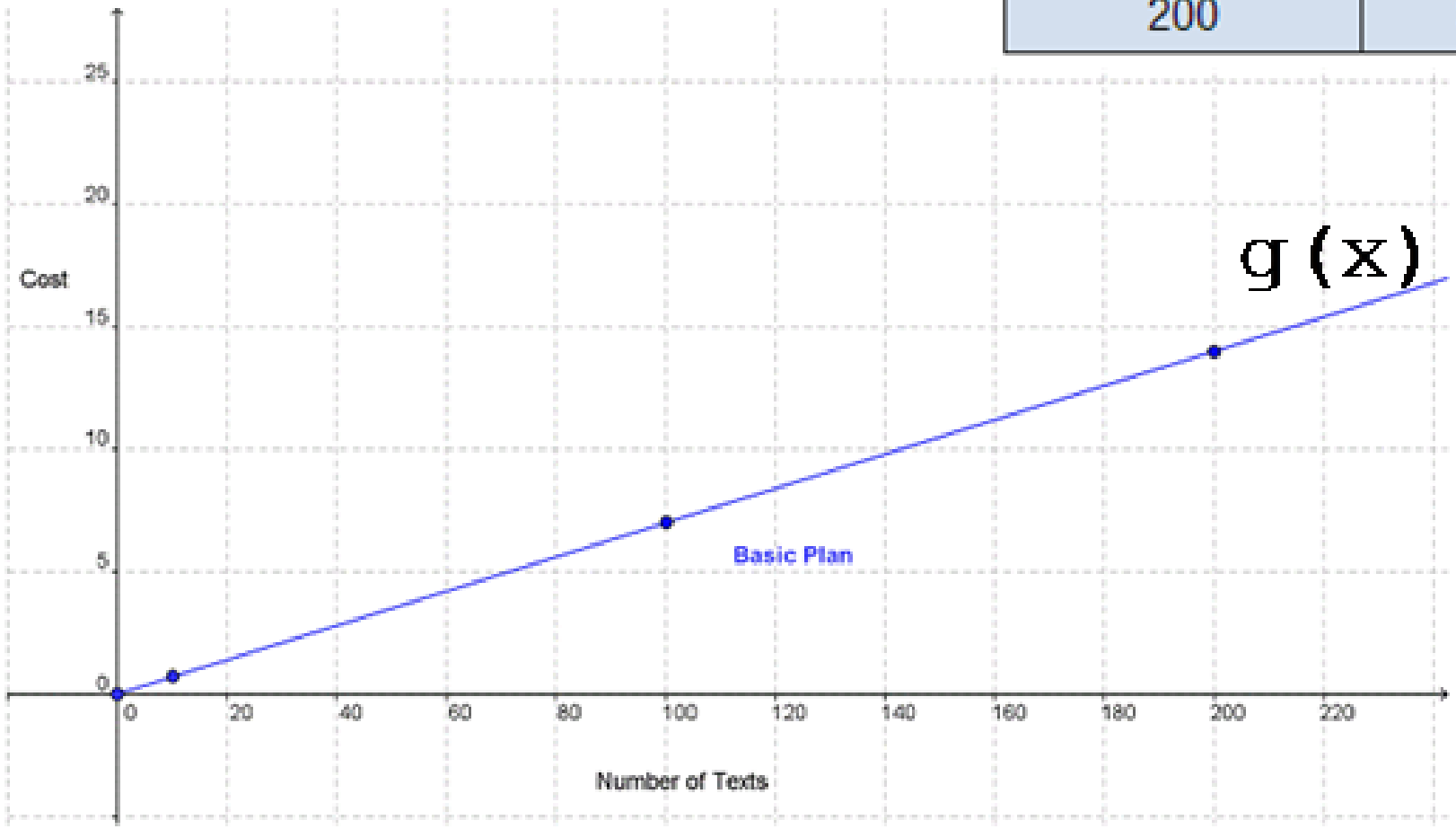
x	f(x)
# of Texts	Cost
0	$10.00
10	$10.20
100	$12.00
200	$14.00

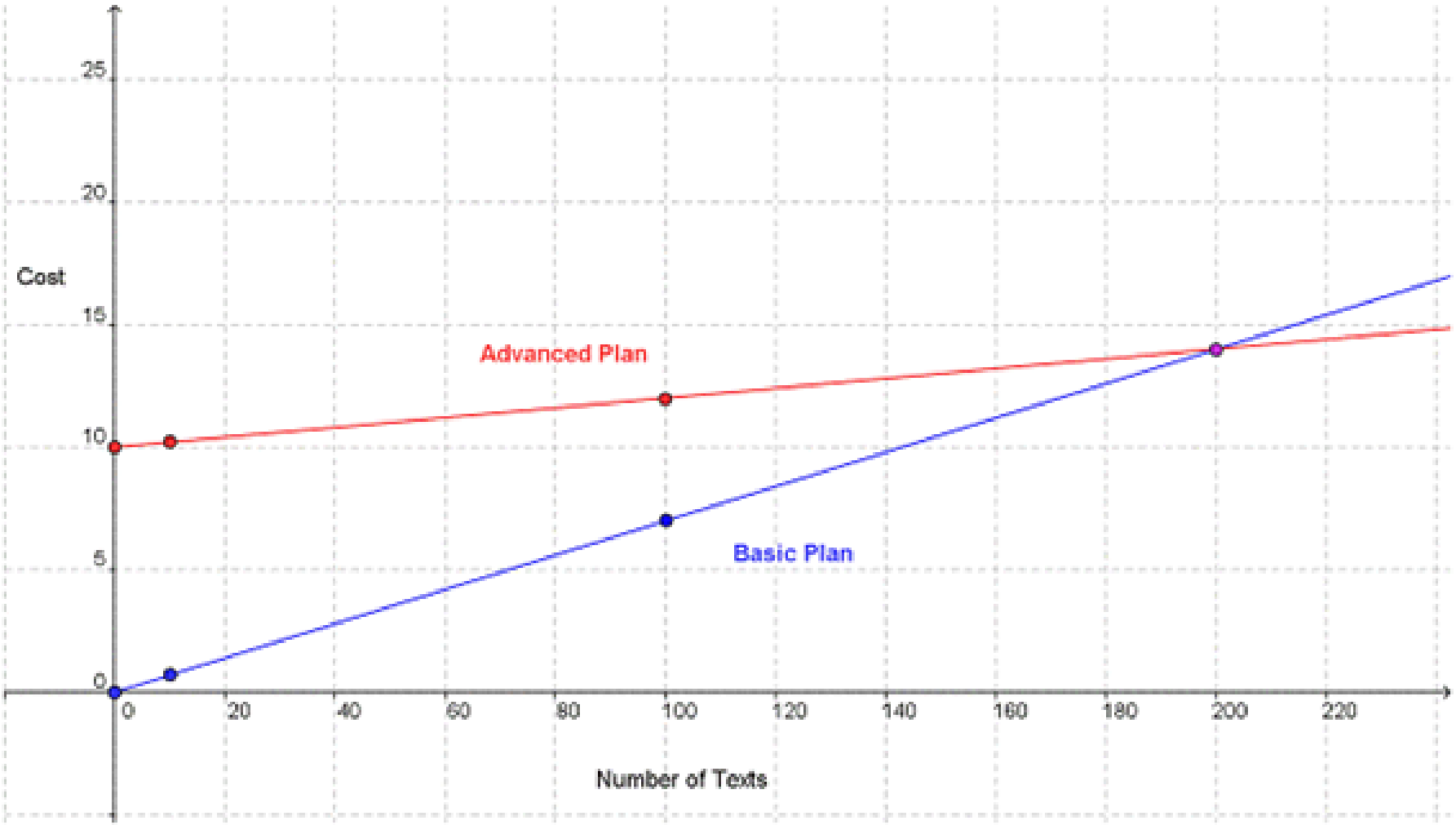


Find f(5) & g(5).

x f(x)

# of Texts	Cost
0	$10.00
10	$10.20
100	$12.00
200	$14.00





- When would the basic plan be a better deal?
- When would the advanced plan be a better deal?

- Explain two different ways you can find the rate of change?

- How can you can find the y-intercept?

Hours worked	Amount earned
5	$30
10	$60
15	$90
20	$120
25	$150
30	$180
35	$210

Goals aligned to common core standards:

- You understand the meaning of slope:
  - definition and formulas
  - how to solve
  - compare slopes
  - real-life situations