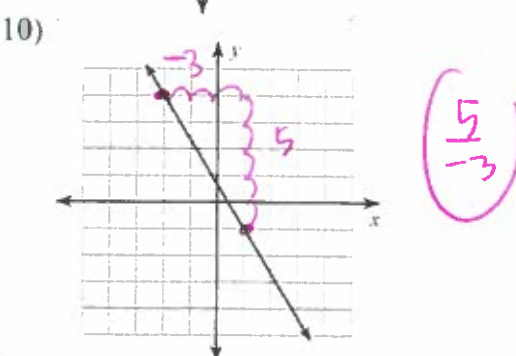
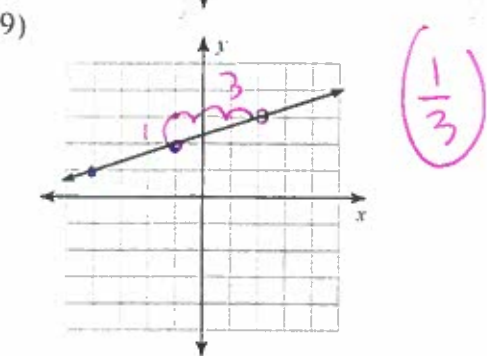
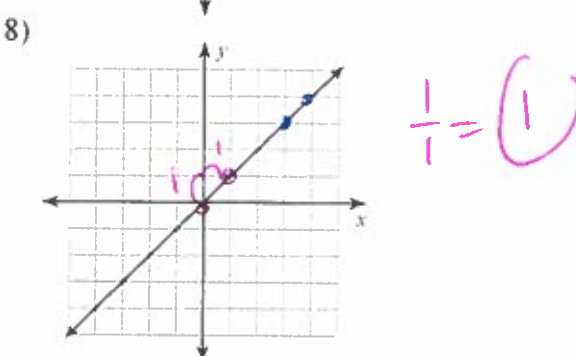
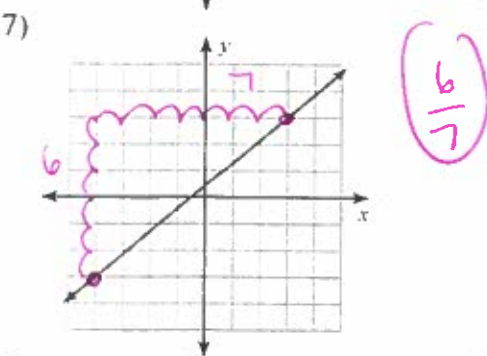
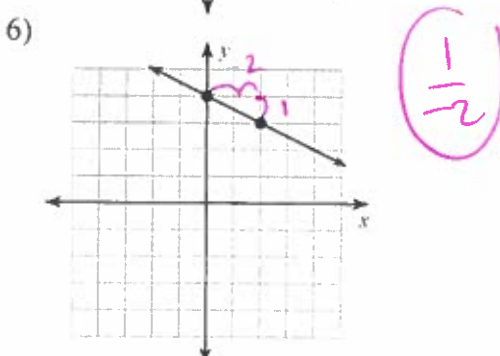
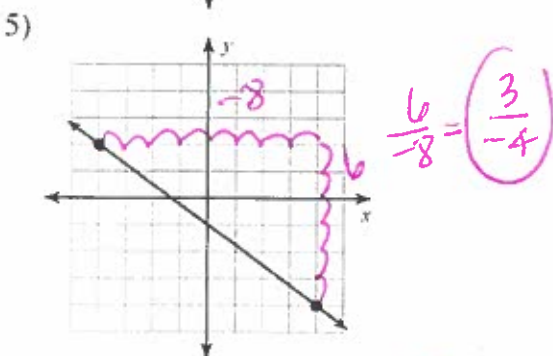
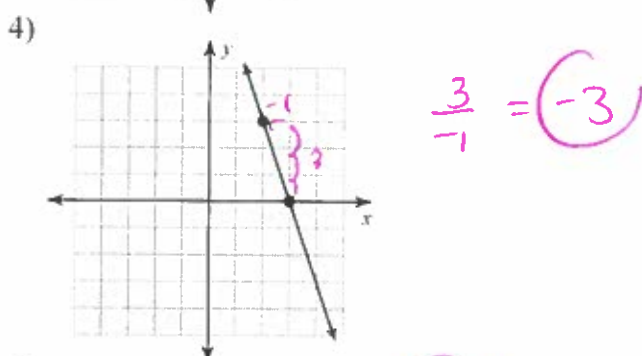
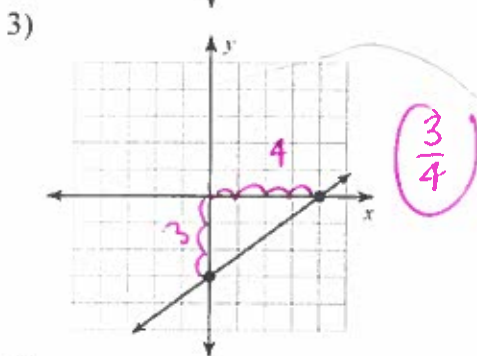
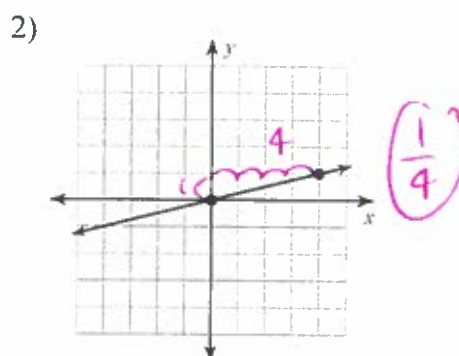
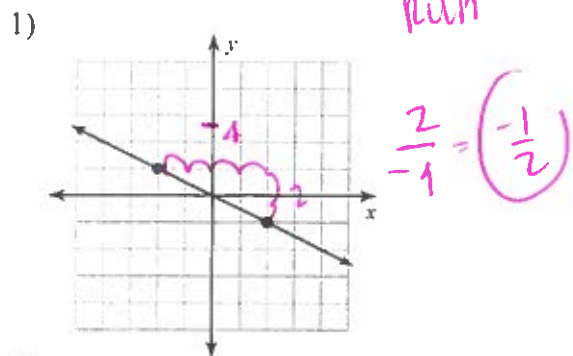


How to Determine Slope and Rate of Change

Find the slope of each line. *Rise*
Run



Find the slope of the line through each pair of points.

11) $(-3, 3), (-5, 7)$

$$\frac{7-3}{-5-(-3)} = \frac{4}{-2} = (-2)$$

12) $(20, 12), (6, 8)$

$$\frac{8-12}{6-20} = \frac{-4}{-14} = \left(\frac{2}{7}\right)$$

13) $(16, 1), (-4, 6)$

$$\frac{6-1}{-4-16} = \frac{5}{-20} = \left(-\frac{1}{4}\right)$$

14) $(-1, -1), (9, 9)$

$$\frac{9+1}{9-(-1)} = \frac{10}{10} = (1)$$

15) $(20, 10), (0, 5)$

$$\frac{5-10}{0-20} = \frac{-5}{-20} = \left(\frac{1}{4}\right)$$

16) $(1, -9), (9, -2)$

$$\frac{-2-(-9)}{9-1} = \left(\frac{7}{8}\right)$$

$\frac{\Delta y}{\Delta x}$

1.

x	y
-2	3
-1	5
0	7
1	9
2	11

$m = \frac{2}{1} = (2)$

2.

x	y
-3	5
-2	2
-1	-1
0	-4
1	-7

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

3.

x	y
1	-17
2	-13
3	-9
4	-5
5	-1

$m = \frac{4}{1} = (4)$

4.

x	y
-6	-4
-5	-9
-4	-14
-3	-19
-2	-24

$m = \frac{-5}{1} = (-5)$

5.

x	y
0	3
1	5.5
2	8
3	10.5
4	13

$m = \frac{2.5}{1} = (2.5)$

6.

x	y
-2	5
-1	4.75
0	4.5
1	4.25
2	4

$m = \frac{-0.25}{1} = (-0.25)$

7.

x	y
-2	$\frac{2}{5}$
-1	$\frac{4}{5}$
0	$\frac{6}{5}$
1	$\frac{8}{5}$

$m = \frac{\frac{2}{5}}{1} = \left(\frac{2}{5}\right)$

8.

x	y
-1	1
1	2
3	3
5	4
7	5

$m = \left(\frac{1}{2}\right)$

Rate of Change

Find the rate of change for each graph or table. Then in a **complete sentence**, explain what the rate of change means in that problem.

1. The table shows the linear relationship between the balance of a student's savings account and the number of weeks he has been saving.

$$\frac{\Delta y}{\Delta x} = \frac{7}{1}$$

+1 Savings Account

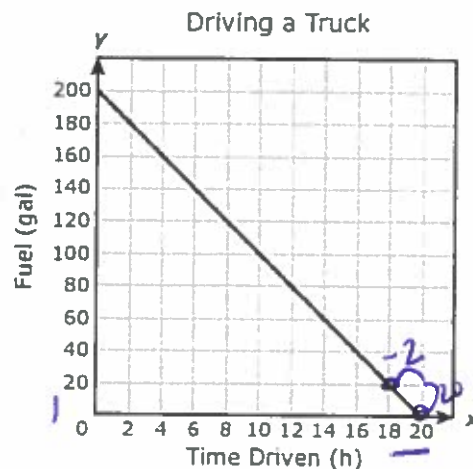
Week	0	1	3	6	8	13
Balance (dollars)	32	39	53	74	88	123

What is the rate of change: 7

What does the rate of change represent in this situation?

Every week he gains \$7 in his balance of bank acct.

2. The graph below shows the relationship between the number of gallons of fuel remaining in a truck and the number of hours the truck has been driven.



$$\frac{\Delta y}{\Delta x} = \frac{20}{-2} = -10$$

What is the rate of change: -10

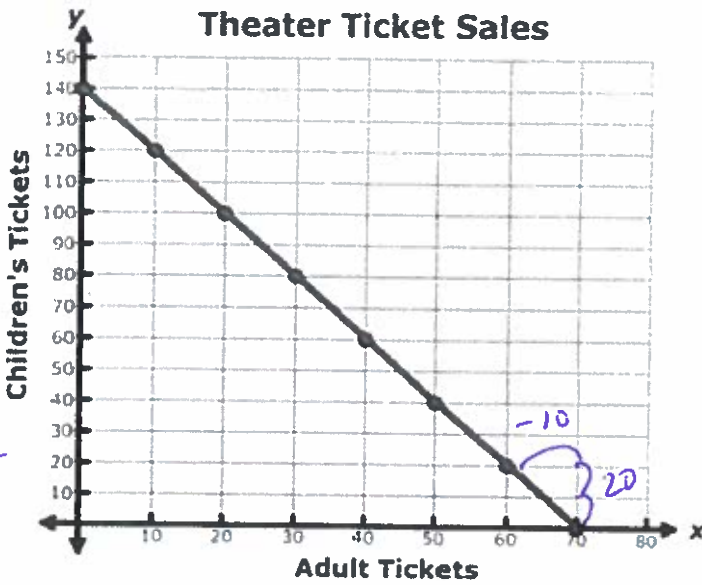
What does the rate of change represent in this situation?

every hour you drive you loose 10 gallons of fuel.

3.

Rise
Run

$$\frac{20}{-10} = -2$$



What is the rate of change:

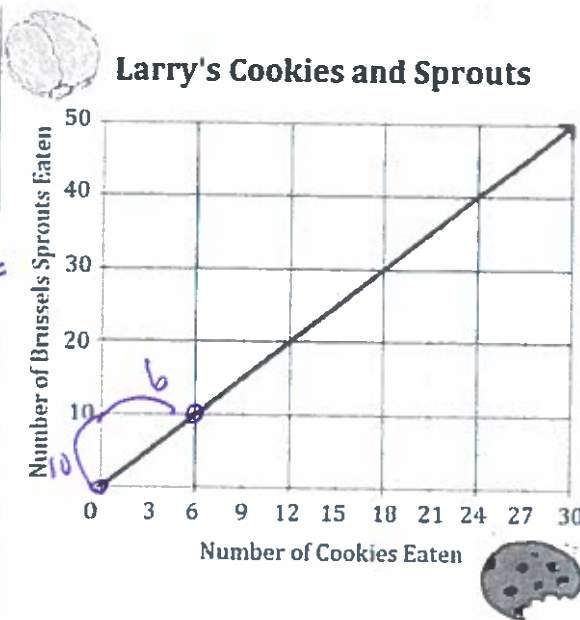
-2

What does the rate of change represent in this situation?

For every adult ticket sold, you loose 2 children's tickets

4.

$$\frac{10}{6} = \frac{5}{3} = 1.\bar{6}$$



What is the rate of change:

$\frac{5}{3} \approx 1.\bar{6}$

What does the rate of change represent in this situation?

For every cookie eaten Larry eats 1.6 brussel sprouts.

$$\begin{array}{r} 1714 \\ 2 \overline{) 3428} \\ \underline{2} \\ 14 \\ \underline{14} \\ 28 \\ \underline{28} \\ 0 \end{array}$$

$$\begin{array}{r} 1714 \\ + 2,828 \\ - 9,378 \\ \hline 3,428 \end{array}$$

5.

Months of Service	2	4	6	8	10	12
Total Cost (dollars)	9,378	12,806	16,234	19,662	23,090	26,518

$$+2$$

$$+3,428$$

$$\$1,714$$

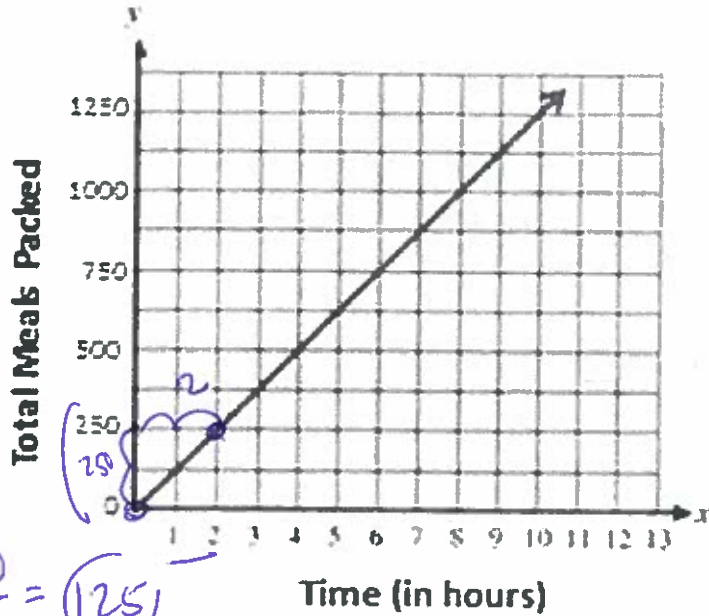
$$\frac{3428}{2} = 1714$$

What is the rate of change: \$1,714

What does the rate of change represent in this situation?

Every month of service costs \$1,714.

6.



$$\frac{250}{2} = 125$$

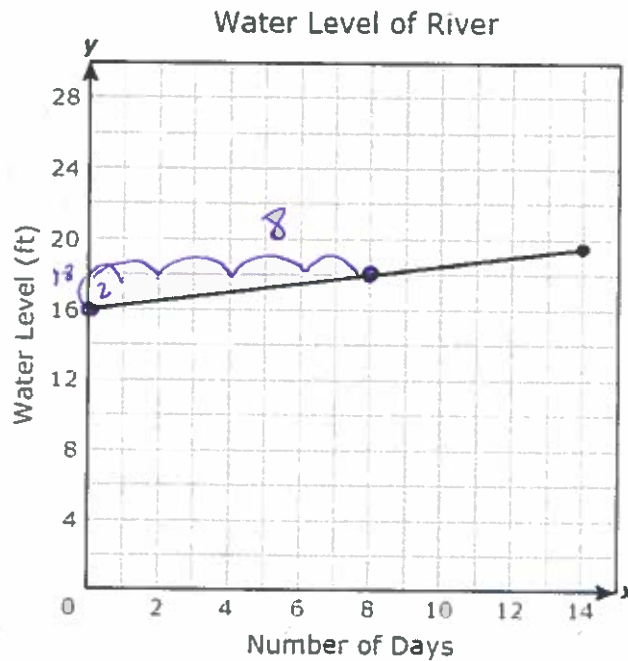
What is the rate of change:

125

What does the rate of change represent in this situation?

In 1 hour, you can pack 125 meals.

7. The water level of a river was measured each day during a two-week period. The graph models the linear relationship between the water level of the river in feet and the number of days the water level was measured.



$$\frac{2}{8} = \frac{1}{4}$$

What is the rate of change: $\frac{1}{4}$ or .25

What does the rate of change represent in this situation?

Every day the water level rises .25 feet.

8. The table shows the playing time in minutes of high-definition videos and the file size of these videos in megabytes (MB).

Videos

Playing Time, x (min)	File Size, y (MB)
0.5	60
1.5	180
2	240
4.5	540
5	600

What is the rate of change:

120

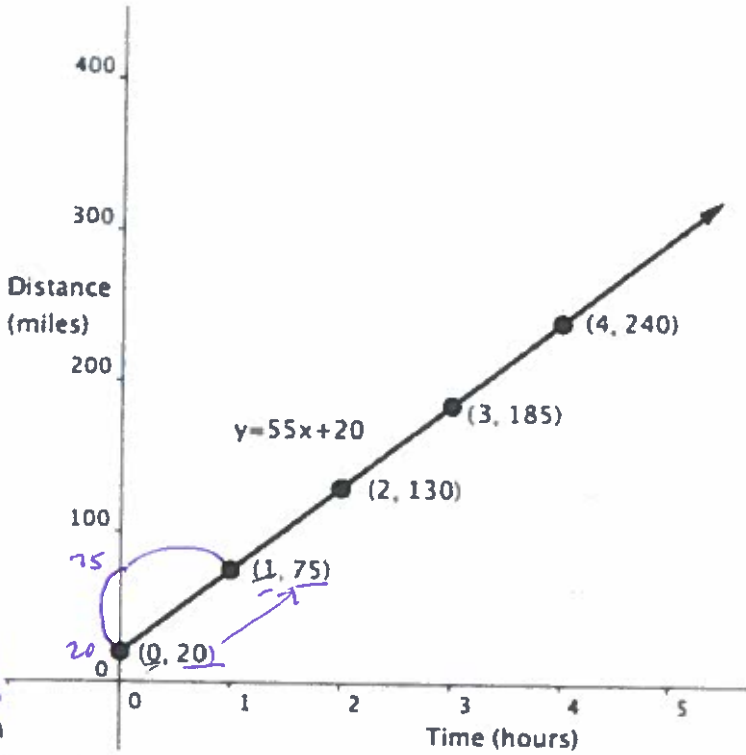
What does the rate of change represent in this situation?

Every minute of playing time takes 120 MB

+1 } +120

$$\frac{120}{1} = 120$$

9.



What is the rate of change:

55

What does the rate of change represent in this situation?

Every hour you go 55 miles

$$\frac{55}{1} = 55$$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{75 - 20}{1 - 0} = 55$$