

Algebra 1 Chapter 3 Review Packet

Vocabulary Words to Review: Arithmetic Sequence, common difference, dilation, linear equation, parent function, rate of change, reflection, translation, term, sequence, standard form, slope intercept form, x-intercept, y-intercept

For Questions 1 and 2, find the slope of the line passing through each pair of points. If the slope is undefined, write *undefined*.

1) (2, 5) and (3, 6) 2) (6, -4) and (-3, 7) 3) (2, 10) and (2, 1)

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

$\frac{1}{1} = 1$
 $\frac{11}{-9}$
 $\frac{9}{0} \rightarrow \text{undefined}$

4) Write a linear equation in slope intercept form to model the situation: A telephone company charges \$28.75 and \$0.10 a minute for long distance calls.

$y = 0.10x + 28.75$

5) In 1972, federal vehicle emission standards allowed 3.4 hydrocarbons released per mile driven. By 2007, the standards allowed only 0.8 hydrocarbons per mile driven. What was the rate of change (in hydrocarbons per year) from 1972 to 2007?

$\frac{0.8 - 3.4}{2007 - 1972} = \frac{-0.07}{1}$

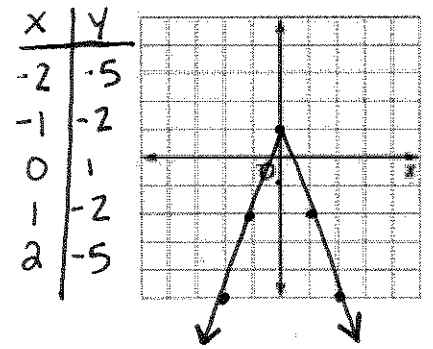
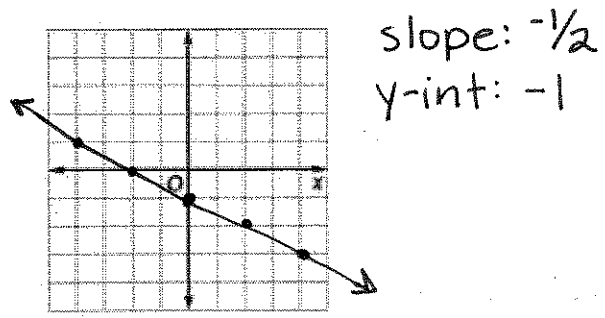
6) Describe the transformation in $g(x) = 0.5(x - 3)$ as it relates to the graph of $f(x) = x$.

Vertical Translation: Right 3
Dilation: compressed

7) Describe the transformation in $h(x) = -3|x| + 1$ as it relates to the graph of $f(x) = |x|$. Then, graph it.

Vertical Translation: Up 1
Reflection: over x-axis
Dilation: Stretch

8) Graph $y = -\frac{1}{2}x - 1$. State the slope and y-intercept.

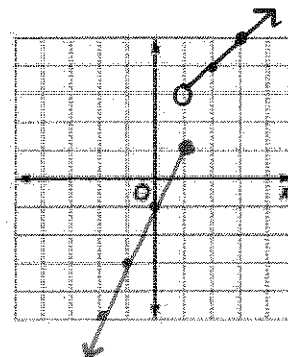


9) Graph

$$g(x) = \begin{cases} x+2 & \text{if } x > 1 \\ 2x-1 & \text{if } x \leq 1 \end{cases}$$

x+2	
x	y
1	3
2	4
3	5
4	6

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



10) Determine whether the sequence -10, -7, -4, -1, is an arithmetic sequence. If so, state the common difference.

Yes; common difference = 3

11) Write an equation for the nth term of the sequence 12, 5, -2, -9, ...

$$a_1 = 12$$

$$d = -7$$

$$a_n = a_1 + (n-1)d$$

$$a_n = 12 + (n-1)(-7)$$

$$a_n = 12 - 7n + 7$$

$$a_n = -7n + 19$$

12) In 2005, MusicMart sold 14,550 CDs. In 2010, they sold 12,000 CDs. What is the rate of change (in CDs per year) in the number of CDs sold?

$$\frac{12,000 - 14,550}{2010 - 2005} = \frac{-2550}{5} = -510$$

13) What is the slope-intercept form of the equation of the line with a slope of $\frac{1}{4}$ and y-intercept at the origin?

$$y = \frac{1}{4}x + 0 \quad (\text{or } y = \frac{1}{4}x)$$

For questions 15 and 16, use the following information.

The number of students seated in each row of an auditorium form an arithmetic sequence, as shown in the table.

$$a_n = a_1 + (n-1)d$$

Row	1	2	3	4
Number of Students	4	7	10	13

14) How many students are seated in the 15th row?

~~46~~

46 students

15) Write a formula that can use used to find the number of students seated in any given row?

$$a_1 = 4$$

$$d = 3$$

$$a_n = 4 + (n-1)(3)$$

$$a_n = 4 + 3n - 3$$

$$a_n = 3n + 1$$

$$a_n = 3n + 1$$

16) Find the x-intercept and y-intercept of the equation $x - 2y = 9$.

y-int: $0 - 2y = 9$

$$-2y = 9$$

$$y = 9/-2$$

x-int: $x - 2(0) = 9$

$$x = 9$$