

Name: _____

Block: _____

This IS homework. You need to submit the solved practice test (see pages 2 and beyond) on the day of the test.

Algebra 2: Relations, Functions, Graphs Review for test

Review chapter 3 in the book.

Make sure you are familiar with all the material in the review sheet (given here as small image).

Terms: Chapter 3. Relations, functions, and graphs
(Focus on linear equations and straight-lines)

Relation: Ordered pair
 Domain: All possible input values
 Range: All possible output values

Function: A relation with one output for each input
Vertical line test

Linear equations (straight lines):

1. No product of variables.
2. No variable has a power greater than 1.
3. No variable in the denominator.

Slope:

$$m = \frac{\text{rise}}{\text{run}} = \frac{(y_2 - y_1)}{(x_2 - x_1)}$$

Horizontal line slope: 0
Vertical line slope: undefined

Slope-intercept form	$y = mx + b$	m is slope b is y-intercept
Point-slope form	$(y - y_1) = m \cdot (x - x_1)$	m is slope Line contains point (x_1, y_1)
Two points form	$(y - y_1) = \left(\frac{y_2 - y_1}{x_2 - x_1}\right) \cdot (x - x_1)$	Line contains point (x_1, y_1) and (x_2, y_2)
Standard form	$Ax + By + C = 0$	Slope is $m = -\frac{A}{B}$, if $B \neq 0$

Parallel lines: Equal slope: $m_2 = m_1$, different intercept
Perpendicular lines: $m_2 = -\frac{1}{m_1}$

More on functions

One-to-One function: One input for each valid output
Horizontal line test

Function composition: $f(g(x))$; $(f \circ g)(x)$

Algebra 2: Relations, Functions, Graphs
PRACTICE test

There are **20 questions** in this test, each worth **2pts**.

There is **1 additional** extra-credit questions, worth **1pt**.

You have **30 minutes** to complete the test (more if you have accommodations).

=== Start of test

For each of the following, choose the most specific name from "Relation", "Function", or "1-to-1 function":

1) (Monday, Block2) , (Monday, Block3) , (Monday, Block1) , (Monday, Block4)

- a) Relation b) Function c) 1-to-1 function

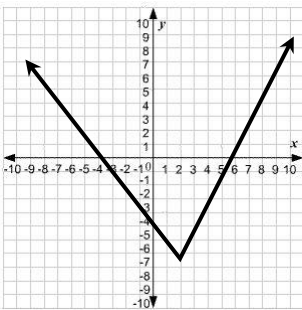
2) (Block2,Monday) , (Block2, Tuesday) , (Block2, Thursday)

- a) Relation b) Function c) 1-to-1 function

3) (CS, Block2) , (APUSH,Block3) , (Geometry, Block4)

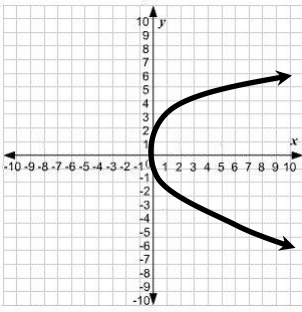
- a) Relation b) Function c) 1-to-1 function

4)



- a) Relation b) Function c) 1-to-1 function

5)



a) Relation

b) Function

c) 1-to-1 function

===

Find the equation for the following lines:

5) With slope = 4 and x-intercept=3. Give your result in slope-intercept form.

6) With slope = 4 and y-intercept=3. Give your result in slope-intercept form.

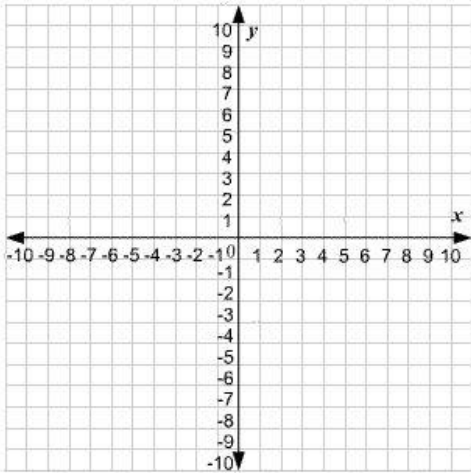
7) Through (3,1) and (7,9). Give your result in slope-intercept form.

8) Find the slope and y-intercept of a line with equation $6x+2y=24$.

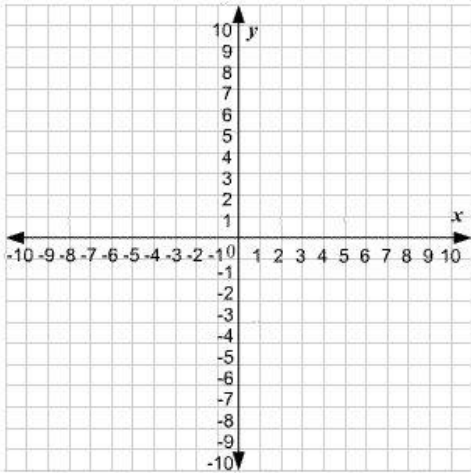
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Sketch the graph of each line

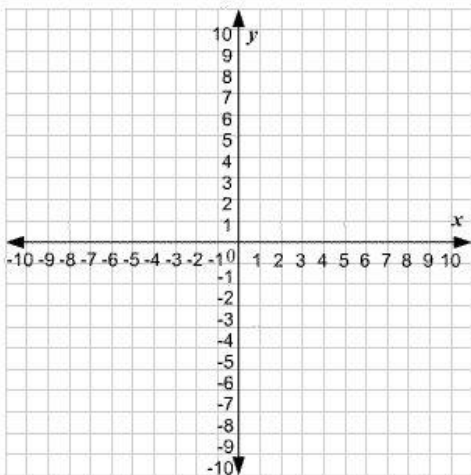
9) $y = 3$



10) $y = 5 - x$



11) $x + 2y = 4$



===

12) Is the following equation linear $(y - 3x) \cdot (3x - y) = 3x - 3y + 1$?

13) What is the slope of the line going through the points $(3, -1)$ and $(1, -3)$?

14) What is the slope of the line given by $5x - 2y + 9 = 27$?

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Given the following definitions:

$$f(x) = \frac{x}{2} - 1, \quad g(x) = x \cdot x + 2, \quad h(x) = |x - 5|$$

Find the following:

15) $f(6)$

16) $g\left(\frac{1}{2}\right)$

17) $f(f(g(2)))$

18) $h(-1)$

19) $f(4x + 2)$

20) $(g \circ f)(x)$

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Extra-credit

21) A square has two of its adjacent corners at coordinates $(0,2)$ and $(5,0)$. The sides of the square have slopes denoted as m_1, m_2, m_3, m_4 .

What is the value of the product $(m_1 \cdot m_2 \cdot m_3 \cdot m_4)$?

=== End of test