

Writing Linear Equations

In This Unit:

1. Domain and Range
2. Relation and Functions
3. Slope
4. Interpreting Distance Over Time

Bellwork

01/16/2012

Solve the compound inequality. Graph the solution.

1. $-20 \leq -6m - 2 \leq 58$



2. $-5 + 2n \geq -11$ or $-6 - 10n > 44$



Lesson 3.1

Domain and Range

What You Need to Know:

When given a point (x,y) the x values are the domain [input] and the y values are the range [output].

When listing domain and range, don't repeat a number in the domain or range!

Example: $(1,2), (1,2), (1,2), (2,3), (3,4)$
Domain: $\{1,2,3\}$
Range: $\{2,3,4\}$

Domain and Range

Correctly list the domain and range of each relation.

x	y
-1	-5
1	-1
3	3
5	7

Domain: _____

Range: _____

x	y
3	9
2	4
2	-8
-7	-7
-1	-7
0	-5

Domain: _____

Range: _____

Lesson 3.2 Relations and Functions

What You Need to Know:

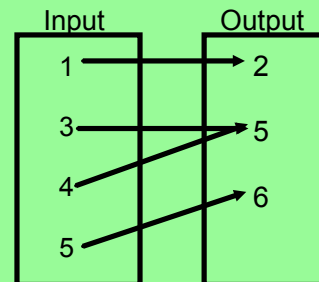
There are two ways to tell if a relation is a function:

Input Test Vertical Line Test

To Be a Function:

Input Test:

No x-value can have more than 1 y-value.



Vertical Line Test:

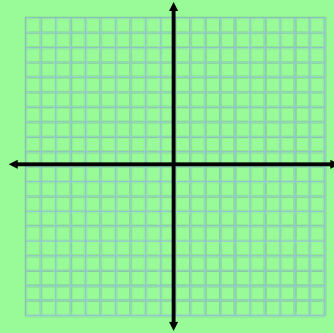
Vertical lines only pass through one point.

Relations and Functions

Use both methods to show whether the relation is a function.

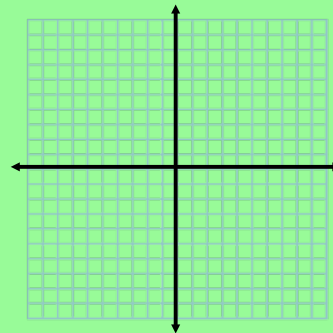
$(-2,4), (1,3), (0,4)$

INPUT	OUTPUT



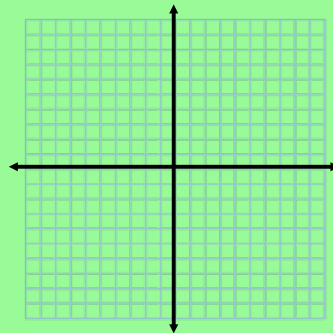
$(5,5), (4,4), (3,3), (4,5)$

INPUT	OUTPUT



$(-4,0), (-7,0), (10,0), (9,1)$

INPUT	OUTPUT



Homework Assignment

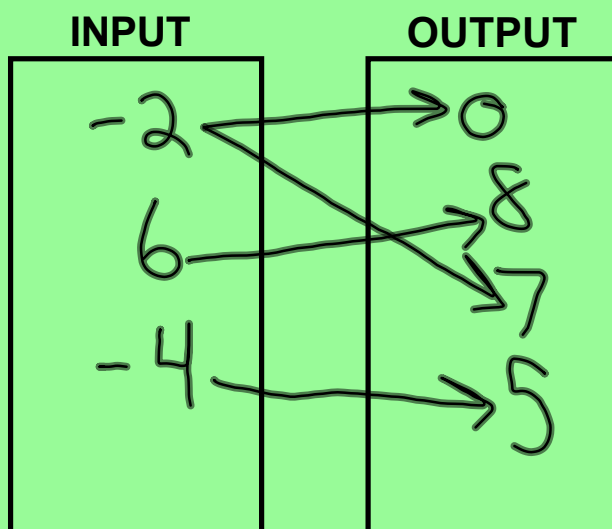
Worksheet 3.1/3.2 "Relations and Functions"

Bellwork

01/17/2012

Tell whether the relation is a function using the input test.

1. $(-2,0)$, $(6, 8)$, $(-2, 7)$, $(-4,5)$



Not a
function!

Lesson 3.3 Slope

What You Need to Know:

Slope is $\frac{\text{RISE}}{\text{RUN}}$.

****Slope Formula:** $\frac{y_2 - y_1}{x_2 - x_1}$ **

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

Slope should always be in simplest form!

↑
fraction

When referring solely to slope, it should be represented as a fraction.

When finding slope:

$$\frac{0}{4}$$

Zero Slope
[horizontal]

$$\frac{4}{0}$$

Undefined Slope
[vertical]

Slope

Find the slope between the two points. Tell whether the line is rising, falling, horizontal, or vertical.

$$\begin{array}{c} x_1, y_1, x_2, y_2 \\ (2, 4), (5, 2) \\ \uparrow \quad \uparrow \quad \downarrow \quad \downarrow \\ \text{---} \end{array}$$

$$\frac{2-4}{5-2} = \frac{-2}{3}$$

$$\frac{4-2}{2-5} = \frac{2}{-3}$$

$$\begin{array}{c} x_1, y_1, x_2, y_2 \\ (2, -5), (2, 4) \\ \uparrow \quad \uparrow \quad \downarrow \quad \downarrow \\ \text{---} \end{array}$$

$$\frac{4 + (+5)}{2-2} = \frac{9}{0} = \text{undefined}$$



$$\begin{array}{c} x_1, y_1, x_2, y_2 \\ (4, 1), (6, 7) \\ \uparrow \quad \uparrow \quad \downarrow \quad \downarrow \\ \text{---} \end{array}$$

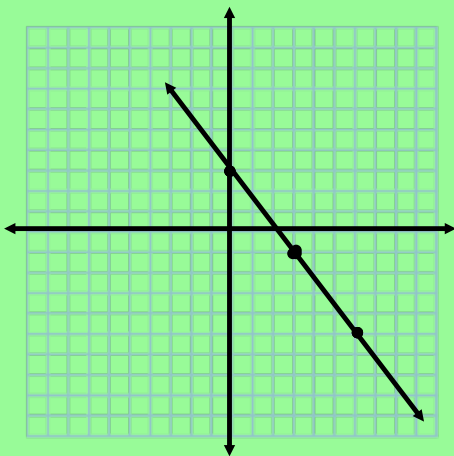
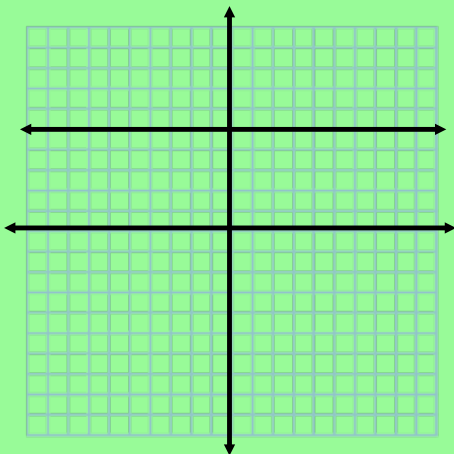
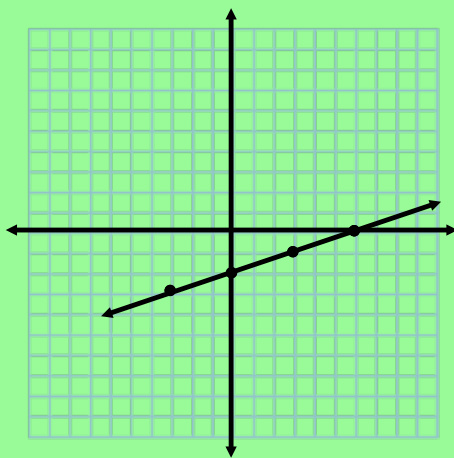
$$\frac{7-1}{6-4} = \frac{6}{2} = \frac{3}{1}$$

$$\begin{array}{c} x_1, y_1, x_2, y_2 \\ (2, -3), (-4, -3) \\ \uparrow \quad \uparrow \quad \downarrow \quad \downarrow \\ \text{---} \end{array}$$

$$\frac{-3 + (+3)}{-4 + 2} = \frac{0}{-2} = 0 \quad \longleftrightarrow$$

Slope Cont.

Find the slope of the line.



Lesson 3.4

Interpreting Distance Over Time

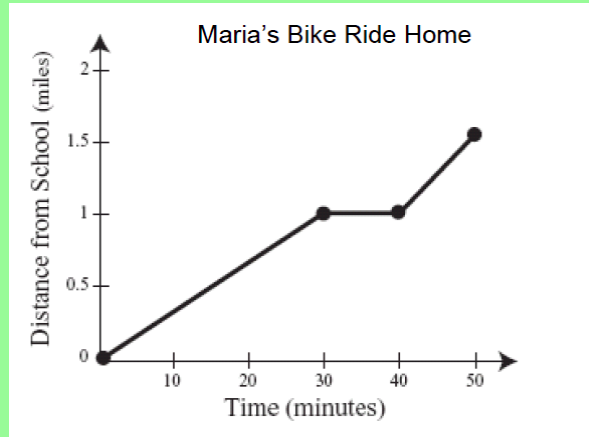
What You Need to Know:

Carefully read all directions when given a diagram.

Be sure to check the units in which the problem is written, and familiarize yourself with the axis'.

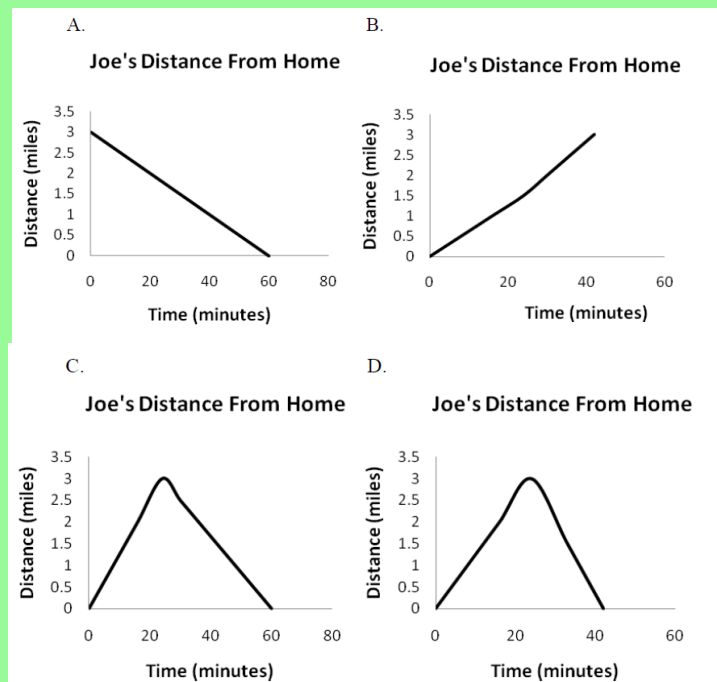
Interpreting Distance Over Time

Maria rode her bike home from school. The following graph represents her distance over time.



Describe Maria's ride home as distance over time. Be sure to include any change in speed during the bike ride.

Joe ran from his home to school at a constant speed. He immediately turned around and ran back home, but at a slower constant speed. Joe ran along a straight path to and from school. Which graph best represents Joe's distance from his home over time?



Homework Assignment

Worksheet "Slope and Graph Interpretations"