

Algebra/Geometry Institute Summer 2005

Graphing Linear Functions

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School: Solomon Middle School
Greenville, MS 38701
Grade Level: 7



1 Teaching objective(s)

NCTM Standards

Understand patterns, relations, and functions

- *The student will represent, analyze, and generalize a variety of patterns with tables, graphs, words, and when possible, symbolic rules.*
- *The student will identify functions as linear.*

Institute Content Based on MS Framework

Recognize, create, extend, and apply patterns, relations and functions and their applications.

- *The student will recognize and continue a number pattern.*
- *The student will complete a function based on a given rule*
- *The student will apply the principles of graphing in the coordinate system.*

2 Instructional Activities

(This lesson can be implemented in conjunction with graphing ordered pairs on a coordinate plane.)

Problem of the day

Find the missing number in the table. State a rule for finding the missing value.

X	Y
3	1
	2
	0
-1	-3
	-4

The teacher will display the problem of the day on the overhead. The teacher will ask a student to identify the pattern in the problem of the day.

The student will explain the pattern in the problem of the day.

The teacher will tell the students, “Today we will learn about graphing linear functions”. We will learn how to recognize patterns in a table, and graph the number pattern which is called a function on a coordinate plane. We will also learn how to identify a linear function. The teacher will tell the students that recognizing the pattern is the first step in understanding linear functions. The teacher will tell the students that in a linear function you have an input, an output, and a function rule.

The teacher will ask the students, “What is an input?” “What is an output?” and “What is a function?”

The student will tell the teacher in their own words or give an example(s) of an input, an output and a function?

The teacher will ask the students to identify the input, output and the function in the problem of the day.

The students will identify the input, output, and the type of function used in the problem of the day.

The teacher will tell the students that in a linear function the input can be represented as an x or y variable and the output can also be represented as an x or y variable. The teacher will display the problem of the day table and graph on the overhead projector.

The teacher will ask the students, “Which number line represents the x -axis?”

The students will identify the number line that represents the x -axis.

The teacher will draw the x -axis on the overhead transparency.

The teacher will ask the students, “Which number line represents the y -axis?”

The students will identify the number line that represents the y -axis.

The teacher will draw the y -axis on the overhead transparency.

The teacher will demonstrate how to graph the linear functions on the overhead projector. The teacher will call upon a student to graph the next set of linear functions on the overhead projector.

The students will graph the next set of linear functions listed on the Problem of the Day Table and Graph Transparency on the overhead projector.

The teacher will connect the points on the overhead. The teacher will ask the students “What do you notice about the graph of linear functions?”

The students will state their observation.

The teacher will tell the students that graphing linear functions forms a straight line and that linear contains the word line.

The teacher will distribute the in-class activity “Graphing Linear Functions”. The teacher will instruct the students to use a ruler to draw the x-axis and the y-axis on the coordinate plane. The teacher will instruct the students to complete the in-class assignment.

The students will draw the x and y axis on the coordinate plane using the ruler. The students will complete the in-class assignment “Graphing Linear Functions”.

3 Materials and Resources

Overhead projector

Dry Erase Markers

Ruler

The Problem of the Day

The Problem of the Day Table and Graph Transparency

Graphing Linear Function Handouts

Susan Friel, Sid Rachlin, Dot Doyle, Claire Nygard, David Pugalee, Mark Ellis, grades 6-8 editor, Navigating Through Algebra in Grades 6-8(*The National Council of Teachers of Mathematics, Inc., 2004*)

4 Assessment

The teacher will observe the students during work time. The teacher will observe the students to ensure they are applying the principal of graphing in the coordinate system.

Performance Assessment - the teacher will grade the Graphing Linear Functions Activity.

Problem of the day

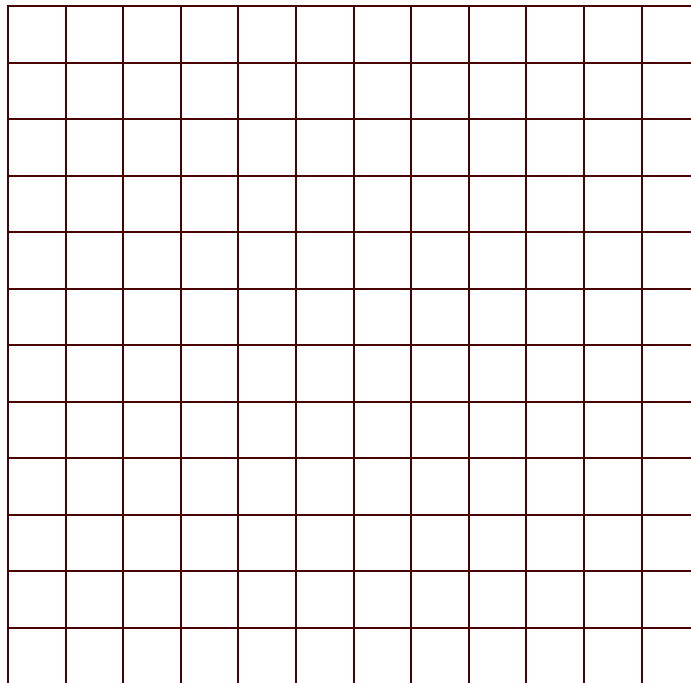
Find the missing number in the table. State a rule for finding the missing value.

X	Y
3	1
	2
	0
-1	-3
	-4

Problem of the day

Find the missing number in the table. State a rule for finding the missing value. Graph the linear functions in the coordinate plane below.

X	Y
3	1
	2
	0
-1	-3
	-4



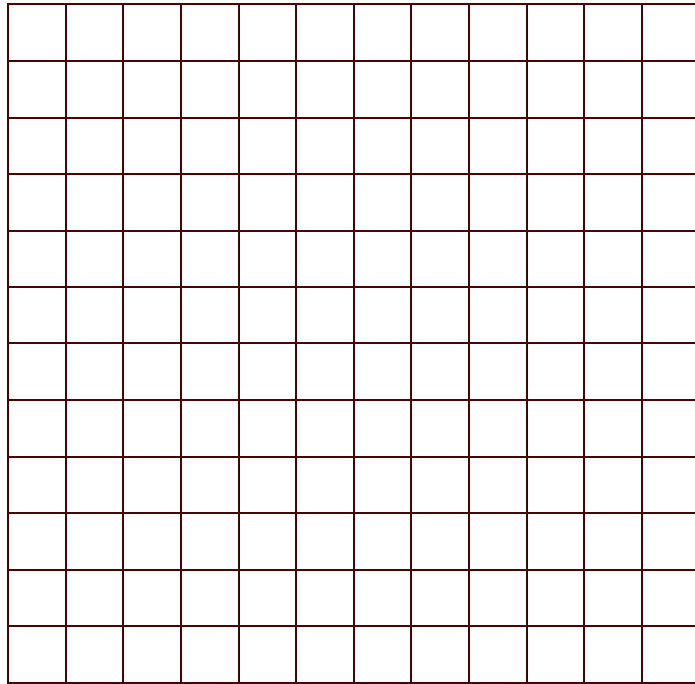
Problem of the Day Table and Graph Transparency

Graphing Linear Functions

Name _____

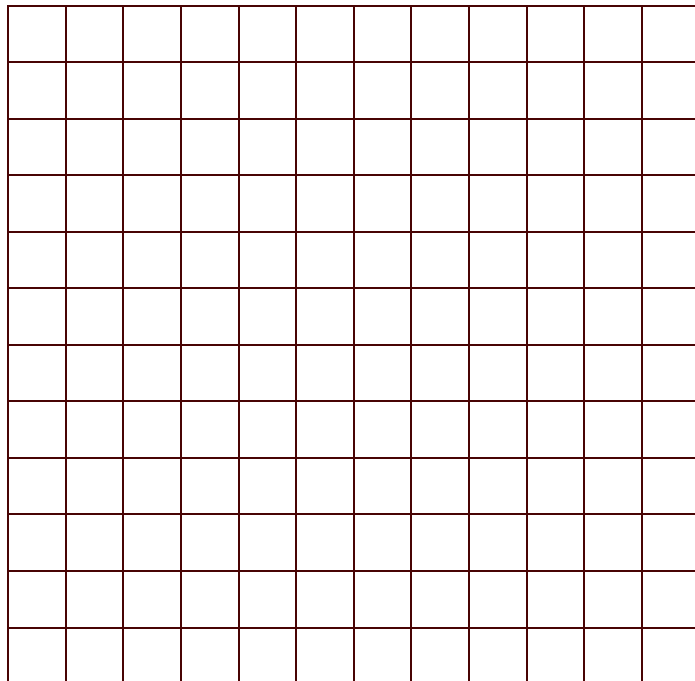
Using a ruler, draw the x and y axis on the coordinate planes below. Find the missing value in each table. Write the rule for each linear function. Graph the linear functions in the coordinate plane to the right of each table; then connect each point.

X	Y
1	-2
2	-1
0	
-2	
-1	



Write the rule _____

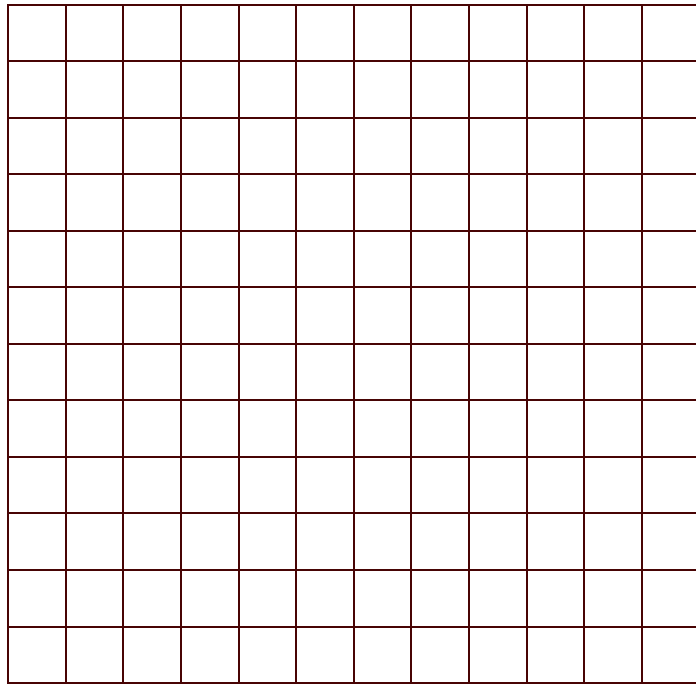
X	Y
	2
2	4
0	0
-3	
-4	



Write the rule _____

X	Y
2	
4	-4
0	
-1	
-3	3

Write the rule _____



X	Y
3	1
4	
2	
-1	
-2	-4

Write the rule _____

