

BALTIMORE COUNTY PUBLIC SCHOOLS

OFFICE OF MATHEMATICS

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KINESTHETIC LESSON

GRAPHING EQUATIONS

Written by:

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Course: Pre-Algebra

Topic: Graphing equations

Instructional Objective: By the end of this lesson, the student will be able to graph an equation by making a table.

Materials Needed: This lesson is most effective when there is a large (human-size) coordinate grid for the students to walk on. Possibilities include masking tape on the floor (use the tiles as guidelines) or my choice of masking tape on a large blue tarp. This can be folded and reused daily with no marks.

Drill: Complete the chart for the equation $y = 2x - 1$
(on overhead)

x	$y = 2x - 1$	y	(x, y)
-4			
-3			
-2			
-1			
0			
1			
2			
3			
4			
5			

ACTIVITY: The students will be asked to graph their points from the overhead on the mat. The students will check their answers by their formation of a line on the mat. Allow the students to discover their mistake (if any). If they do not form a perfect line, the one that is out of order will realize their answer was incorrect and will ask a peer for help.

If possible, have one additional student graph the same line on the chalkboard or overhead. This will be used later.

(Do not have the students take any notes during this time. Participation only!)

Ask the students: **What do you form?** (A line)

Tell the students: This is a linear equation because it forms a line.
Now we want to figure out the parts that make a linear equation.

Have one student walk to the next – **tell them:** You must stay on the lines, moving up then to the right/left.

Write on chalkboard (no note taking yet!)

This is known as slope – $\text{SLOPE} = \frac{\text{change in } y}{\text{change in } x}$

Note: Slope is introduced although is not the primary topic for today.

Discuss that here our slope is $2/1 = 2$.

Ask the students: Where is 2 in our equation? (The number in front of the x)
This is a good time to introduce the vocabulary “coefficient”.

Now ask: What is -1? Hint: What is y when $x = 0$?
This is the y-intercept.

Seated Instruction: Have each student graph the drill on graph paper. They will use their drill and the line drawn on the overhead or chalkboard earlier. Review the notes from the chalkboard so students can copy:

$$\text{SLOPE} = \frac{\text{change in } y}{\text{change in } x}$$

The form of a linear equation: $y = mx + b$

$$m = \text{slope} \quad b = \text{y-intercept}$$

Ask: On our graph is 2 the slope? Does your line cross the y-axis at -1 ?

Graph one of last night’s homework problems: Example: $y = 3x + 1$

What is your slope? Have students volunteer one of their coordinates from their problem and get on the mat. Check by walking person to person.

Where should your line cross the y-axis?

Have students sit down and check their own graph.
If this is right, your homework is right!

More Examples: Make a chart and graph. Maybe get back on mat! (if needed) Check your work by examining your slope and y-intercept.

a) $y = \frac{1}{2}x + 3$

b) $y = \frac{2}{5}x - 2$

c) $y = -2x + 1$

d) $y = x + 3$

e) $y = \frac{1}{3}x - 3$

CLOSURE:

(on overhead)

Exit Ticket

Complete the chart and graph the function $y = 2x - 3$
Be sure to choose at least 5 points.

x	$y = 2x - 3$	y	(x, y)

CLASSROOM DIAGRAM WITH BLUE MAP

