

GRAPHING LINEAR FUNCTIONS

- Focus:** Summarization of slope and y-intercept concepts
- Objective:** **Algebra I TEKS, Linear Functions #6**
The student understands the meaning of the slope and intercepts of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations.
- Terms:** Slope, y-intercept, x-intercept
- Set-Up:** Participants should be seated at tables in groups of 3-4.
- Materials:** Transparencies #13-14, Activities #13-14, Materials #1
- Prerequisites:** Graphing in coordinate plane, slope, y-intercept
- Procedure:** **Transparency #13: Graphing Linear Functions**
Transparency #14: Graphing Linear Functions
Activity #13: Graphing Linear Functions
Materials Sheet #1: Straight Lines for Graphs

Participants are to use the acetate straight lines from the previous activity (The Y-Intercept) to graph the functions. This activity may be used as a whole group activity with participants taking turns at the overhead graphing one of the functions and recording at least two labeled points through which it passed. The activity may also be used as a small cooperative group activity where the group members assist one another with the exercises.

Answers:

- | | |
|---------------|----------|
| 1. F, G, J, K | 8. A, J |
| 2. B, D, E | 9. C, M |
| 3. I, K | 10. B, N |
| 4. B, G | 11. L, P |
| 5. H, L | 12. D, K |
| 6. M, N, P | 13. C, P |
| 7. G, H | 14. B, C |

Emphasize Algebra I TEKS, Linear Functions #5

- 5.a. The student translates among numerical, algebraic, tabular, graphical, or verbal descriptions of linear functions.

Emphasize Algebra I TEKS, Linear Functions #6

- 6.e. The student graphs and writes equations of lines given characteristics, such as ... a slope and a y-intercept.
- 6.f. The student investigates, describes, and predicts the effects of changes in m and b on the graph of $y = mx + b$.

Activity #14: Identifying Linear Functions

Given a viewing window and the graph of a function, participants are to work in small groups to determine the rule. Emphasize that this activity was created to move students into the summarization stage of the algebraic representation level of the Learning Model. It allows students to make connections between the graphical and algebraic stages and approaches the concept of graphs of linear functions from two directions: (a) graph a line from a given function and (b) determine the function from a given graph of a line.

Answers:

- | | |
|----------------------|----------------------|
| 1. $Y = X + 2$ | 2. $Y = -2X - 1$ |
| 3. $Y = -(1/3)X + 1$ | 4. $Y = 3X - 2$ |
| 5. $Y = 0.5X - 1$ | 6. $Y = X + 1.5$ |
| 7. $Y = (2/3)X - 2$ | 8. $Y = -(3/2)X - 3$ |

Emphasize Algebra I TEKS, Linear Functions #5

- 5.a. The student translates among numerical, algebraic, tabular, graphical, or verbal descriptions of linear functions.

Emphasize Algebra I TEKS, Linear Functions #6

- 6.e. The student graphs and writes equations of lines given characteristics, such as two points, a point and a slope, or a slope and a y-intercept.

GRAPHING LINEAR FUNCTIONS

Graph each of the following linear functions. Record at least two labeled points through which the line passes.

1. $Y = X$

8. $Y = -2X - 3$

2. $Y = (1/2)X + 4$

9. $Y = -0.5X + 1$

3. $Y = (2/3)X - 1$

10. $Y = -(3/4)X - 1$

4. $Y = 0.25X + 3$

11. $Y = -4X + 2$

5. $Y = 3X - 5$

12. $Y = (-4/3)X - 7$

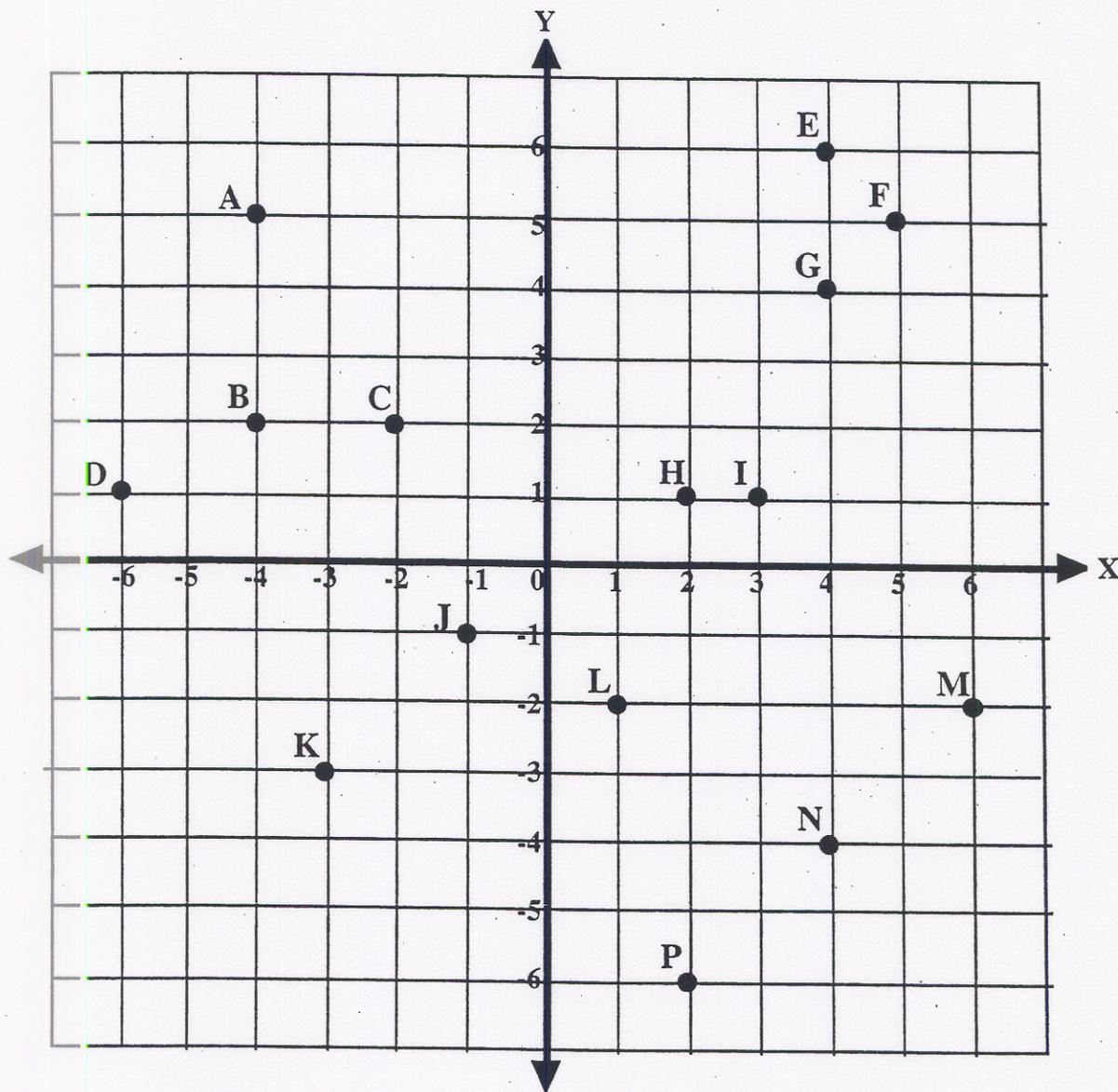
6. $Y = X - 8$

13. $Y = -2X - 2$

7. $Y = (3/2)X - 2$

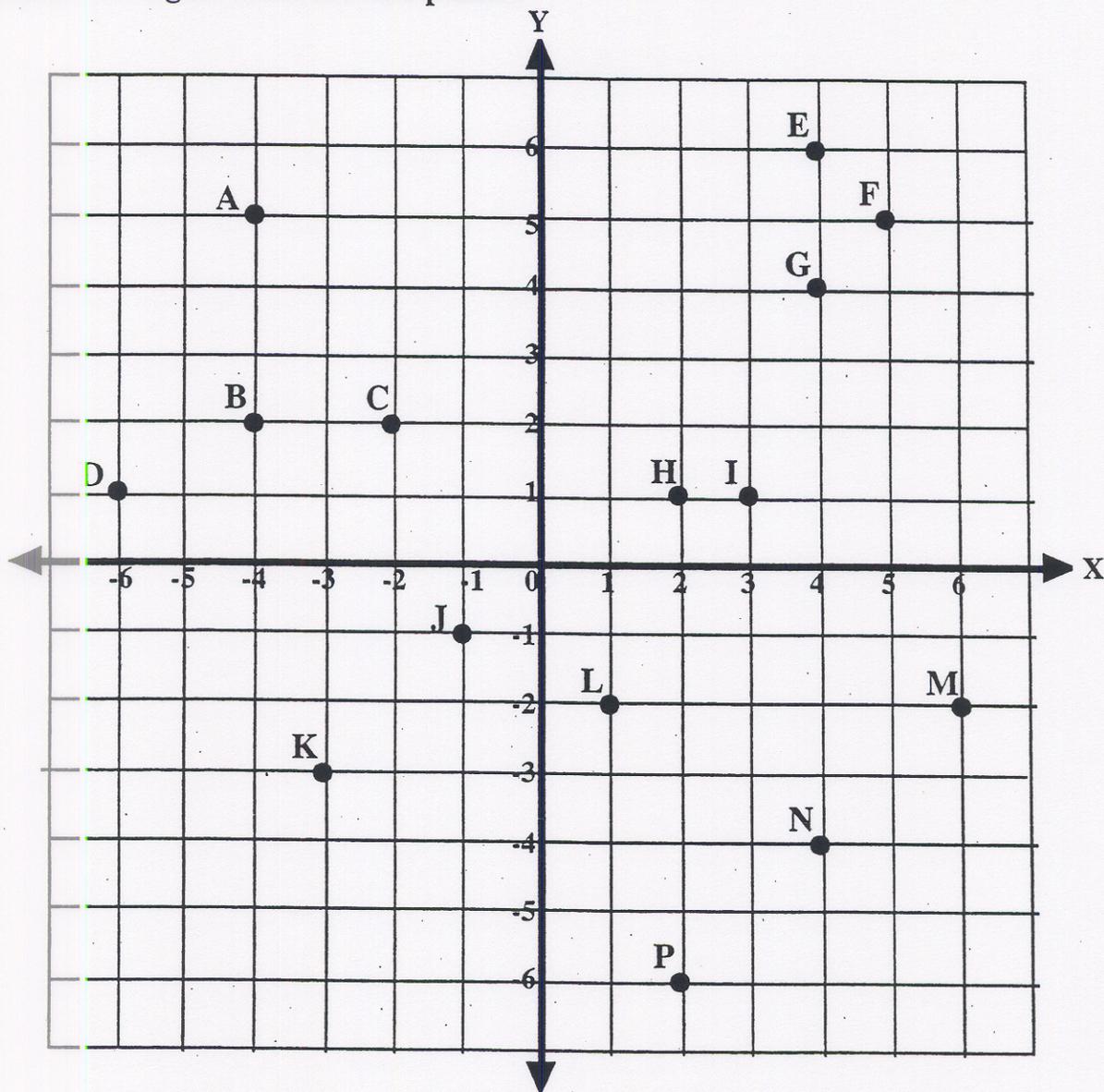
14. $Y = 2$

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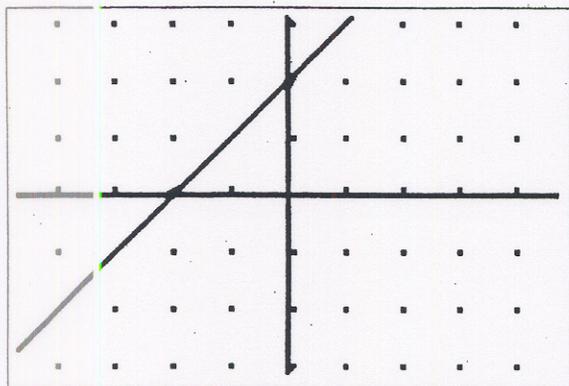
1. $Y = X$
2. $Y = (1/2)X + 4$
3. $Y = (2/3)X - 1$
4. $Y = 0.25X + 3$
5. $Y = 3X - 5$
6. $Y = X - 8$
7. $Y = (3/2)X - 2$

8. $Y = -2X - 3$
9. $Y = -0.5X + 1$
10. $Y = -(3/4)X - 1$
11. $Y = -4X + 2$
12. $Y = (-4/3)X - 7$
13. $Y = -2X - 2$
14. $Y = 2$

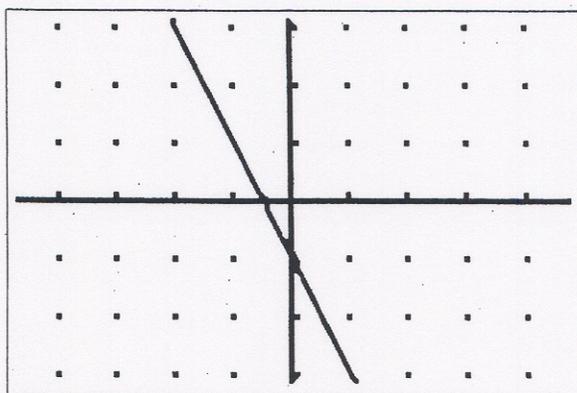
IDENTIFYING LINEAR FUNCTIONS

Each of the following functions is graphed in the calculator standard decimal window $(-4.7, 4.7, 1, -3.1, 3.1, 1)$. Determine the function whose graph “best fits” the given graph.

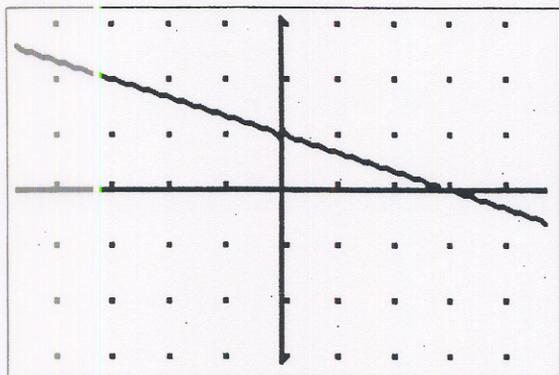
1.



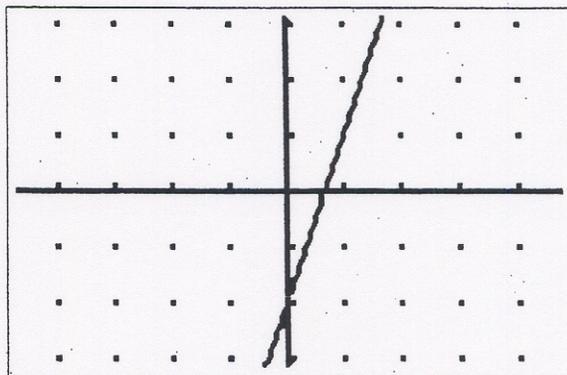
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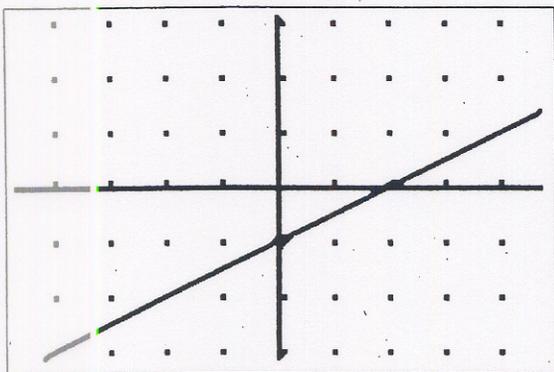
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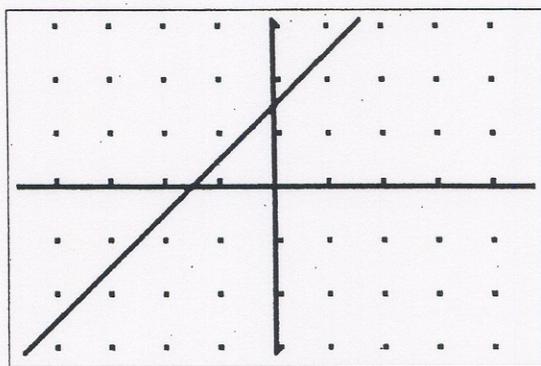
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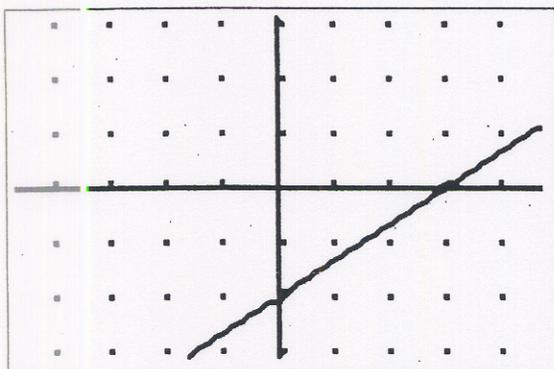
5.



6.



7.



8.

