

The Family of Lines

Homework PreAP

Name _____

Key

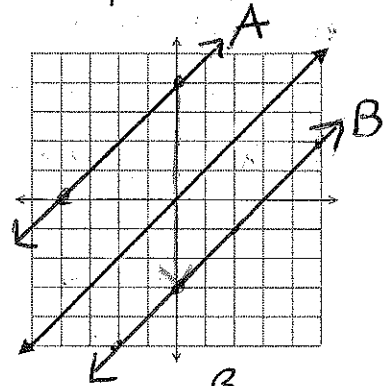
Date _____

2013 Period _____

For each problem graph lines A and B on the given graph, and answer the questions.

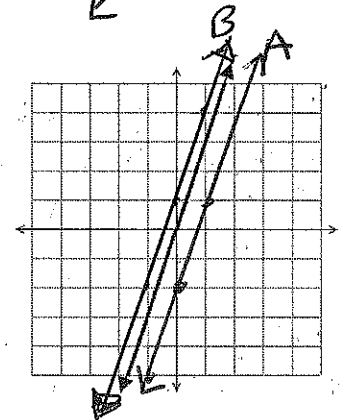
1. $y = x$ A: $y = x + 4$ B: $y = x - 3$

- What change to the original graph produced graph A?
Shifts up 4 b added 4
- What change to the original graph produced graph B?
Shifts down 3 b subtract 3
- If you had started with graph A, how would you then get to graph B? Subtract 7 from b
→ shift down 7 units



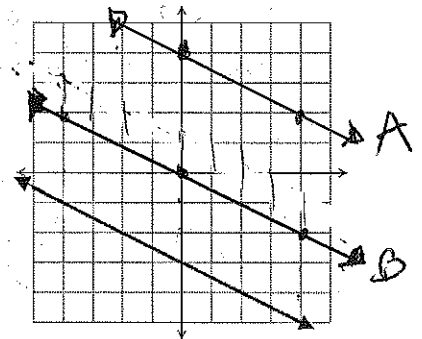
2. $y = 3x$ A: $y = 3x - 2$ B: $y = 3x + 1$

- What change to the original graph produced graph A?
shift down 2 units b subtract 2
- What change to the original graph produced graph B?
Shift up 1 unit b add 1
- If you had started with graph A, how would you then get to graph B? Shift up 3 units b add 3



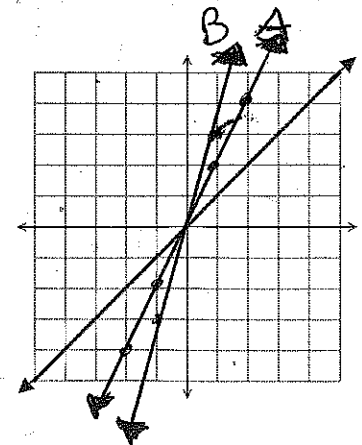
3. $y = -\frac{1}{2}x - 3$ A: $y = -\frac{1}{2}x + 4$ B: $y = -\frac{1}{2}x$

- What change to the original graph produced graph A?
Shift up 7 units b changed to 4
- What change to the original graph produced graph B?
Shift up 3 units b changed to 0
- If you had started with graph A, how would you then get to graph B?



4. $y = x$ A: $y = 2x$ B: $y = 3x$

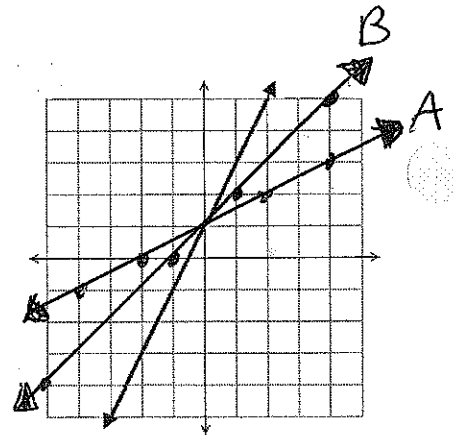
- What change to the original graph produced graph A?
m changed to 2, A is 2 times steeper
- What change to the original graph produced graph B?
m changed to 3, B is 3 times steeper
- If you had started with graph A, how would you then get to graph B?
multiply m by 3/2 or 1.5



changing the A or B y-intercept only shifts graph up or down

changing the m slope changes steepness of line

5. $y = 2x + 1$ A: $y = \frac{1}{2}x + 1$ B: $y = x + 1$



- a. What change to the original graph produced graph A?
 m changed to $\frac{1}{2}$; $m = \frac{1}{2}$
- b. What change to the original graph produced graph B?
 m changed to 1 ; $m = \frac{1}{2}$
- c. If you had started with graph A, how would you then get to graph B? $m = 2$ or double the slope

6. Write a sentence comparing the graphs of equations with a positive coefficient of x and graphs with a negative coefficient x .

Graphs with positive coefficients are increasing graphs and those with negative coefficients are decreasing graphs

7. What is the relationship among the following equations?

$y = 5x + 5$, $y = 2x + 5$, and $y = -2x + 5$

They have the same y -intercept \rightarrow all go through $(0, 5)$
 the first is the steepest the other two are the same steepness

8. What is the relationship among the following equations?

$y = 3x + 1$, $y = 2x + \frac{3}{3}$, and $y = 2x - \frac{-5}{5}$

They have the same y -intercept \rightarrow all go through $(0, 1)$
 First is the steepest, the other 2 are the same graph

9. What is the relationship among the following equations?

$y = \frac{2}{4}x - 2$, $y = \frac{1}{2}x - 2$, and $y = 0.5x - 2$

They have the same slope & same y -intercept
 so they are the same just the slope is in a different form

10. Given the equation $y = x + 5$, write an equation of a line if the graph has been shifted up 9.

$y = x + 14$

11. Given the equation $y = -2x + 3$, write an equation of a line if the graph has been shifted down 5.

$y = -2x - 2$

12. Given the equation $y = 3x$, write an equation of a line if the graph has been shifted down 15.

$y = 3x - 15$