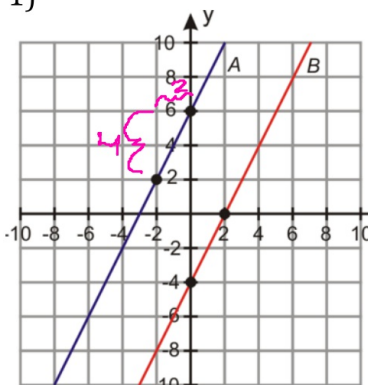## 6.1.1- Parallel Lines Investigation   Name: _____

1)

a. What are some observations you can make about lines A and B?

parallel - never cross

b. Write the equation of Line A in slope-intercept form:

$m = \frac{4}{2} = \frac{2}{1}$ $y = 2x + 6$

$y = mx + b$
slope y-int

c. Write the equation of Line B in slope-intercept form:

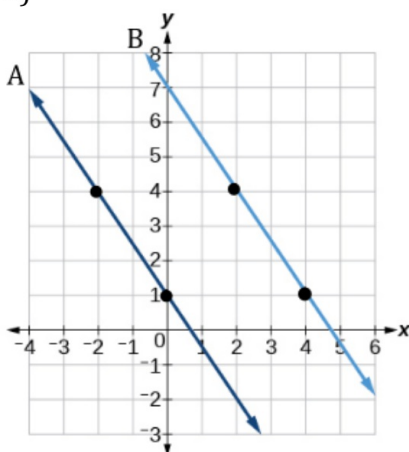$m = \frac{2}{1}$ $y = 2x - 4$

d. Compare and contrast the two equations you wrote above:

• different y-intercepts

• same slopes

2)

a. What are some observations you can make about lines A and B?

parallel ; negative slopes

b. Write the equation of Line A in slope-intercept form:

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

c. Write the equation of Line B in slope-intercept form:

$y = -\frac{3}{2}x + 7$

d. Compare and contrast the two equations you wrote above:
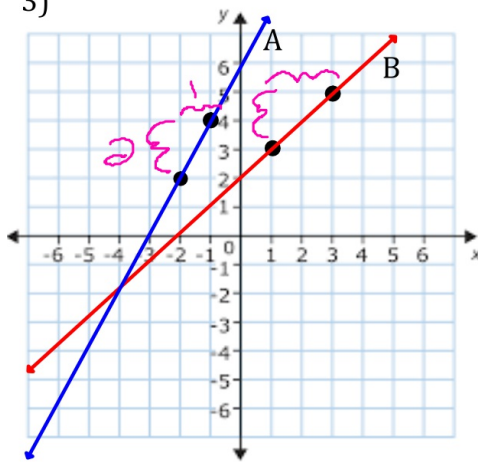
• different y-intercepts

• same slope

e. What can we conclude about the graphs of parallel lines?

same slope - never cross

f. What can we conclude about the equations of parallel lines in relation to y = mx + b?

the equations should have the same slope (m)

3)

a. What are some observations you can make about lines A and B?

they cross ; not parallel
y-intercepts are positive

b. Write the equation of Line A in slope-intercept form:

$y = \frac{3}{1}x + 6$

c. Write the equation of Line B in slope-intercept form:

$y = 1x + 2$ $(y = x + 2)$

$m = \frac{2}{2} = 1$

d. Compare and contrast the two equations you wrote above:

- slopes are different
- y-intercepts are different

4. Are the lines y = -3x + 7 and y = -3x - 8 parallel? Explain your answer, using words.

$m = -3$ $m = -3$ yes; same slopes.

5. Are the lines $y = \frac{3}{2}x + 4$ and $y = \frac{2}{3}x + 9$ parallel? Explain, using words.

$m = 3/2$ $m = 2/3$ No; different slopes

6. Write equations for 3 lines that are parallel to y = 4x.

$y = 4x + 5$; $y = 4x + 3$; $y = 4x + 1$

7. Write equations for 3 lines that are NOT parallel to y = -5x - 6.

$y = 2x + 7$, $y = -2x + 3$; $y = 6x + 2$

8. Are the lines y = 3x + 7 and 3x + y = 10 parallel? Explain, using words.

$m = 3$ $\frac{-3x \quad -3x}{y = -3x + 10}$ Not parallel; different slopes

$m = -3$

9. Are the lines y = 4x + 1 and -8x + 2y = 16 parallel? Explain, using words.

$m = 4$ $\frac{+8x \quad +8x}{\frac{2y}{2} = \frac{8x}{2} + \frac{16}{2}}$ Parallel - both slopes are 4.

$m = 4 \rightarrow y = 4x + 8$

10. Are the lines y - 6 = 2(x - 10) and y = -2x + 14 parallel? Explain, using words.

$y - y_1 = m(x - x_1)$ $m = -2$ Not Parallel - different slopes

$m = 2$

11. Are the lines y - 4 = 6(x + 3) and -6x + y = 10 parallel? Explain, using words.

$m = 6$ $\frac{+6x \quad +6x}{y = 6x + 10} \rightarrow m = 6$ Parallel - same slopes