Writing Linear Equations from Graphs

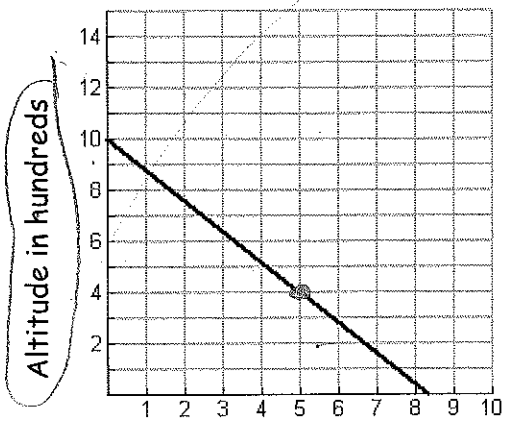
Aircraft Algebra Activity PreAP

Name _____ 5d

Date _____ Period _____

Use the graph in quadrant II to answer the questions in quadrants I, III, and IV.

II



I

negative

An aircraft descends from an altitude of 1000 feet at a rate of 120 feet per minute.

$$\frac{400-1000}{5-0} = \frac{-600}{5} = -120 \text{ ft per min}$$

III

Complete the table of values comparing the time to altitude.

Time (in min.)	Altitude (in ft.)	
0	1000	−120
1	880	−120
2	760	−120
3	640	
4	520	
5	400	
6	280	
7	160	
t		

IV

Write a linear equation that represents the altitude, a, of the aircraft at the time, t.

IV: time, t

DV: altitude, a

$$a = -120t + 1000$$

$$y = mx + b$$

Aircraft Algebra

Use the information on the previous page to help answer the following questions:

1. Find the slope of the line. What does it represent in this situation?

$m = -120$ The aircraft descends 120 feet per minute

2. Find the y-intercept of the line. What does it represent in this situation?

(0, 1500) The aircraft started at an altitude of 1,500 feet

3. Solve for the x-intercept. Explain what it represents in this situation.

$y = -120t + 1500$

$-1500 = -120t + 1500$

$\frac{-1000}{-120} = \frac{-120t}{-120}$ $t = 8\frac{1}{3}$ $(8\frac{1}{3}, 0)$

It took $8\frac{1}{3}$ minutes to reach the ground

4. Determine how many minutes it will take the aircraft to reach an altitude of 400 feet.

$400 = -120t + 1500$

$-1100 \quad -1500$

$\frac{-600}{-120} = \frac{-120t}{-120}$ $t = 5$

It will take 5 minutes to reach 400 feet.

For each graph write the equation of the line in at least two different forms.

5. $y = \frac{4}{3}x - 2$

$y - 2 = \frac{4}{3}(x - 3)$

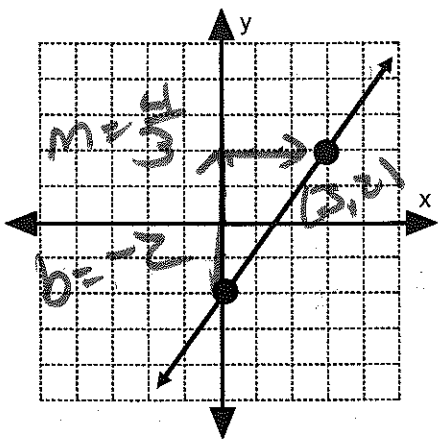
6. $y = -\frac{1}{3}x + 1$

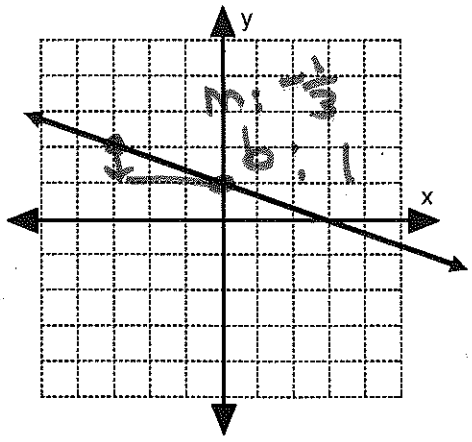
$+\frac{1}{3}x \quad +\frac{1}{3}x$

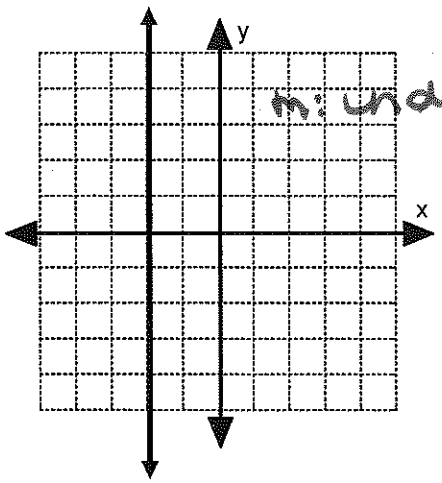
$(\frac{1}{3}x + y) = (1)3$

$x + 3y = 3$

7. $x = -2$







8. Which of the graphs above cannot be represented by using all three forms of linear equations?

The vertical graph (there is no y-intercept)