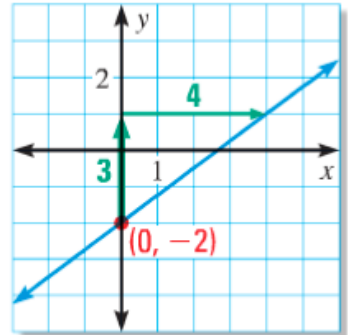


## 2.5 Writing Equations of Lines

Ex 1: What's the equation of the line with slope 4 and y-intercept -2?

Ex 2: What's the equation of the line graphed?



What happens if we're not given the y-intercept?

Point-slope form:

Ex 3: What's the equation of the line that goes through  $(2, -5)$  with a slope of  $-2$ ?

What do we do if we're given a parallel or perpendicular line?

Ex 4: What's the equation of the line through  $(-2, 3)$  and perpendicular to the line  $y = -4x + 1$ ?

What if we are only given two points?

Ex 5: What's the equation of the line that goes through  $(5, -2)$  and  $(2, 10)$ ?

The boys go to the comic book store for Halloween. They have \$24 to spend on comics, which cost \$1.50 each and candy bars, which cost \$0.75 each.

Write an equation for the situation.

If they bought 12 candy bars, how many comics could they buy?

You try!

1) What's the equation of the line that is parallel to the line  $y = -4x + 1$  and goes through the point  $(-3, 5)$ ?

2) What's the equation of the line that goes through the points  $(4, -1)$  and  $(6, -7)$ ?

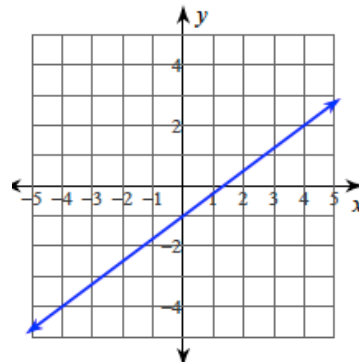
Summarize your notes

### 2.5 Practice Problems

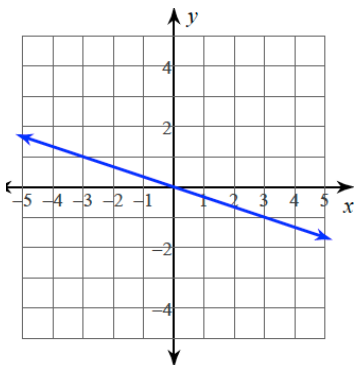
Directions: Write the equation of each line.

1) slope =  $\frac{3}{5}$ , y-intercept = 4

2)



3)



4) through:  $(2, 1)$ , slope =  $-\frac{3}{2}$

5) through:  $(-3, -2)$ , slope =  $\frac{4}{3}$

6) through:  $(-5, 5)$ , slope =  $-\frac{2}{5}$

7) through:  $(-2, 4)$  and  $(2, -1)$

8) through:  $(0, -5)$  and  $(2, 4)$

9) through:  $(4, -5)$  and  $(2, -4)$

10) through:  $(-1, 1)$  and  $(-3, 5)$

11) through:  $(1, -3)$ , perp. To  $x = 0$ .

12) through:  $(1, -2)$ , parallel to  $y = -\frac{2}{3}x - 4$

13) through:  $(2, 0)$ , parallel to  $y = \frac{4}{5}x - 3$

14) through:  $(1, 0)$ , perp to  $y = 2x + 5$

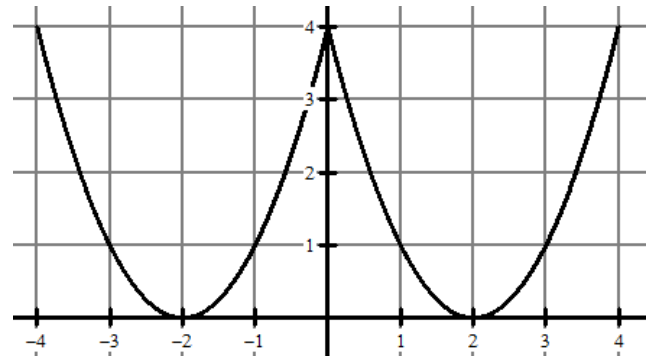
### Algebra Skillz

1) Find the y-intercept(s)

2) Find the x-intercept(s)

3) Find  $f(-3) =$

4) Find  $x$  when  $f(x) = 1$



5) Simplify:  $-9\sqrt{100}$

6) Simplify:  $8\sqrt{52}$

7) Solve:  $\frac{24}{3+x} - 15 = -13$

8) Factor:  $x^2 - 3x - 40$

### 2.5 Application and Extensions

1) Write the equation of a line that goes through the points  $(2, -4)$  and  $(-10, 2)$ .

2) Write the equation of the line that goes through  $(2, 10)$  and is parallel to the line  $y = 4x - 135$ .

3) PeacePlayers International is a non-profit organization that brings children from communities in conflict together to play basketball. Their coaches and mentors work year round to unite, educate and inspire young people to create a more peaceful world. They hope to raise \$500 a month and in 12 months have \$8700 for next summer's kids in Israel and Palestine.

- a. What is the rate of change (slope) for this situation?
  
  
  
  
  
  
  
  
  
  
- b. What other information do you have?
  
  
  
  
  
  
  
  
  
  
- c. Write an equation of the line in slope-intercept form for this information.

It costs \$248 to send a child from Israel to a PeacePlayer International camp and \$187 to send a child from Palestine and they met their goal and have \$8700 budget to send children to camp.

- d. Write an equation in STANDARD FORM for the above information.
  
  
  
  
  
  
  
  
  
  
- e. If PeacePlayers International wants to send the same amount of children from both Israel and Palestine to the camp, how many kids from each country will they send?

For more information on PeacePlayers International visit <http://www.peaceplayersintl.org>.

4) The boys decided that the way to big time was to create a spin off of The Big Bang Theory. Kelly came up with the name for the new show, of course, The Alge-Big Bang Theory. The boys want to be bigger than the original show however and know that to do that they'll need to have at least 21 million viewers of their show. After a few weeks the boys look to see how they are doing. They know that the second episode they had 3.5 million viewers and that the fifth episode they had 5.9 million viewers.

- a. How many viewers do they grow by on average each episode?
  
  
  
  
  
  
  
  
  
  
- b. What's an equation to model the equation for number of viewers of The Alge-Big Bang Theory?

- c. About how many viewers did the boys start with?
- d. How many viewers should the guys expect after their 11 episode?
- e. If there are 23 episodes in a season will The Alge-Big Bang Theory surpass total viewership of The Big Bang Theory this season?
- f. How many episodes will it take for them to pass The Big Bang Theory's viewership?

**SAT PREP** Below are sample SAT questions. The SAT is the main standardized test that colleges look at for admission. One is multiple choices; the other is free response where you must grid in your answer. Blow it up.

**MULTIPLE CHOICE**

For which value of the following functions is  $f(10) < f(-10)$ ?

- (A)  $f(x) = \frac{25}{2x}$
- (B)  $f(x) = 2 - x^5$
- (C)  $f(x) = 5x^8$
- (D)  $f(x) = 200$
- (E)  $f(x) = x^4 + 2$

**GRID IN**

If  $f(x) = -3x^3 + 10$ , what is the value of  $f(-1)$ ?

•	•	•	•
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9