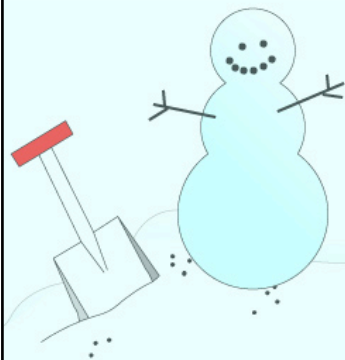


# Algebra I

## Lesson 5-4

- I can write an equation of a line given the slope and one point on a line.
- I can write an equation of a line given two points on the line.



### Writing an equation given the slope and one point

Write an equation of a line that passes through (1, 5) with slope 2.

$$y = mx + b$$

$$m = 2$$

$$y = 2x + 3$$

$$\begin{aligned} 5 &= 2(1) + b \\ 5 &= 2 + b \\ \underline{-2 \quad -2} & \\ 3 &= b \end{aligned}$$

## Write an equation given two points

x	y
-3	-1
6	-4

$$m = -\frac{1}{3}$$

$$b = -2$$

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

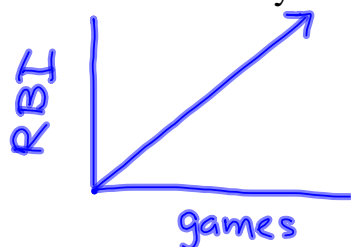
$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - (-4)}{-3 - 6} = \frac{3}{-9} = -\frac{1}{3}$$

$$-4 = \left(-\frac{1}{3}\right)(6) + b$$

$$-4 = (-2) + b$$

$$\begin{array}{r} +2 \quad +2 \\ \hline -2 = b \end{array}$$

In the middle of the 1998 baseball season, Mark McGwire seemed to be on track to break the record for most runs batted in. After 40 games, McGwire had 45 runs batted in. After 86 games, he had 87 runs batted in. Write a linear equation to estimate the number of runs batted in for any number of games that season.



$$y = 0.91x + 8.5$$

$$(40, 45) \quad m = \frac{87 - 45}{86 - 40} = \frac{42}{46} = \frac{21}{23}$$

$$(86, 87) \quad 45 = \frac{21}{23}(40) + b$$

$$45 = 0.91(40) + b$$

$$45 = 36.52 + b$$

$$\begin{array}{r} 45 = 36.52 + b \\ -36.52 \quad -36.52 \\ \hline 8.48 = b \end{array}$$

When you use a linear equation to predict values that are beyond the range of the data, you are using linear extrapolation.

The record for the most runs batted in during a single season is 190. Use the equation from the last example to decide whether a baseball fan following the 1998 season would have expected McGwire to break the record in the 162 games played that year.

$$y = 0.91x + 8.5$$

$$y = (0.91)(162) + 8.5$$

$$y \approx 147.42 + 8.5$$

$$y \approx 155.92$$

## Assignment:

Pgs. 284-285 #12-32 even; 41-43 &  
MidChapter Test tomorrow.

