The Slope of a Line

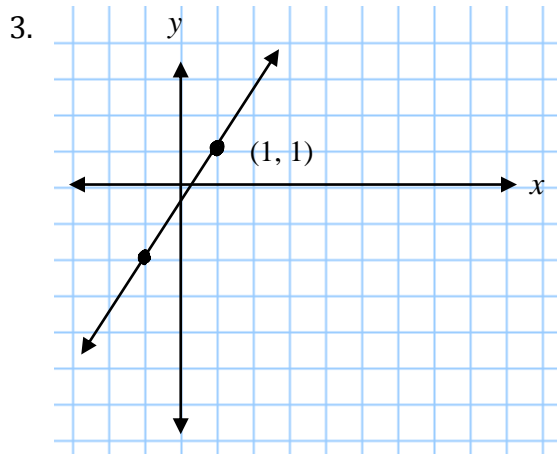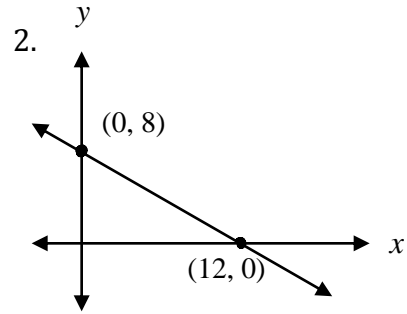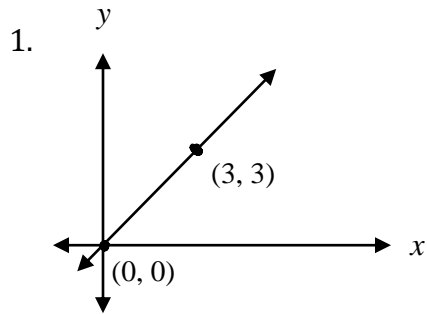| Quick Review	
The *slope* of a line indicates the incline of that line. *Slope* is expressed as a fraction. The numerator of the fraction indicates the *rise,* or change in the value of y, of the line between two given points and the denominator and the denominator of the fraction gives the *run,* or change in the value of x, between the same two points.	Slope $$\frac{Rise}{Run} = \frac{Change\ in\ y}{Change\ in\ x} = \frac{y_2 - y_1}{x_2 - x_1}$$
To find slope, label one point on the line as (x_1, y_1) and another point on the line as (x_2, y_2). Plug the points into the equation given at right and leave your answer as a simplified fraction. Slope can be negative or positive. Positive slope describes a line running from SW to NE, and negative slope describes a line running from NW to SE. A slope of 0 indicates a horizontal line An undefined slope indicates a vertical line.	Example $(x_1, y_1) = (2, 4)$ $(x_2, y_2) = (6, 7)$ $$\frac{y_2 - y_1}{x_2 - x_1} = \frac{7-4}{6-2} = \frac{3}{4}$$
Parallel lines have the same slope. *Perpendicular* lines have slopes that are opposite (negative) reciprocals of one another.	

Problems

Find the slope of each line.

1.

(3, 3)

(0, 0)

2.

(0, 8)

(12, 0)

3.

(1, 1)

4.

(-2, -5)

5.

(6, 5)

(6, -2)

6.

(-5, 7)   (10, 7)
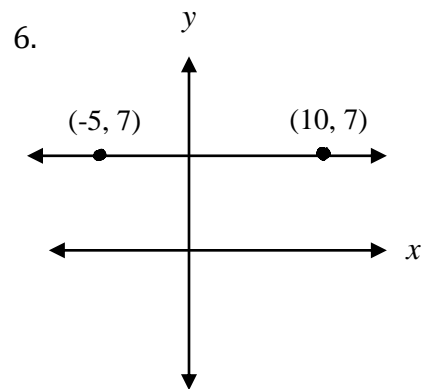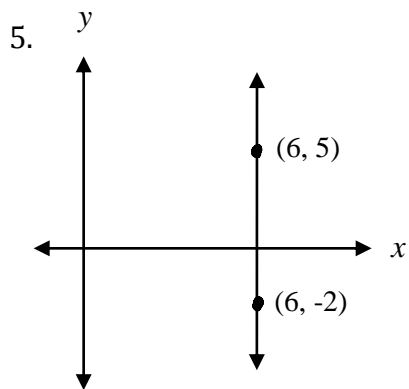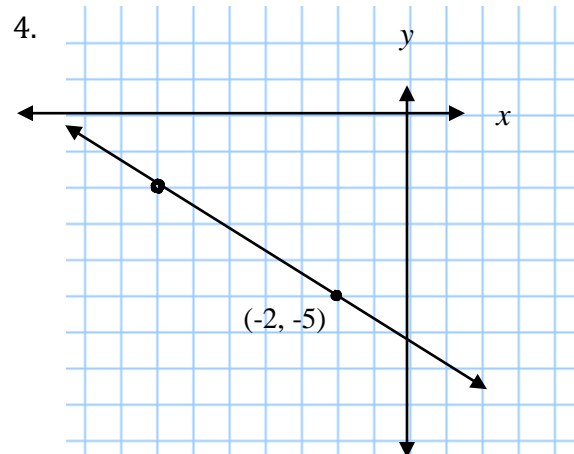
7. Find the slope of a line parallel to the line in problem 2.

8. Find the slope of a line perpendicular to the line in problem 2.