

Lesson 6.3: Slope-Intercept Form

Specific Outcome: 5.5 – Identify the graph that corresponds to a given slope and y-intercept. 5.6 – Identify the slope and y-intercept that correspond to a given graph. 6.3 – Generalize and explain strategies for graphing a linear relation in slope-int. form. 6.4 – Graph, with and without tech., a linear relation given in slope-int. form. 6.6 – Match a set of linear relations to their graphs. 7.1 – Determine the slope and y-int. of a given linear relation from its graph, and write the equation in the form $y = mx + b$. 7.2 – Write the equation of a linear relation, given its slope and the coordinates of a point on the line, and explain the reasoning. 7.4 – Write equation given coordinates of a point on the line and equation of a parallel/perpendicular line, and explain reasoning. 7.6 – Solve a problem, using the equation of a linear relation.

Slope-intercept Form

$$y = mx + b$$

where:

$$m = \text{slope}$$

$$b = y - \text{intercept}$$

Practice:

1. Identify the slope and y-intercept in each of the following equations.

a) $y = 3x + 2$

b) $y = -\frac{3}{5}x - 8$

c) $3y = -12x + 3$

2. Write an equation in slope-intercept form for each of the linear functions.

a) $m = -5$ $y - \text{int.} : -4$

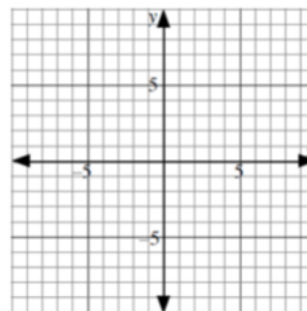
b) $m = -\frac{7}{4}$ $y - \text{int.} : -\frac{3}{4}$

c) $y - \text{int.} : 0$ $m = 3$

d) has slope 0 and passes through (0,-5)

GRAPHING A LINEAR FUNCTION

Graph the linear function with equation: $y = -2x + 6$.

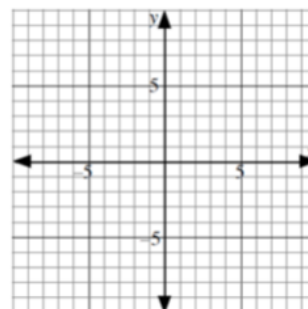
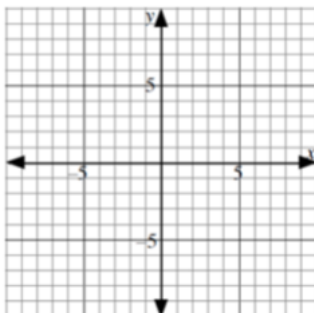
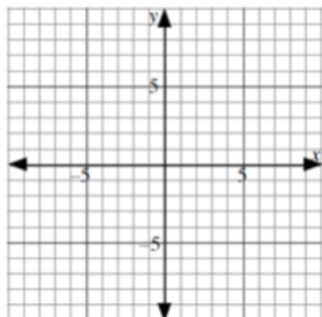


Practice: Graph the following equations.

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

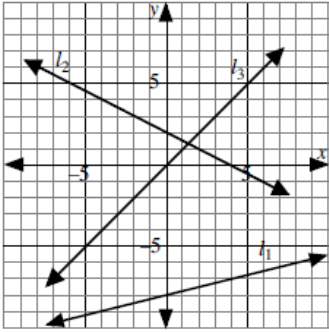
b) $3y = -4x$

c) $3y - 3 = 9x$



DETERMINE THE EQUATION GIVEN THE GRAPH

Practice: Determine the equation for each line on the graph.



USING AN EQUATION TO SOLVE A PROBLEM

1. The student council sponsored a dance. A ticket cost \$5 and the DJ cost \$300.

a) Write an equation for the profit, P dollars, on the sale of t tickets.

b) Suppose 123 people bought tickets. What was the profit?

c) If the profit made was \$1145, how many tickets were sold?

WRITING AN EQUATION USING PARALLEL/PERPENDICULAR LINES

Write the equation of the line that passes through $R(0, -7)$ and is perpendicular to $y = -x + 15$.

Practice

1. Write the equation of each line:

a) through $P(0, 4)$ and parallel to $y = \frac{1}{5}x + 8$

b) with same y-int. as $y = 2x - \frac{1}{3}$
and perpendicular to $y = -\frac{7}{3}x - 1$

2. Consider the line which is perpendicular to the line $y = \frac{1}{3}x + 4$ and has the same y-intercept as $y = 6x - 7$.

If the equation of this line is written in the form $y = mx + b$ then the exact value of $m - b$ is _____.