

## Prerequisite Skills for Algebra I

### Computation:

- Use [order of operations](#) to simplify expressions
- Simplify [fractional](#) expressions
- [Evaluate algebraic expressions](#) (substitution with positive and negative numbers)

### Solving Equations and Inequalities:

- [Solve multi-step equations](#) using inverse operations
- [Solve linear equations & inequalities](#) which require the use of distributive property, combining like terms, simplifying and completing calculations involving fractions and decimals

### Linear Functions:

- [Graph ordered pairs](#) on the coordinate plane
- [Graph linear functions](#) in slope-intercept form
- [Write the equation](#) of a line from a graph
- Given two points:
  - [Find the slope](#) of the line that passes through them
  - [Write the equation](#) of the line that passes through them
- Solve a linear word problem

## PRACTICE PROBLEMS

Use order of operations to simplify the following expressions:

1.  $54 \div 3 - 3 \times 2$

2.  $8 \div 2(4) - 4^2$

3.  $2(4 - 7)^2 - 4 \div 2$

4.  $-3^2 - 7 \div 2 + 5$

5.  $(-7) - (-8) \div 2^2 + 5$

6.  $(-3)^3 - 4 \div 2(2) - 10$

7.  $7 - 4(3 - 8) - (-2 + 9)$

8.  $8 \div 4(2) - (6 - 9)^2$

**Simplify the following fractional expressions:**

9.  $\frac{3}{5} + \frac{2}{3} \times \frac{3}{5}$

10.  $\frac{3}{5} + \frac{2}{3} \div \frac{3}{5}$

11.  $\frac{1}{3} + \frac{1}{4} - \frac{1}{6}$

12.  $\frac{1}{3} - \left(\frac{1}{4} + \frac{1}{6}\right)$

13.  $2\frac{1}{3} + 1\frac{1}{4} - 3\frac{1}{6}$

14.  $\left(-\frac{1}{3}\right)^2 \div \frac{1}{3}$

**Evaluate the following algebraic expressions for  $x = 2$  and  $y = -3$ :**

15.  $3x + 8y$

16.  $x^2 - y$

17.  $-x^2 + y$

18.  $5 + x - y^2$

**Solve the following equations:**

19.  $3x + 8x = -11$

20.  $-4x - 9 = 13$

21.  $-7t - 6t = 0$

22.  $-y + 3 + 8y = 17$

23.  $b - (5 - 3b) = 19$

24.  $2(t + 3) = 3(7 - t)$

25.  $4 - \frac{2}{3}t = 5$

26.  $h - \frac{2}{3}h = 6$

**Solve each of the following linear inequalities. Then graph each solution set on the number line:**

27.  $6x + 2 > 8$



28.  $-4x + 3 \leq -9$



29.  $5(x + 2) < 0$



30.  $2(x + 1) < \frac{1}{3}$



31.  $\frac{2}{3}(3 - x) < 1$

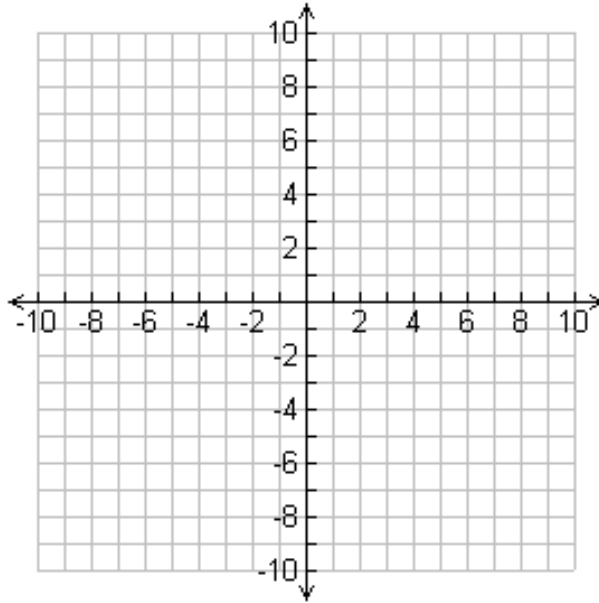


32.  $0.2x + 2 < -0.6$



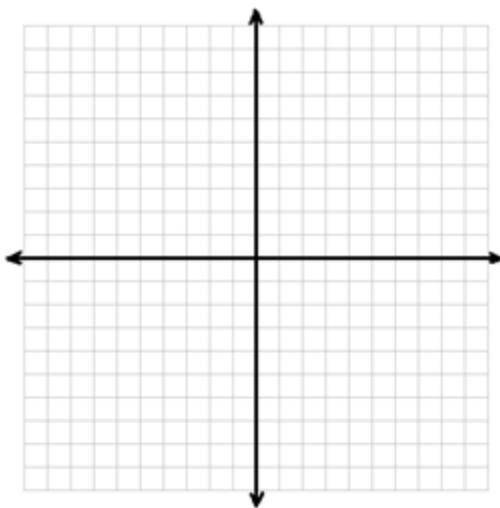
**33. Graph the following ordered pairs on the coordinate plane and label each point:**

A:  $(3, -2)$    B:  $(-10, 10)$    C:  $(4, 0)$    D:  $(7, 7)$    E:  $(-6, 5)$    F:  $(0, -8)$    G:  $(1, 9)$    H:  $(\frac{3}{2}, -5)$

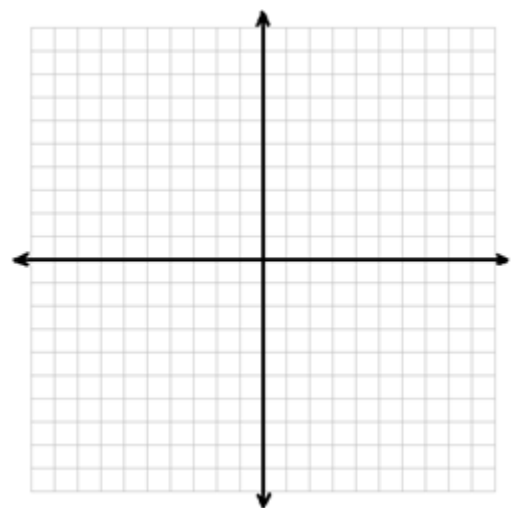


**Graph each of the following linear functions:**

34.  $y = \frac{1}{5}x - 7$

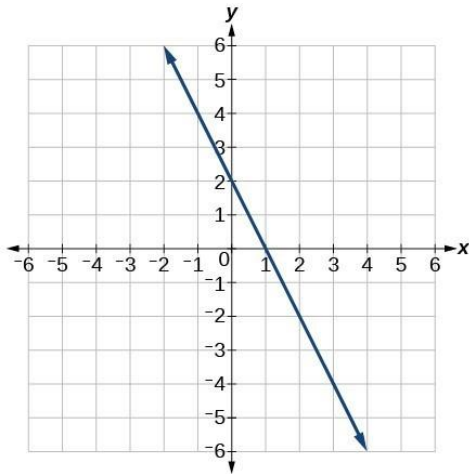


35.  $y = -\frac{2}{3}x + 6$

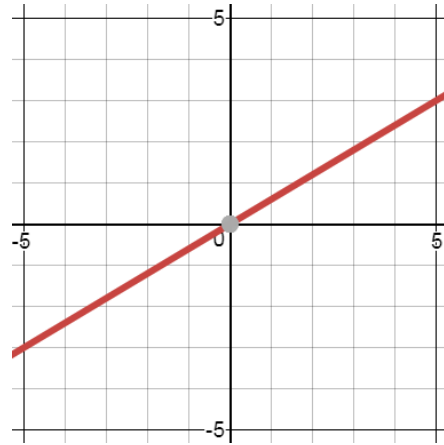


For each of the following graphs, write the equation of the line in slope-intercept form:

36.



37.



Given points G (-4, 5) and H (-2, -1):

38. Find the slope of the line that passes through them.

39. Write the equation of the line that passes through them.

**Solve the following word problem using a method of your choice:**

40. The Robinsons are tearing down their above-ground pool to fix the liner. The pool contains 18,000 gallons of water. The water drains at a rate of 1,500 gallons per hour. How long will it take to empty half of the water out of the pool?