

The following problems involve the major topics that are expected of incoming students for Algebra 2. Ideally, all questions are to be completed without a calculator. Students should show all relevant work along with their answers.

- **Topic:** Students should be able to use the distributive property and combine like terms.

Simplify the following expressions.

1) $-2(x-6)$

2) $\frac{5}{2}(8m+3)$

3) $-10x+6+4x-x+1$

4) $-x-3x^2+4x-x^2$

5) $-4(w-3)-(2w+1)$

6) $\frac{2}{5}(5x-10)+\frac{1}{4}(8x+4)$

- **Topic:** Students should be able to solve linear and quadratic equations. Solve.

7) $5x-11=2x+22$

8) $\frac{1}{2}x-4=\frac{3}{4}x+6$

9) $3(x-3)=2(2x+5)$

10) $x^2=36$

11) $3x^2-7x+11=4x^2-5x+3$

12) $x^2+40=-9$

➤ **Topic:** Students should be able to evaluate an expression if given the value of a variable.

Evaluate each expression for the given value of the variable.

13) $-5x+1$ for $x=3$

14) y^2-3y+7 for $y=-2$

15) $\frac{4z+3}{z^2-4}$ for $z=3$

16) $|15k+10|$ for $k=-\frac{3}{5}$

17) $\frac{3-5m}{(m-4)^2}$ for $m=4$

18) $\frac{2x^2+5x+2}{x^2+5x+6}$ for $x=3$

➤ **Topic:** Students should be able to work with coordinate geometry. Given the points, find the slope, midpoint, distance, and equation of the line.

19) $(0,3)$ & $(4,0)$

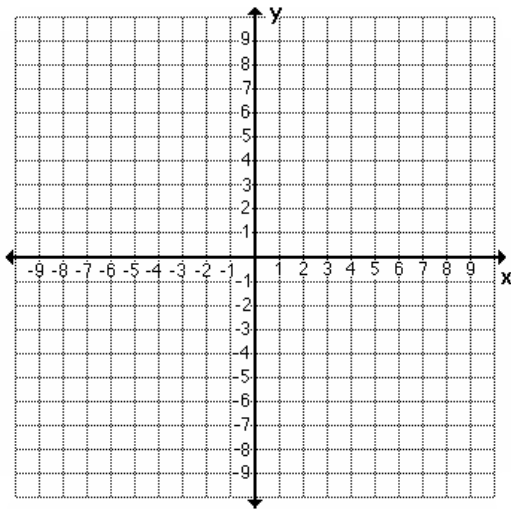
20) $(-5,3)$ & $(0,-9)$

21) $(4, -3)$ & $(-2, 5)$

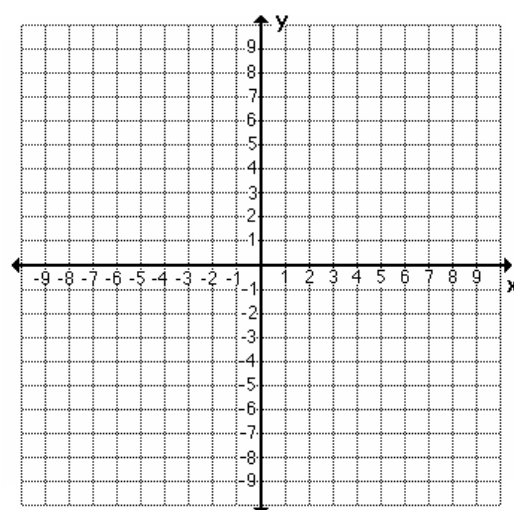
22) $(-7, -1)$ & $(1, 14)$

➤ **Topic:** Students should be able to graph a linear equation. Graph each line.

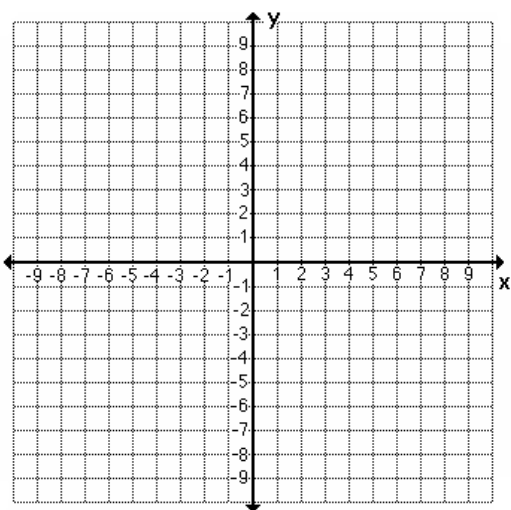
23) $y = 2x + 3$



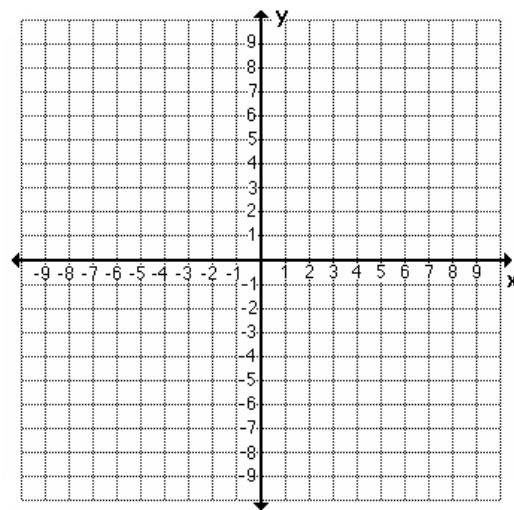
24) $2x + 5y = 10$



25) $y = -4x - 5$



26) $2x - 3y = 9$



➤ **Topic:** Students should be able to solve systems of equations. Solve each system.

27) $x + 2y = 10$
 $3x - 4y = -30$

28) $y = 3x - 11$
 $y = 3x + 10$

29) $x + y = -1$
 $-2x + y = -7$

30) $y = x + 4$
 $3x - 3y = 11$

➤ **Topic:** Students should be able to simplify basic factoring. Factor Completely.

31) $x^2 - 7x + 10$

32) $x^2 + 7x - 44$

33) $x^2 - 6x + 9$

34) $x^2 - 5x - 6$

35) $x^2 - 49$

36) $x^2 - 100$

37) $15x^2 - 10x - 5$

38) $20x^2y^3 - 48xy^5$