Prerequisite skills for Algebra II Level 2

- solving linear equations/inequalities and absolute value equations/inequalities
- functions vs. relations
- graphing functions from tables of values
- finding x and y intercepts from standard form
- writing equations in point-slope, slope intercept, standard form
- solving systems of equations (2 variables)
- systems of linear inequalities
- quadratic factoring and including $a \neq 1$
- simplifying square roots
- solving quadratics by factoring, square roots, quadratic formula, or completing the square
- simplifying, multiplying and dividing rational expressions, including domain restrictions

Solving linear absolute value equations/inequalities

1. $\frac{3}{4}x + 7 = 16$

2. $|x - 3| = 10$

3. $-2|2x + 3| = 16$

4. Solve for m in $y = mx + b$

5. Solve for w in $P = 2l + 2w$

6. $\frac{-|2x-1|}{6} = -5$

7. $\frac{2}{3}s - 4 = \frac{1}{4}s - \frac{1}{2}$

8. $\frac{4}{5}x + 3 = \frac{2}{15}x - \frac{3}{10}$

9. Solve for x. Then graph your answer on the number line.

a. $-3x + 2 > 8$

c. $-4x + 3 \leq -6x + 12$

d. $5x + 25 < 0 \cup 6x - 36 > 0$

e. $2x - 10 < -2 \mid x + 3 > -15$

f. $|x + 5| \leq 15$

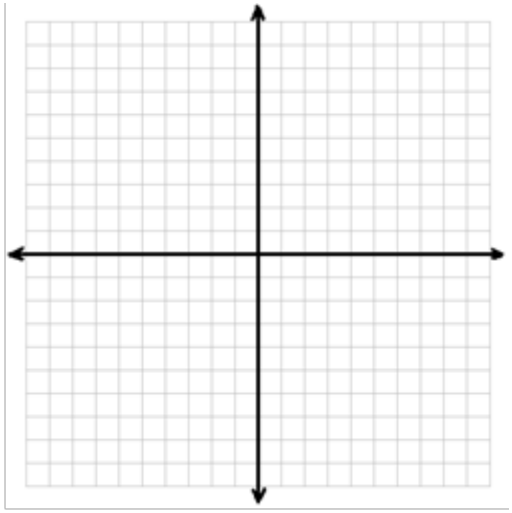
g. $\frac{|x+4|}{3} > 9$

h. $14 - 2|x - 1| < 12$

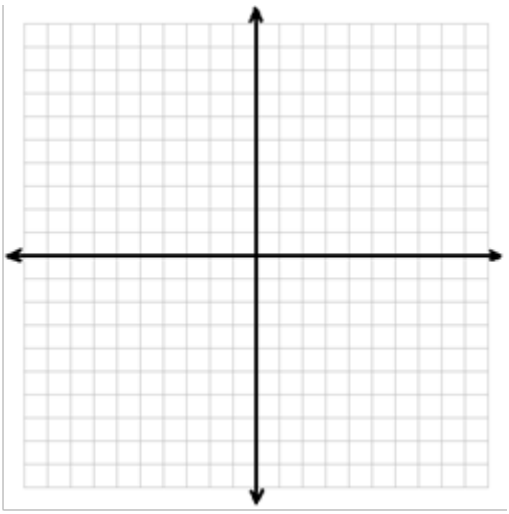
Graphing from tables of values

12) *Create a table for each and graph the function*

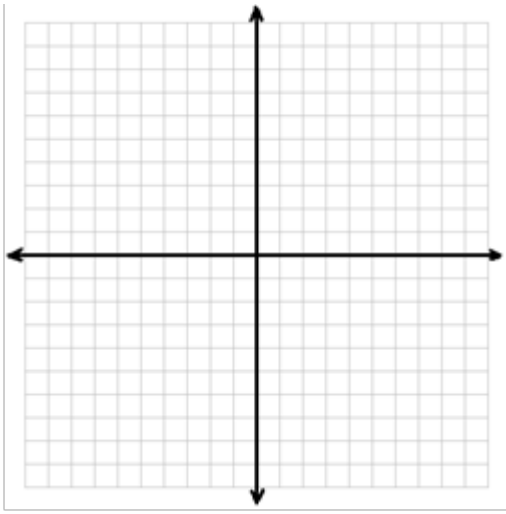
a) $y = 3x - 1$



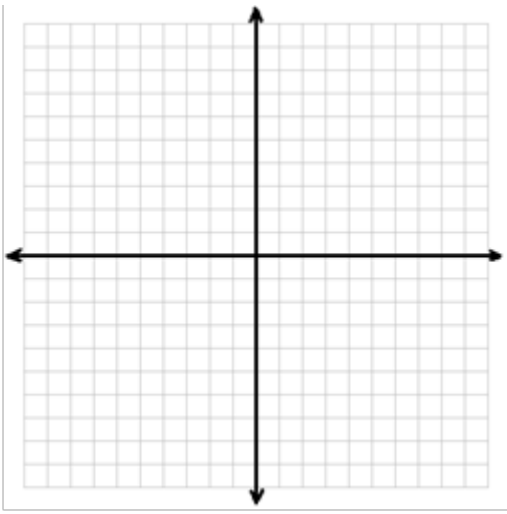
b) $y = -|x| + 3$



c) $y = x^3$



d) $y = 3 - \sqrt{x}$



13) a. Write the equation of a line that crosses through G(-4, 5) and H(-2, -1).

b. Write an equation of a line parallel to the line in part (a).

c. Write an equation of a line perpendicular to the line in part (a).

d. What type of angle do the lines in parts b and c create at their intersection?

7. Write an equation of a line that crosses through F(5, 7) and M(-3, -1) in the following forms:

Slope-Intercept *Point-Slope* *Standard*

14. Solve each system of equations:

$3x + 9y = 9$
$y = \frac{2}{3}x - 2$

$y = -2x + 9$
$3x - 4y = 8$

$-2x + 7y = 10$
$x - 3y = -3$

15. At a recent concert, there were 1500 people. Adult tickets were $12 each and student tickets were 50% off the adult price. If the concert profit was $15,600, find the number of adult and student tickets sold.

Factoring and solving polynomials

16. *Factor the following completely or state that it is prime:*

a.) $9x^2 - 36$

b.) $8x^2 + 25x + 3$

c.) $6x^2 - 30x - 36$

d.) $x^2 - 10x + 25$

e.) $6x^3 - 12x^2$

f.) $3x^2 + x - 10$

g) $2x^3 - 14x^2 + 24x$

h.) $3x^2 + 17x + 10$

i) $4y^2 + 14y + 6$

j.) $6x^2 - 12x - 18$

Simplifying square roots. *Simplify each.*

a.) $\sqrt{98}$

b.) $\sqrt{72}$

c.) $\sqrt{108}$

d.) $2\sqrt{6} \cdot 5\sqrt{3}$

e.) $\sqrt{15} \cdot \sqrt{10}$

f.) $\frac{\sqrt{50}}{\sqrt{2}} - \sqrt{20}$

g.) $\sqrt{20} - \sqrt{200} + \sqrt{45}$

h.) $\sqrt{\frac{32}{50}}$

i.) $\frac{\sqrt{120}}{\sqrt{20}}$

Solving quadratics. *Solve for x using any appropriate method*

a.) $x^2 - 3x = 4$

b.) $x^2 = 10x - 25$

e.) $x^2 - 6x + 8 = 0$

f.) $3x^2 - 7x + 2 = 0$

g.) $x^2 - 3x + 1 = 6$

h.) $4x^2 + 7x + 2 = 0$

Rational Expressions. *Multiply, divide, simplify. State any restrictions.*

a) $\frac{3x-12}{8x+12} \bullet \frac{12x+8}{5x-20}$

b) $\frac{3x^2}{5y^3} \div \frac{9x^8}{15y^6}$

c) $\frac{x^2+4x}{x-5} \div \frac{x^2-x-20}{2}$

d) $\frac{x^2-6x+5}{x^2-x-20} \bullet \frac{x^2-16}{1-x^2}$

e) $\frac{x^2+4x+4}{x^2-4}$

f) $\frac{x^2+5x-6}{x^2-4x+4}$