

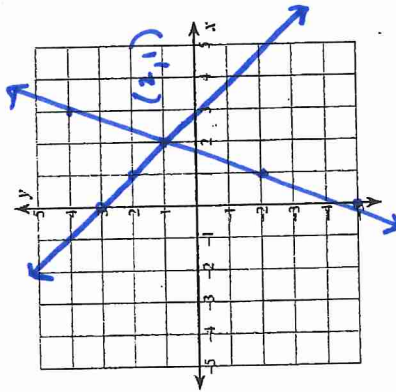
Name: Answer Key

### GRAPHING SYSTEMS OF EQUATIONS

Solve each system by graphing.

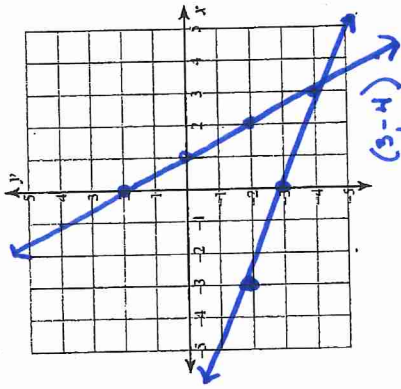
$$\begin{cases} -3x + y = -5 \\ y = 3x - 5 \end{cases}$$

$$y = -x + 3$$



$$y = -\frac{1}{3}x - 3$$

$$2x + y = 2 \quad y = -2x + 2$$



### THE SUBSTITUTION METHOD

Solve each system by using substitution.

$$\begin{cases} y = 2x - 5 \\ 4x - 6y = -18 \end{cases}$$

$$4x - 6(2x - 5) = -18$$

$$4x - 12x + 30 = -18$$

$$-30 - 30$$

$$-8x = -48$$

$$x = 6$$

$$y = 2(6) - 5 = 12 - 5$$

$$y = 7$$

$$\begin{cases} -5x - 3y = 5 \\ y = -7x - 23 \end{cases}$$

$$-5x - 3(-7x - 23) = 5$$

$$-5x + 21x - 23 = 5$$

$$+ 69$$

$$16x = -64$$

$$x = -4$$

$$y = -7(-4) - 23$$

$$= 28 - 23 = 5$$

$$y = 5$$

### THE ELIMINATION METHOD

Solve each system by using elimination.

$$\begin{cases} -5x + 4y = -7 & (3, 2) \\ -6x - 4y = -26 & (-8, -4) \end{cases}$$

$$-11x + 0y = -33$$

$$-11x = -33$$

$$x = 3$$

$$-5(3) + 4y = -7$$

$$-15 + 4y = -7$$

$$+15 \quad +15$$

$$\frac{4y}{4} = \frac{8}{4}$$

$$y = 2$$

$$\begin{cases} 6x - 8y = -16 \\ -2x + 8y = -16 \end{cases} \quad (-8, -4)$$

$$4x + 0y = -32$$

$$\frac{4x}{4} = \frac{-32}{4}$$

$$x = -8$$

$$-2(-8) + 8y = -16$$

$$+16 + 8y = -16$$

$$-16 \quad -16$$

$$8y = -32$$

$$y = -4$$

### MULTIPLYING MONOMIALS

Simplify each product.

$$(3m^4n)(-2m^2n)$$

$$-6m^6n^2$$

$$(2a^2bc^2)(5b^2c)$$

$$10a^2b^3c^3$$

### RAISING A POWER TO A POWER

Simplify each expression.

$$(2b^2)^4$$

$$2^{1 \cdot 4} b^{2 \cdot 4}$$

$$16b^8$$

$$= 2^4 b^8$$

$$(-3mn^2)(2m)^3$$

$$(-3mn^2)(2^3m^3)$$

$$(-3m^4n^2)(8m^3)$$

$$-24m^7n^2$$

### DIVIDING MONOMIALS

Simplify each expression.

$$\frac{20a^8}{4a^3} = 5a^{8-3}$$

$$\boxed{5a^5}$$

$$\frac{-3a^2b^6}{-18a^5b^2}$$

$$\frac{1a^2b^4}{6} = \frac{1a^{2-5}b^{6-2}}{6}$$

$$\boxed{\frac{b^4}{6a^3}}$$

$$\frac{16m^3n}{-4mn^5}$$

$$-4m^{3-1}n^{1-5}$$

$$\boxed{\frac{-4m^2}{n^4}}$$

### NEGATIVE AND ZERO EXPONENTS

Simplify each expression. Write the expression with positive exponents only.

$$\frac{12p^{-3}}{4p^3}$$

$$2^0 = \boxed{1}$$

$$3p^{-3-5} = 3p^{-8} = \boxed{\frac{3}{p^8}}$$

$$a^0 b^{-2} c^3$$

$$1 \cdot b^{-2} c^3$$

$$\boxed{\frac{c^3}{b^2}}$$

$$(-3f^{-3}g^{-4})(-5f^{-2}g^6)$$

$$15f^{-3+2}g^{-4+6}$$

$$15f^{-1}g^2$$

$$\boxed{\frac{15g^2}{f}}$$

### ADDING AND SUBTRACTING POLYNOMIALS

Add or Subtract.

$$(3a^3 + 2a^2 + a + 5) + (2a^3 + 4a - 6)$$

$$\boxed{5a^3 + 2a^2 + 5a - 1}$$

$$(5c^2 - 2c + 3) - (2c^2 + c + 8)$$

$$5c^2 - 2c + 3 - 2c^2 - c - 8$$

$$\boxed{3c^2 - 3c - 5}$$

### MULTIPLYING BINOMIALS

Find each product.

$$x(x - 4)$$

$$\boxed{x^2 - 4x}$$

$$(x + 2)(x - 5)$$

$$x^2 - 5x + 2x - 10$$

$$\boxed{x^2 - 3x - 10}$$

$$(2p - 3)(3p - 1)$$

$$6p^2 - 2p - 9p + 3$$

$$2p^2 + 10p - 9p - 45$$

$$\boxed{6p^2 - 11p + 3}$$

$$\boxed{2p^2 + p - 15}$$

### FACTORING

Factor each polynomial.

$$3n^3 - 15n^2 + 6n$$

$$\boxed{3n(n^2 - 5n + 2)}$$

$$-5x^2y + 10xy^3$$

$$\boxed{-5xy(x - 2y^2)}$$

### FACTORIZING QUADRATIC TRINOMIALS

Factor each trinomial.

$$x^2 - 6x + 8$$

$$(x-4)(x-2)$$

$$x^2 - 5x - 6$$

$$(x-6)(x+1)$$

$$x^2 + 8x + 15$$

$$(x+5)(x+3)$$

$$x^2 - 2x - 8$$

$$(x-4)(x+2)$$

### SOLVING EQUATIONS BY FACTORING

Solve by factoring.

$$(x+3)(x-1) = 0$$

$$x+3 = 0 \quad x-1 = 0$$

$$-3 -3 \quad +1 +1$$

$$\boxed{x = -3} \quad \boxed{x = 1}$$

$$x^2 - x - 6 = 0$$

$$(x-3)(x+2) = 0$$

$$x-3 = 0 \quad x+2 = 0$$

$$+3 +3 \quad -2 -2$$

$$\boxed{x = 3} \quad \boxed{x = -2}$$

$$x^2 + 3x + 2 = 0$$

$$(x+2)(x+1) = 0$$

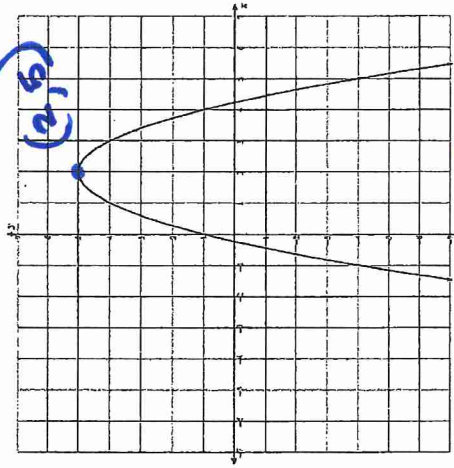
$$x+2 = 0 \quad x+1 = 0$$

$$-2 -2 \quad -1 -1$$

$$\boxed{x = -2} \quad \boxed{x = -1}$$

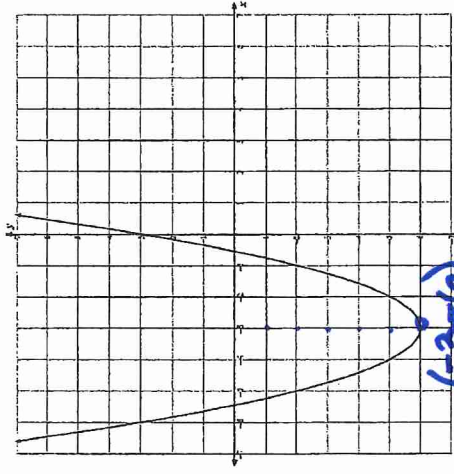
### GRAPHING PARABOLAS

Write the vertex form of each graph.



$$y = -(x-2)^2 + 6$$

$$y = a(x-h)^2 + k$$



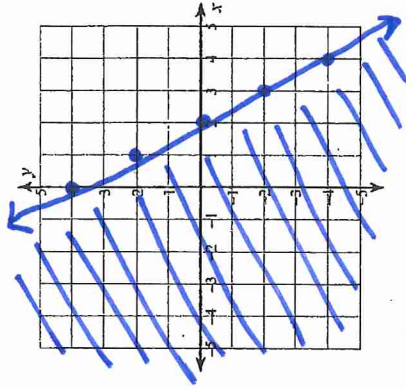
$$y = (x+3)^2 - 6$$

### SOLVING LINEAR INEQUALITIES

Solve each inequality and graph the solution on a coordinate grid.

*closed/solid line*

$$y \leq -2x + 4$$



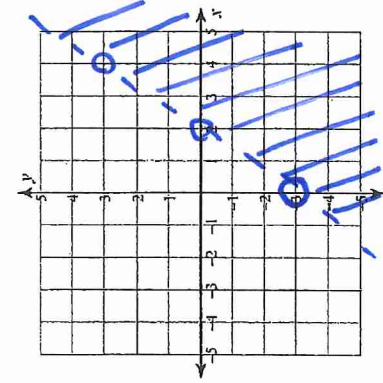
$$3x - 2y > 6$$

$$3x - 2y > 6$$

$$-3x \quad -3x$$

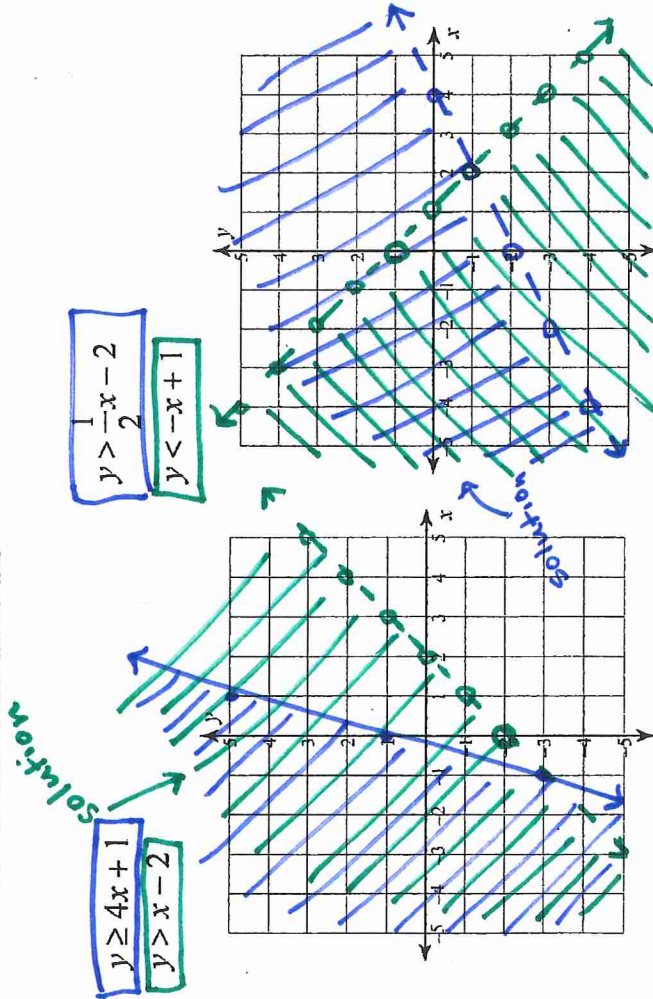
$$\frac{-2y > -3x + 6}{-2}$$

$$y < \frac{3}{2}x - 3$$



### SYSTEMS OF INEQUALITIES

GRAPH EACH SYSTEM TO FIND THE SOLUTION

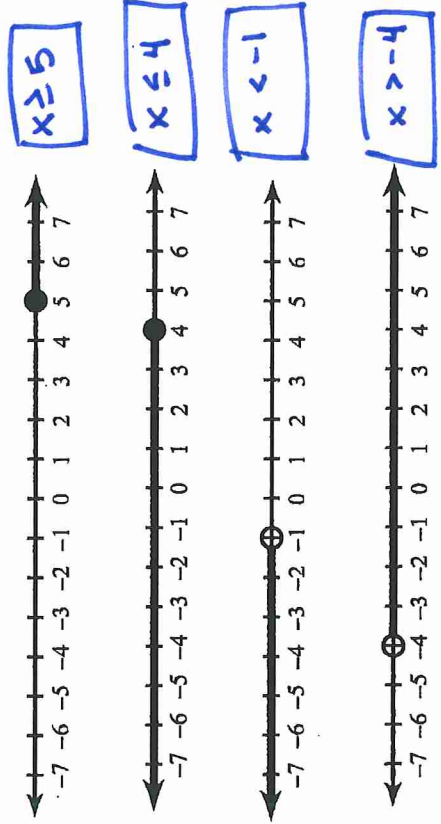


$$\begin{cases} y \geq 4x + 1 \\ y > x - 2 \end{cases}$$

$$\begin{cases} y > \frac{1}{2}x - 2 \\ y < -x + 1 \end{cases}$$

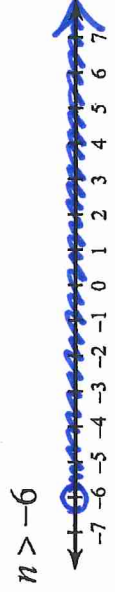
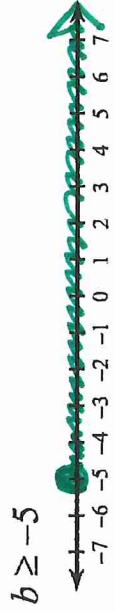
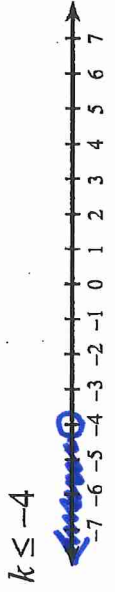
### WRITING INEQUALITIES FOR A NUMBER LINE GRAPH

Write an inequality to describe the graph.



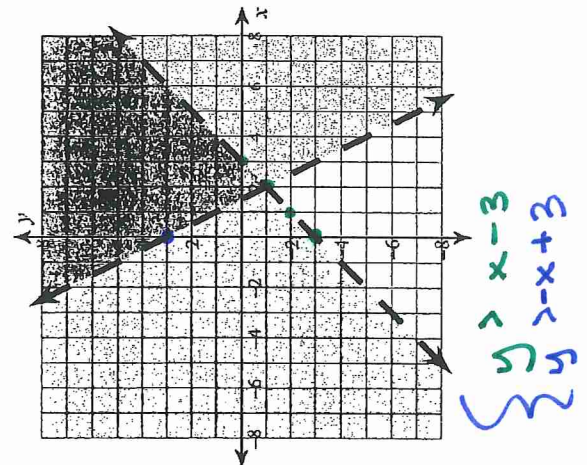
### GRAPHING INEQUALITIES ON A NUMBER LINE

Graph the solution to each inequality on a number line.



### SYSTEMS OF INEQUALITIES

WRITE A SYSTEM OF INEQUALITIES TO DESCRIBE EACH GRAPH.

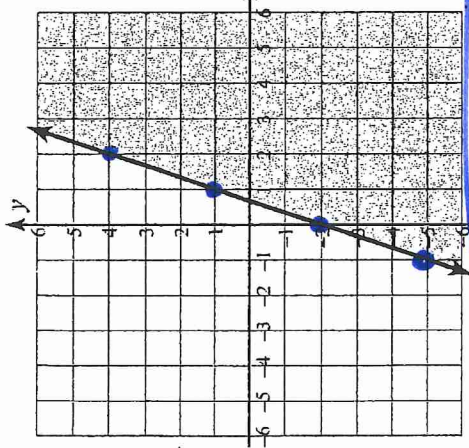


$$\begin{cases} y > x - 3 \\ y > -x + 3 \end{cases}$$

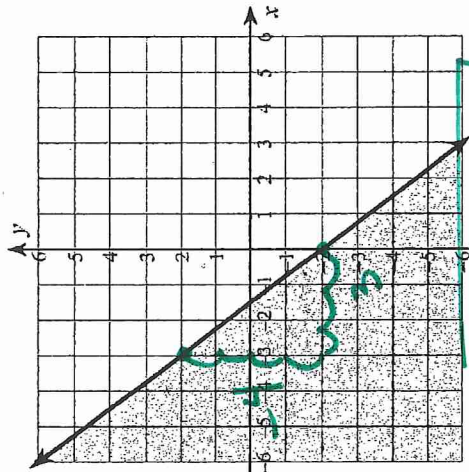
$$\begin{cases} y \leq 4x + 3 \\ y < -2x + 2 \end{cases}$$

### GRAPHING INEQUALITIES IN THE COORDINATE PLANE

WRITE AN INEQUALITY TO DESCRIBE EACH GRAPH.



$$y \leq 3x - 2$$



$$y \leq -\frac{4}{3}x - 2$$

SHOWS  $r = 0.045$

### PROBLEM SOLVING

WRITE AN EQUATION AND USE IT TO SOLVE THE PROBLEM

\$3,000 is invested in an account that pays a 4.5% interest rate compounded annually. At this rate, how much money will be in the investment 7 years from now?

$$A = P(1+r)^t = 3,000(1+0.045)^7 = \$4082.59$$

$r < 0$   
The population of a city is 35,000 and is decreasing at a rate of 2% per year. If this rate of decrease continues, what will the population be 10 years from now?

$$A = P(1-r)^t = 35,000(1-0.02)^{10} = 28,598 \text{ people}$$

Cannot have 28,597.54 people... round up.

### IDENTIFYING FUNCTIONS

WHICH FUNCTION FAMILY DOES EACH EQUATION BELONG TO, AND WHY?

- $y = a \cdot b^x$  EXPONENTIAL
- $y = 2^x$  EXPONENTIAL
- $y = mx + b$  SLOPE-INT FORM (LINEAR)
- $y = 3x + 4$  SLOPE-INT FORM (LINEAR)
- $y = ax^2 + bx + c$  STANDARD FORM (QUADRATIC)
- $y = x^2 - 6x + 9$  STANDARD FORM (QUADRATIC)
- $y = |x|$  ABSOLUTE VALUE
- $y = |x - 3|$  ABSOLUTE VALUE
- $y = a(x-h)^2 + k$  VERTEX FORM (QUADRATIC)
- $y = 2(x+1)^2 - 5$  VERTEX FORM (QUADRATIC)
- $Ax + By = C$  STANDARD FORM (LINEAR)
- $2x - 8y = 16$  STANDARD FORM (LINEAR)