



## Summer Review Packet

### Simple Probability

For problems 1 – 6, a die is rolled. Find the probability of each outcome.

- |    |               |       |    |                      |       |
|----|---------------|-------|----|----------------------|-------|
| 1. | $P$ (prime)   | _____ | 2. | $P$ (less than 3)    | _____ |
| 3. | $P$ (4 or 2)  | _____ | 4. | $P$ (even)           | _____ |
| 5. | $P$ (integer) | _____ | 6. | $P$ (greater than 2) | _____ |

### Algebraic Expressions

For problems 1 – 6, evaluate each expression if  $a = 2$ ,  $b = -3$ ,  $c = -1$ , and  $d = 4$ . Show all work!

- |    |                                     |    |                       |
|----|-------------------------------------|----|-----------------------|
| 1. | $\sqrt{(a - b)^2 + (c - d)^2}$      | 2. | $\frac{b - a}{d - c}$ |
| 3. | $a^2 + b^2$                         | 4. | $\frac{1}{3}ab^2d$    |
| 5. | $\frac{1}{2}(a + b + c)(d) + 2(ac)$ | 6. | $2cd - 3 c + b $      |

## Linear Equations

For problems 1 – 10, solve each equation. Show all work!

1.  $b + 2 = -5$

2.  $-4 - p = -2$

3.  $-2(n + 7) = 15$

4.  $6x + 2 = 3x - 10$

5.  $\frac{x}{4} = 8$

6.  $\frac{12}{5}f = -18$

7.  $\frac{7}{4}q - 2 = -5$

8.  $\frac{2}{9}x - 4 = \frac{2}{3}$

9.  $\frac{x}{3} = \frac{10}{15}$

10.  $\frac{x+2}{3} = \frac{5}{6}$

## Quadratic Equations

For problems 1 & 2, solve each equation. Show all work!

1.  $x^2 = 16$

2.  $3a^2 + 5 = 152$

## Linear Inequalities

For problems 1 – 4, solve each inequality. Show all work!

1.  $7q + 3 \geq -4q + 25$

2.  $-3n - 8 > 2n + 7$

3.  $\frac{-a}{8} < 5$

4.  $-\frac{4}{5}k - 17 > 1$

## Ordered Pairs

For problems 1 – 6, write the ordered pair for each point shown on the coordinate plane.

1. B: \_\_\_\_\_

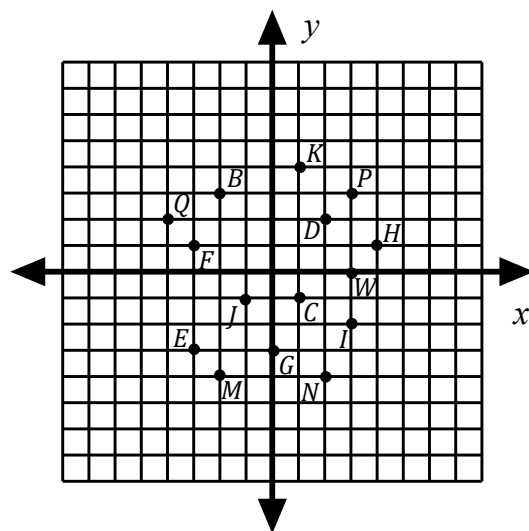
2. C: \_\_\_\_\_

3. D: \_\_\_\_\_

4. E: \_\_\_\_\_

5. F: \_\_\_\_\_

6. G: \_\_\_\_\_



For problems 7 – 11, graph and label each point on the coordinate plane.

Name the quadrant in which each point is located.

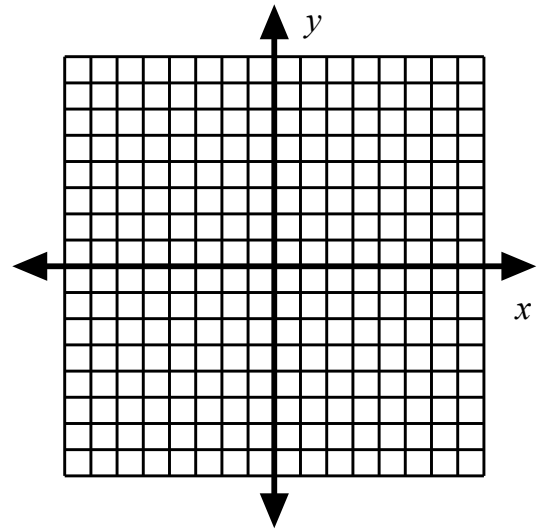
7.  $M(-1,3)$  \_\_\_\_\_

8.  $S(2,0)$  \_\_\_\_\_

9.  $B(5,-1)$  \_\_\_\_\_

10.  $D(3,4)$  \_\_\_\_\_

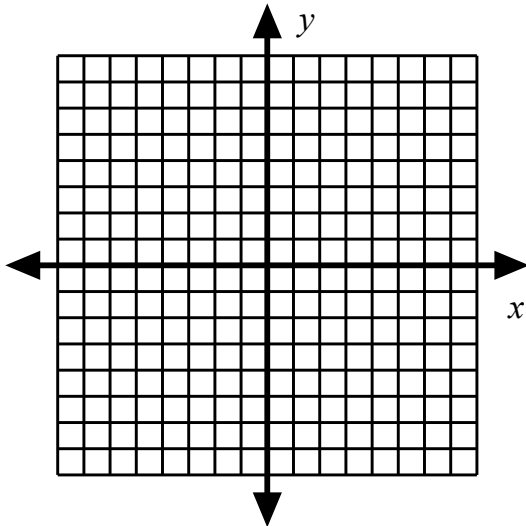
11.  $L(-4,-3)$  \_\_\_\_\_



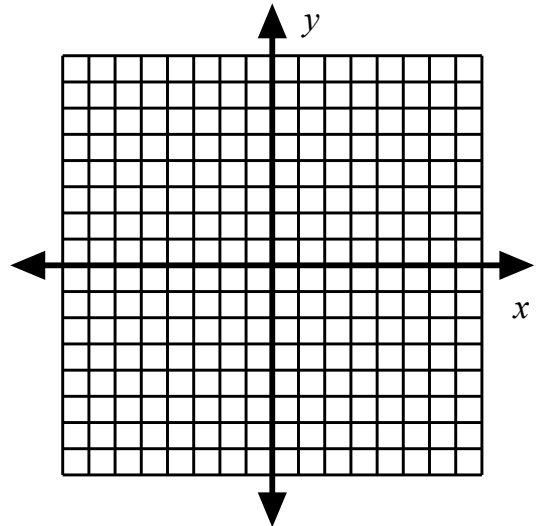
### Graphing Linear Equations

For problems 1 – 4, graph each equation on the given coordinate plane.

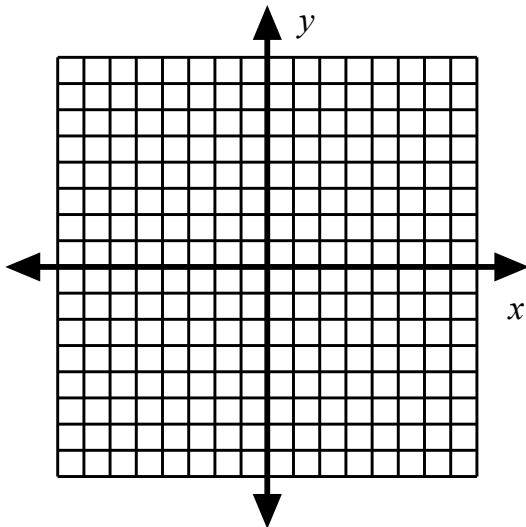
1.  $y = \frac{2}{3}x + 1$



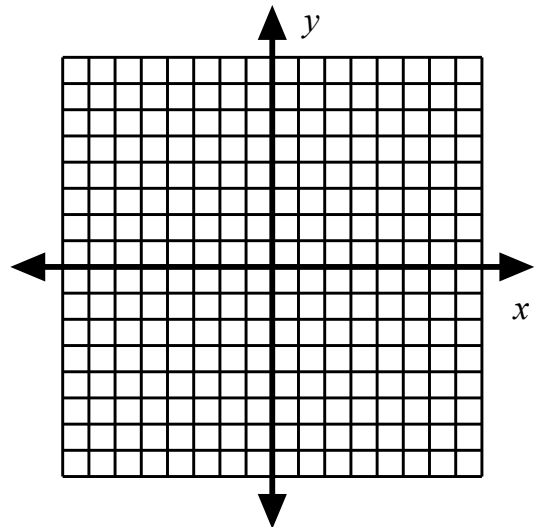
2.  $y = 1 - x$



3.  $y = 3x$



4.  $2x + 4y = 8$



## Systems of Linear Equations

For problems 1 & 2, determine if the given point is a solution to the system of equations.

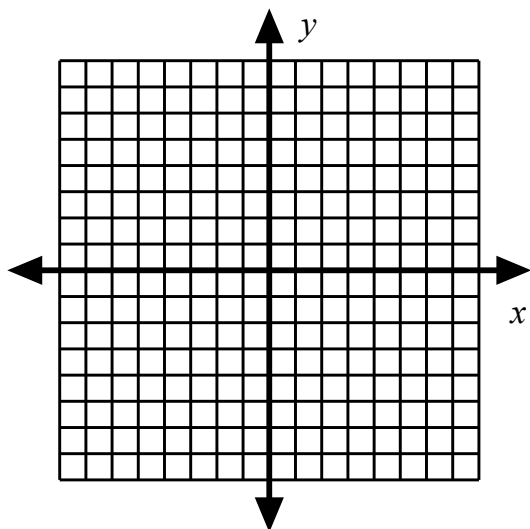
1. 
$$\begin{cases} 3x + 2y = 5 \\ -6x + 2y = -4 \end{cases} \quad (1,1)$$

2. 
$$\begin{cases} 2x + 8y = -4 \\ -3x + 2y = 8 \end{cases} \quad (2, -1)$$

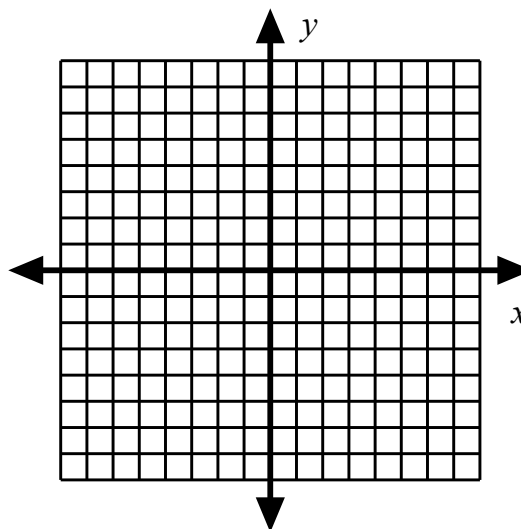
For problems 3 & 4, solve by graphing.

3. 
$$\begin{cases} y = -x + 2 \\ y = -\frac{1}{2}x + 1 \end{cases}$$

4. 
$$\begin{cases} y = 3x - 3 \\ -2x + 2y = 2 \end{cases}$$



Solution: \_\_\_\_\_



Solution: \_\_\_\_\_

**Review:** Solving a system of linear equations using either the substitution or elimination method.

**Example:** 
$$\begin{cases} x + 3y = 5 \\ 2x + 4y = 6 \end{cases}$$

### Substitution Method

- Solve one of the equations for either  $x$  or  $y$ .

$$x + 3y = 5$$

$$x = 5 - 3y$$

- Substitute this expression for  $x$  into the other equation.

$$2x + 4y = 6$$

$$2(5 - 3y) + 4y = 6$$

$$10 - 6y + 4y = 6$$

$$10 - 2y = 6$$

$$-2y = -4$$

$$y = 2$$

- Substitute back in to one of the original equations to solve for  $x$ .

$$x + 3y = 5$$

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

$$x + 6 = 5$$

$$x = -1$$

- Answer:  $(-1, 2)$

OR

### Elimination Method

- Pick a variable to eliminate. I'm going to use  $x$ .
- Multiple one or both of the equations by some number so that when you add the two equations together, both  $x$ 's will cancel.

$$x + 3y = 5$$

$$2x + 4y = 6$$

- Multiply every term in the first equation by  $-2$ .

$$-2x - 6y = -10$$

$$2x + 4y = 6$$

- Add the two equations together.

$$-2y = -4$$

- Solve for  $y$ .

$$y = 2$$

- Substitute this value into one of the original equations to solve for  $x$ .

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

$$x = -1$$

- Answer:  $(-1, 2)$

For problems 5 & 6, solve by substitution or elimination. Show all work.

5. 
$$\begin{cases} -5x + 3y = 12 \\ x + 2y = 8 \end{cases}$$

6. 
$$\begin{cases} 4x - 8y = -8 \\ 6x - 4y = 4 \end{cases}$$

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_

## Square Roots and Simplifying Radicals

For problems 1 – 4, simplify the expression. Show all work. Do NOT use decimals in your answers.

1.  $\sqrt{16}\sqrt{25} = \underline{\hspace{2cm}}$

2.  $\sqrt{32} = \underline{\hspace{2cm}}$

3.  $\sqrt{\frac{81}{49}} = \underline{\hspace{2cm}}$

4.  $\sqrt{75} = \underline{\hspace{2cm}}$

## Multiplying & Factoring Polynomials

For problems 1 – 4, multiply the given polynomials. Answers should be simplified and written in standard form.

1.  $4x^2y(3x^4 + 2y^3)$

2.  $(a - 9)(a + 4)$

3.  $(2k - 13)(7k - 4)$

4.  $(3x + 5)(x^2 + 8x - 10)$

For problems 5 – 8, factor the given polynomial completely.

5.  $12y^4 - 66y^3 + 30y^2$

6.  $x^2 - 16x + 60$

7.  $a^2 - 4a - 32$

8.  $4x^3 + 24x^2 - 288x$

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