

Algebra I Summer Math Packet



Dear Students and Families,

Congratulations on your placement into the Algebra I Advanced Track for the upcoming school year! This is an exciting opportunity, and we are proud of your hard work and dedication to mathematics.

To ensure a successful transition into Algebra I, students are required to complete the enclosed **Summer Math Packet**. The material included consists of two key components:

1. **A review of essential Math 7 concepts**, to reinforce foundational skills.
2. **Introduction to key Math 8 concepts**, which students will skip in the accelerated pathway but will still be expected to understand and apply.

Purpose and Expectations

This packet is not simply a summer assignment to be completed quickly and forgotten. Instead, it is designed to prepare you for the rigor and pace of Algebra I. We expect students to:

- **Complete every problem carefully** and to the best of their ability.
- **Understand each concept thoroughly**, rather than rushing to finish.
- **Use the provided 8th Grade Math Textbook** as a resource. This textbook is being sent home with you and must be **returned at the beginning of the school year**.

When school begins, it will be an expectation that you:

- Are **familiar and comfortable with all the material** in the packet.
- Are ready to move forward with Algebra I content without needing extensive review.

Please take your time over the summer to work through the problems thoughtfully. Feel free to make notes, mark questions you find challenging, and use the textbook to help you. If you find particular topics difficult, consider using online math resources or seeking help from a parent, tutor, or peer.

Due Date: The completed packet is due on the first day of school. It will be collected, graded and counted as the first quiz grade of the year.

We are excited to see the growth and success that this next year will bring. Enjoy your summer, and happy problem solving!

Mrs. Minnick

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Order of Operations

Complete each problem following the order of operations.

1. $10 - (9 - 3)^2$

2. $[5(3 - 2)]^0 - 9$

3. $24 \div 8 + (9 \times 2) \times 4 + 7$

4. $3|9 - 15| + 10$

5. $\frac{10^2 - 9 \cdot 2}{2}$

6. $12 \div 3 + 12 \times 10$

7. $(17 - 3) \times (14 - 6) - 22$

8. $(10 + 43 - 5) \div 6 + 5^2$

9. $|20 - 31| + 10(5^2 - 15)$

10. $(6 + 3)^2 + (9 - 10 \div 5)$

Integer Operations

no calculator

Complete each problem without using a calculator.

1. $-9 + (-7) =$ _____

2. $10 - (-3) =$ _____

3. $-4 - (-5) =$ _____

4. $12 + (-2) =$ _____

5. $-6 + (-7) =$ _____

6. $\frac{-18}{9} =$ _____

7. $-35 \div -7 =$ _____

8. $-9 \times 3 =$ _____

9. $-8 \times -4 =$ _____

10. $10 \times -5 =$ _____

Computation with Fractions

no calculator

Complete each problem without using a calculator.

1. $\frac{1}{3} + \frac{5}{3} =$ _____

2. $\frac{1}{4} + \frac{2}{8} =$ _____

3. $\frac{5}{7} - \frac{3}{7} =$ _____

4. $\frac{7}{8} - \frac{1}{4} =$ _____

5. $\frac{1}{3} + \frac{1}{6} + \frac{2}{9} =$ _____

6. $\frac{1}{2} \div \frac{3}{5} =$ _____

7. $\frac{1}{4} \times \frac{7}{9} =$ _____

8. $\frac{2}{3} \times \frac{3}{4} =$ _____

9. $\frac{4}{5} \div \frac{8}{10} =$ _____

10. $\frac{3}{4} \times \frac{2}{15} =$ _____

Computation with Decimals

no calculator

Complete each problem without using a calculator.

1. $8.75 + 1.24 =$ _____

2. $0.99 - 0.26 =$ _____

3. $24.105 + 11.06 + 6.5902 =$ _____

4. $11.89 - 5.18 =$ _____

5. $80.09 - 72.6081 =$ _____

6. $5 \times 1.2 =$ _____

7. $0.03 \times 1.55 =$ _____

8. $3.8 \times 0.2 =$ _____

9. $1.26 \div 0.8 =$ _____

10. $17.5 \div 5 =$ _____

Multiplication Tables

no calculator

See what you know, how many can you complete in 2 minutes? After time complete the entire page, remember no calculator!

$8 \times 4 = \underline{\quad}$

$7 \times 9 = \underline{\quad}$

$12 \times 0 = \underline{\quad}$

$7 \times 10 = \underline{\quad}$

$3 \times 1 = \underline{\quad}$

$12 \times 0 = \underline{\quad}$

$11 \times 11 = \underline{\quad}$

$11 \times 5 = \underline{\quad}$

$10 \times 0 = \underline{\quad}$

$11 \times 4 = \underline{\quad}$

$10 \times 6 = \underline{\quad}$

$2 \times 5 = \underline{\quad}$

$12 \times 0 = \underline{\quad}$

$7 \times 2 = \underline{\quad}$

$3 \times 9 = \underline{\quad}$

$0 \times 4 = \underline{\quad}$

$8 \times 1 = \underline{\quad}$

$8 \times 5 = \underline{\quad}$

$2 \times 11 = \underline{\quad}$

$1 \times 9 = \underline{\quad}$

$5 \times 5 = \underline{\quad}$

$7 \times 9 = \underline{\quad}$

$5 \times 12 = \underline{\quad}$

$5 \times 6 = \underline{\quad}$

$11 \times 1 = \underline{\quad}$

$3 \times 11 = \underline{\quad}$

$0 \times 9 = \underline{\quad}$

$1 \times 10 = \underline{\quad}$

$2 \times 5 = \underline{\quad}$

$5 \times 10 = \underline{\quad}$

$8 \times 7 = \underline{\quad}$

$11 \times 7 = \underline{\quad}$

$8 \times 9 = \underline{\quad}$

$6 \times 1 = \underline{\quad}$

$4 \times 5 = \underline{\quad}$

$7 \times 4 = \underline{\quad}$

$4 \times 2 = \underline{\quad}$

$4 \times 10 = \underline{\quad}$

$3 \times 11 = \underline{\quad}$

$8 \times 8 = \underline{\quad}$

$7 \times 4 = \underline{\quad}$

$9 \times 10 = \underline{\quad}$

$7 \times 10 = \underline{\quad}$

$7 \times 12 = \underline{\quad}$

$6 \times 2 = \underline{\quad}$

$2 \times 0 = \underline{\quad}$

$9 \times 1 = \underline{\quad}$

$11 \times 1 = \underline{\quad}$

$9 \times 9 = \underline{\quad}$

$12 \times 5 = \underline{\quad}$

$2 \times 4 = \underline{\quad}$

$5 \times 8 = \underline{\quad}$

$12 \times 3 = \underline{\quad}$

$7 \times 0 = \underline{\quad}$

$4 \times 12 = \underline{\quad}$

$9 \times 9 = \underline{\quad}$

$3 \times 2 = \underline{\quad}$

$4 \times 9 = \underline{\quad}$

$8 \times 10 = \underline{\quad}$

$5 \times 3 = \underline{\quad}$

$6 \times 1 = \underline{\quad}$

$8 \times 3 = \underline{\quad}$

$9 \times 10 = \underline{\quad}$

$0 \times 11 = \underline{\quad}$

Evaluating Expressions

Evaluate each of the following expressions given:

$$a = 2, b = 5 \text{ and } c = 6$$

1. $\frac{12}{a} + 2b$

2. $c(4 + a)$

3. $\frac{5(a+b)}{c}$

4. $ab + ac$

5. abc

Evaluate each of the following expressions given:

$$x = -3, y = 4 \text{ and } z = 7$$

6. $-4x + y$

7. $y^2 - x$

8. $z(x + y) - xy$

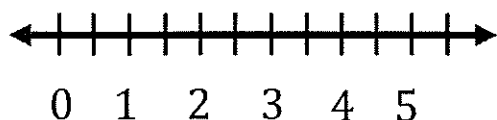
9. $\frac{xy}{2} + z$

10. xyz

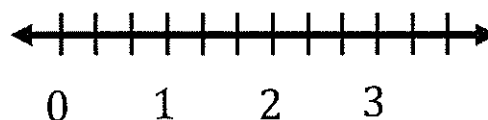
On the Number Line

Place each number on the given number line.

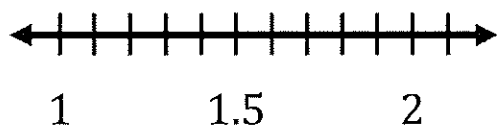
1. 1.5



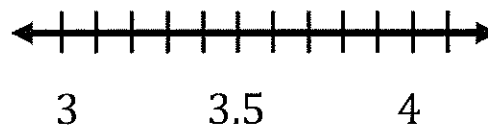
2. $\sqrt{8}$



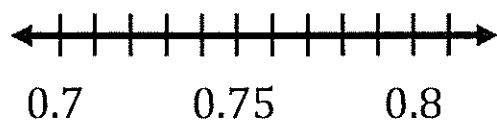
3. $\sqrt{2}$



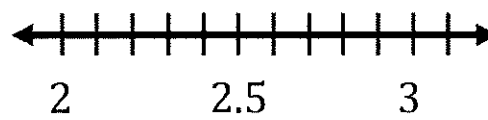
4. π



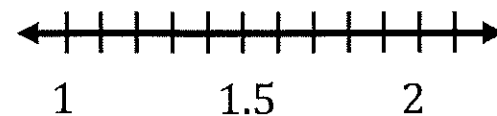
5. 0.77



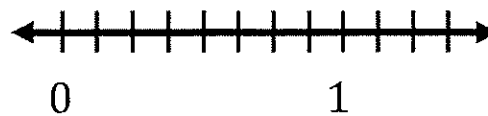
6. $\sqrt{5}$



7. $\sqrt{3}$



8. $\frac{7}{8}$



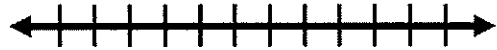
Inequalities on the Number Line

Graph each inequality on the given number line. You will label your number line as needed for the problem.

1. $x < -2$



2. $x \geq 0$



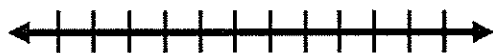
3. $x > 5$



4. $x \leq -4$



5. The value of x is at least 1



6. 9 is less than x



7. x is greater than or equal to 10



8. x is more than 8



Scientific Notation

Part 1: Write each number in scientific notation.

1. 101,000

2. 0.00723

3. 1,300,000

4. 0.0011

5. 7,650,000,000

6. 0.00000034

Part 2: Write each number in standard form.

7. 6.33×10^4

8. 4.2×10^{-2}

9. 9.8×10^7

10. 2.111×10^{-5}

11. 2.67×10^9

12. 5.75×10^{-3}

Exponents Basics

Simplify each of the following expressions using the laws of exponents.

1. $6x^2(3x^2)$

2. $\frac{9x^3y^6}{3x^2y^3}$

3. $(2a^3b^4)^2$

4. $(5xy)^0$

5. $(15mn)(3m^2n^3)$

6. $\frac{25a^7b^3}{5a^6b}$

7. $\frac{m^{10}n^{20}}{m^5n^5}$

8. $(4a)(3a)(2ab)$

9. $(6xyz)(3x)^0$

10. $\frac{ab}{ab}$

GCF

GCF = Greatest Common Factor

For each pair of numbers listed below write their gcf. If their GCF is one they are Prime.

1. 6 and 9

2. 4 and 18

$$\text{GCF}(6,9) = \underline{\hspace{2cm}}$$

$$\text{GCF}(4, 18) = \underline{\hspace{2cm}}$$

3. 12 and 20

4. 10 and 24

$$\text{GCF}(12, 20) = \underline{\hspace{2cm}}$$

$$\text{GCF}(10, 24) = \underline{\hspace{2cm}}$$

5. 30 and 40

6. 5 and 12

$$\text{GCF}(30,40) = \underline{\hspace{2cm}}$$

$$\text{GCF}(5, 12) = \underline{\hspace{2cm}}$$

7. 20 and 15

8. 16 and 49

$$\text{GCF}(20, 15) = \underline{\hspace{2cm}}$$

$$\text{GCF}(16, 49) = \underline{\hspace{2cm}}$$

Combining Like Terms

Simplify each expression by combining like terms.

1. $5x + 3y + 8x - 2y$

2. $2a + 3b + 4a$

3. $2ab + 5ab - 2ab$

4. $5xy - 2xy + 3x - 8x$

5. $4p + 3np - 3n + 2p$

6. $9x + 2 - 7 + 3x$

7. $6mn + 4m - 3n + 7mn$

8. $5xy - 8mn + 3xy - 2mn$

9. $10m^2 - 10m + 2m^2$

10. $12np - 3np - 9np + 2np$

Solving One Step Equations

Solve each of the following one step equations. Show your steps in the spaces below and write your final answer in the given box.

1. $x + 5 = 12$

2. $n - 12 = 10$

3. $\frac{x}{4} = 10$

4. $5m = 30$

5. $\frac{1}{3}x = 9$

6. $5 + y = 8$

Solving Two Step Equations

Solve each of the following two step equations. Show your steps in the spaces below and write your final answer in the given box.

1. $4x + 3 = 15$

2. $2n - 12 = 10$

3. $\frac{x}{4} - 6 = 10$

4. $3 - 4m = 35$

5. $\frac{1}{2}x + 7 = 8$

6. $5 + 2y = 8$

Solving Proportions

Solve each of the following proportions. Show your steps in the spaces below and write your final answer in the given box.

1. $\frac{5}{4} = \frac{x}{12}$

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

3. $\frac{x}{4} = \frac{5}{3}$

4. $\frac{6}{5} = \frac{2}{5x}$

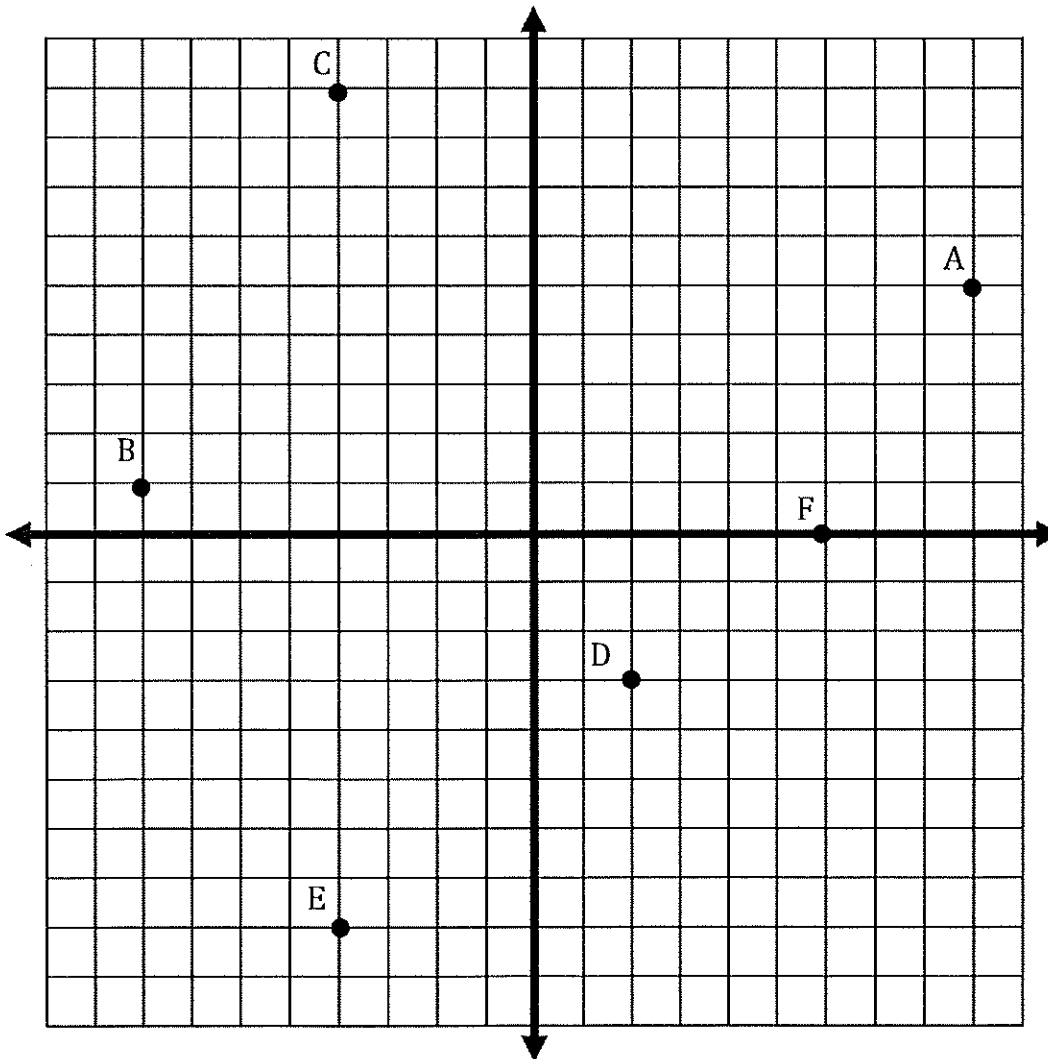
5. $\frac{x}{3.4} = \frac{7.7}{2.17}$

6. $\frac{2.3}{x} = \frac{7.7}{3.6}$

The Coordinate Plane

1. Label the x and y axis.
2. Label the four Quadrants with roman numerals, I, II, III, IV
3. Complete the table with the ordered pair for each point given.

Label	Ordered Pair	Label	Ordered Pair
A		D	
B		E	
C		F	



4. Plot the following points given in the table onto the coordinate plane.

Label	Ordered Pair
G	(0, 0)
H	(-3, 4)
I	(0, -7)
J	(-10, -4)
K	(3, 6)
L	(5, -7)

Creating a Table

1. Fill in the table for each problem using the given equation & values.
2. Use the middle column of the table to substitute in your values

1. Sample: $y = 3x$

x	3x	y
-2	$3(-2) =$	-6
0	$3(0) =$	0
2	$3(2) =$	6

2. $y = -4x$

x	-4x	y
-2		
0		
2		

3. $y = 5x + 3$

x	5x + 3	y
0		
1		
2		

4. $y = -2x - 4$

x	-2x - 4	y
0		
1		
2		

5. $y = -0.5x + 1$

x	-0.5x + 1	y
2		
4		
6		

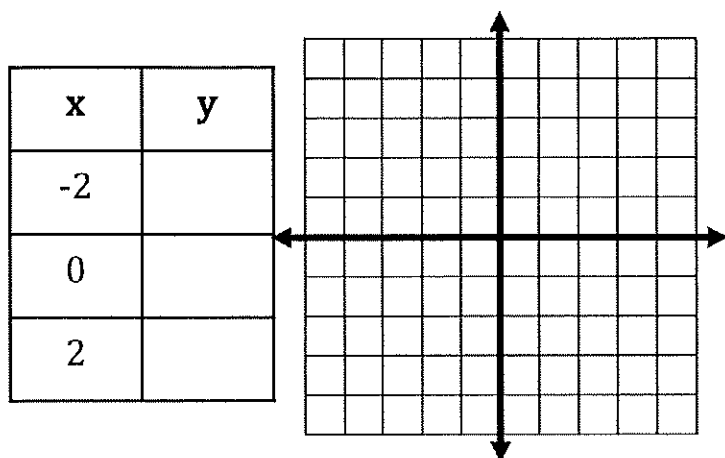
6. $y = -x - 6$

x	-x - 6	y
2		
4		
6		

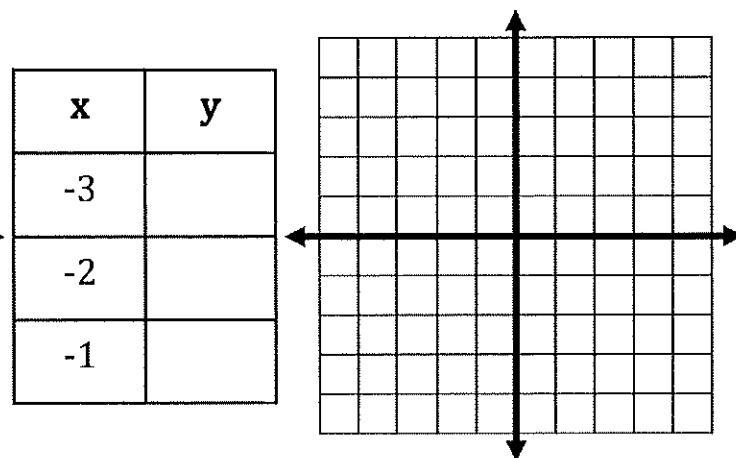
Graphing from a Table

1. Fill in the table for each problem using the given equation & values.
2. Graph the ordered pairs from the table.
3. Connect ordered pairs to create the graph of the line.

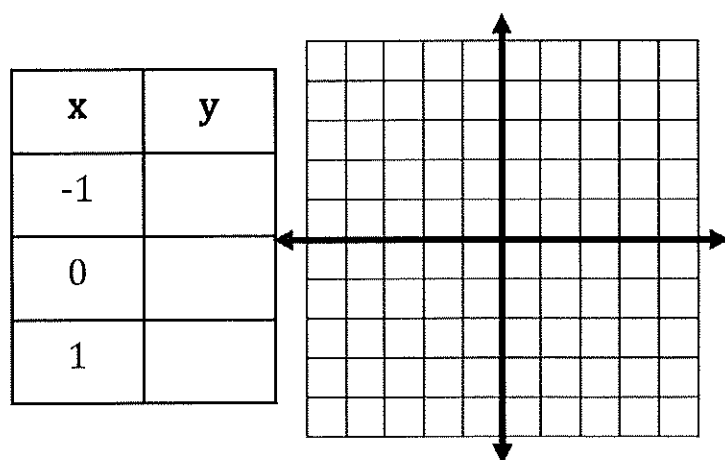
1. $y = x$



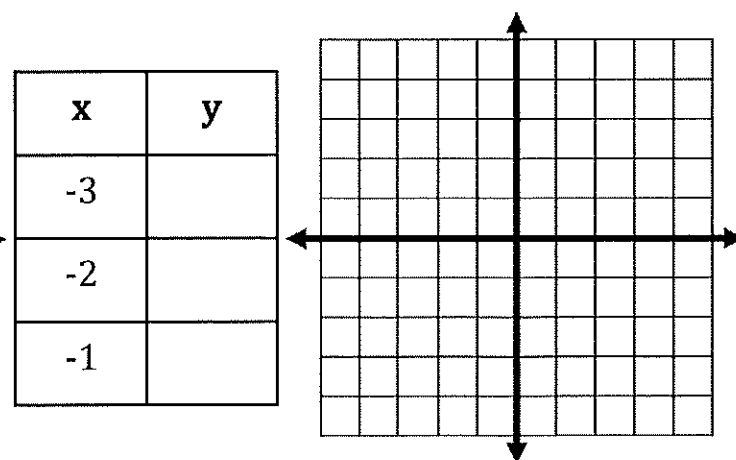
2. $y = 2x + 1$



3. $y = -x - 2$



4. $y = -3x - 3$



Slope

$$\text{Slope} = \frac{\text{Rise}}{\text{run}} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

Find the slope between the two given points using the formula for slope. $m = \frac{y_2 - y_1}{x_2 - x_1}$

1. $(4, 3)$ and $(9, 6)$

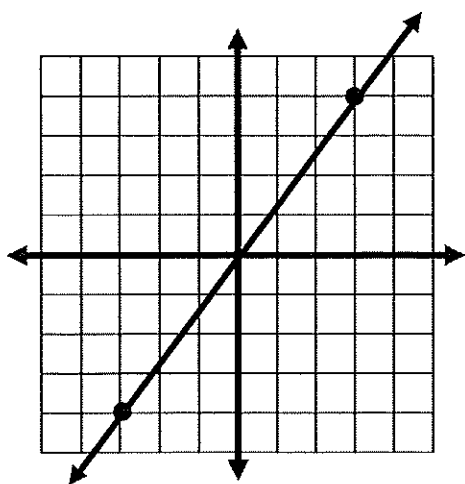
2. $(0, -2)$ and $(6, 4)$

3. $(2, 2)$ and $(-6, -2)$

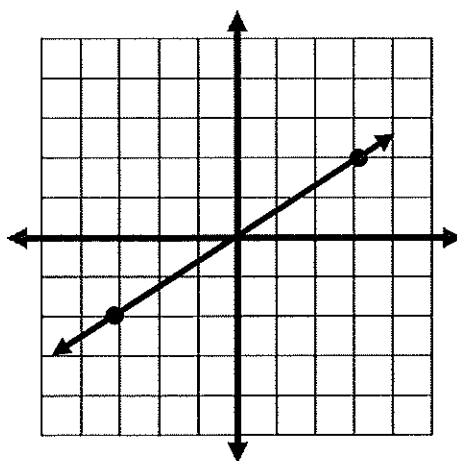
4. $(9, 0)$ and $(5, -2)$

Find the slope from each of the given graphs.

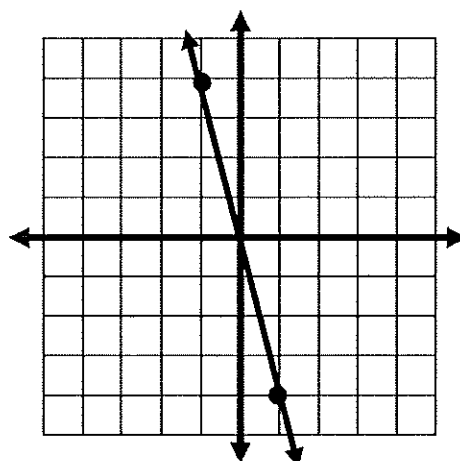
5.



6.



7.



Slope Intercept Equation

Slope Intercept Form: $y = mx + b$
 $m = \text{slope}$ & $b = \text{y-intercept}$

Name the slope and y-intercept of each given equation.

1. $y = 5x - 2$

Slope _____

y-intercept _____

2. $y = 3x$

Slope _____

y-intercept _____

3. $y = 1/2x + 5$

Slope _____

y-intercept _____

4. $y = x + 9$

Slope _____

y-intercept _____

Write an equation in slope intercept form given the slope and y-intercept.

5. Slope = 3, y-intercept = -1

equation: _____

6. Slope = 1, y-intercept = 0

equation: _____

7. Slope = -2, y-intercept = 4

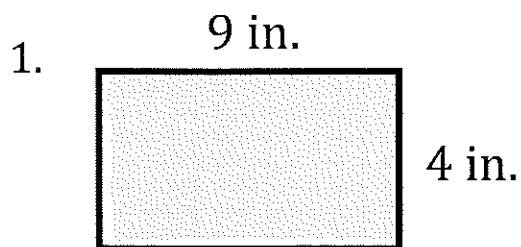
equation: _____

8. Slope = -1, y-intercept = -3

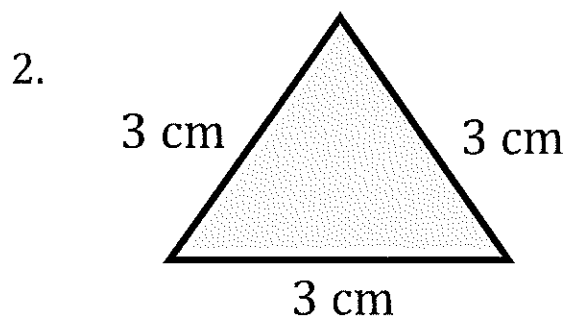
equation: _____

Perimeter

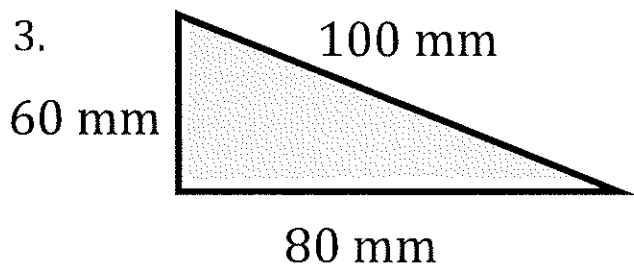
Perimeter is the measure of the distance around the shape. Find the perimeter of each given shape.



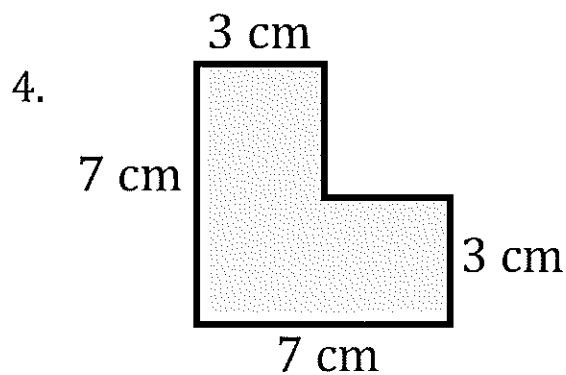
P = _____



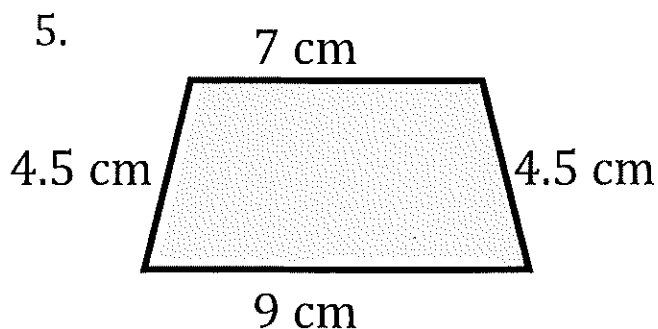
P = _____



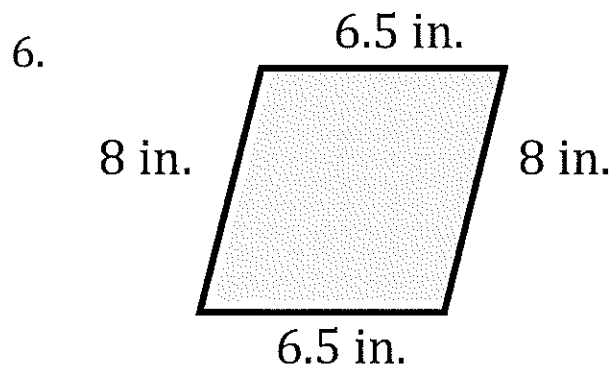
P = _____



P = _____



P = _____

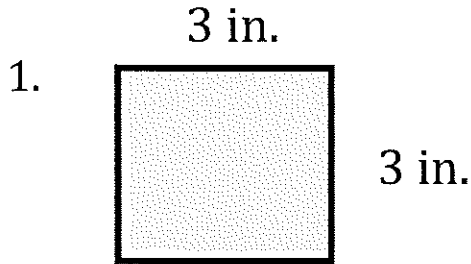


P = _____

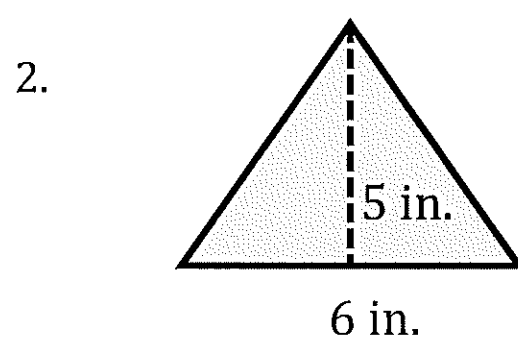
Area

Area is calculated using different formulas for each shape. Round to the nearest tenth when needed.

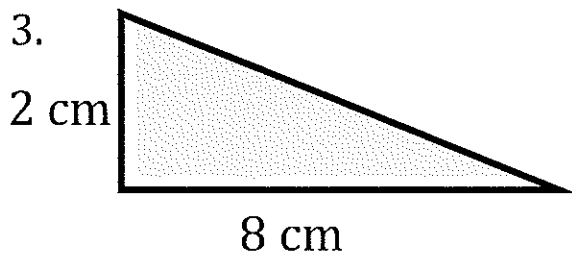
Square $A =$ _____ Triangle $A =$ _____ Circle $A =$ _____



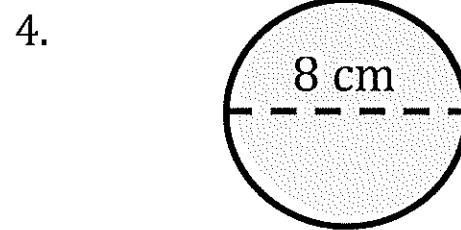
$A =$ _____



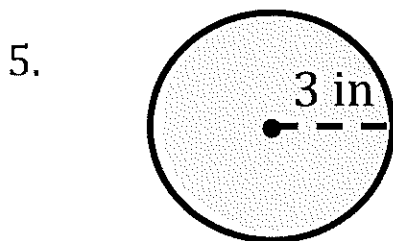
$A =$ _____



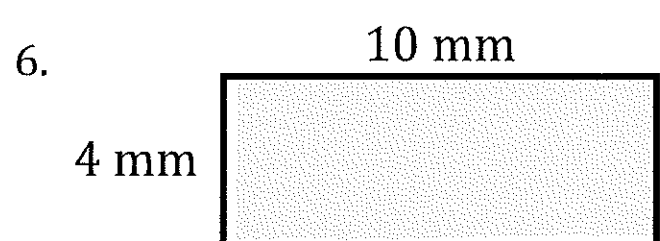
$A =$ _____



$A =$ _____



$A =$ _____

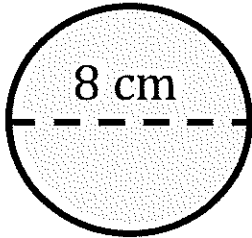


$A =$ _____

Circumference

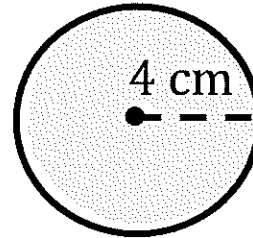
Circumference of a circle is the distance around a circle. Find the circumference of each of the given circles, round to the nearest tenth. Write the formula(s) for circumference here: $C = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

1.



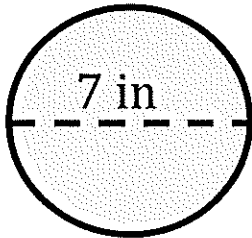
$$C = \underline{\hspace{2cm}}$$

2.



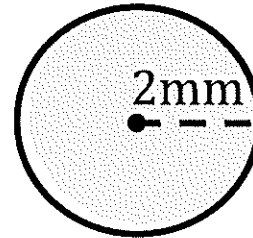
$$C = \underline{\hspace{2cm}}$$

3.



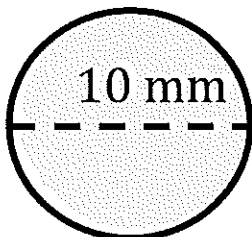
$$C = \underline{\hspace{2cm}}$$

4.



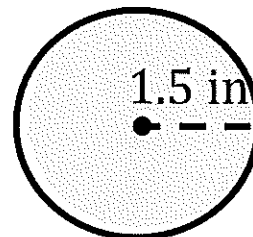
$$C = \underline{\hspace{2cm}}$$

5.



$$C = \underline{\hspace{2cm}}$$

6.



$$C = \underline{\hspace{2cm}}$$

Perfect Squares

Complete the table for each number squared 1 – 15. You should know and recognize these for Algebra 1.

X	X²
1	$1^2 = 1$
2	$2^2 = 4$
3	$3^2 = 9$
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	