

for students entering Mrs. Thornton's **GEOMETRY** Class

- This packet will be graded for accuracy, and it will be included into your Fall 2023 Geometry Grade as a Test
- I will be offering a number of HELP SESSIONS at the school during the week before school starts this fall, and I am available to help this summer by email at athornton@unitychristianschool.org (Please do allow a few days for me to answer summer emails)
- I am available, and I will be happy to help you this summer with the work for this important Summer Packet.
- Regrettably, my help with this packet will not be available after the first day of school has started.
- Students who do not submit a packet by Fall Semester Day 1 will be given a 0.

**Summer Packet 2023 –
Due on the 1st Day of School at the
beginning of your class period.**

Student Name: _____

THE NUMBER PROPERTIES

Match each expression with the property that it shows.

$$5 + 0 = 5$$

Commutative Property
of Addition

$$5(1) = 5$$

Associative Property
of Addition

$$5(0) = 0$$

Additive Identity

$$2 + 3 = 3 + 2$$

Distributive Property

$$2(3) = 3(2)$$

Commutative Property
of Multiplication

$$2 + (3 + 4) = (2 + 3) + 4$$

Associative Property
of Multiplication

$$2(3 \cdot 4) = (2 \cdot 3)4$$

Zero Product Property

$$3(2 + 5) = 6 + 15$$

Multiplicative Identity

CALCULATING SLOPE

Find the slope between the given points or on the graph.

(1, 3) and (5, 8)

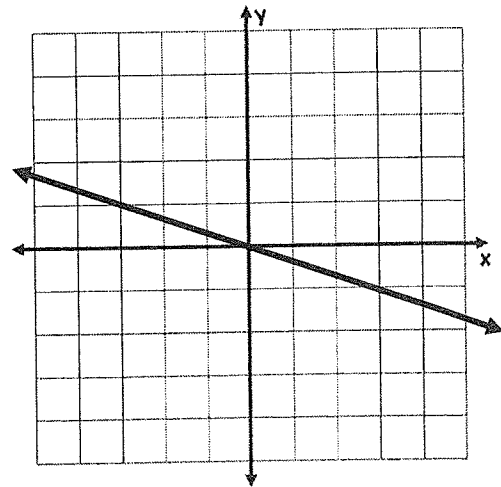
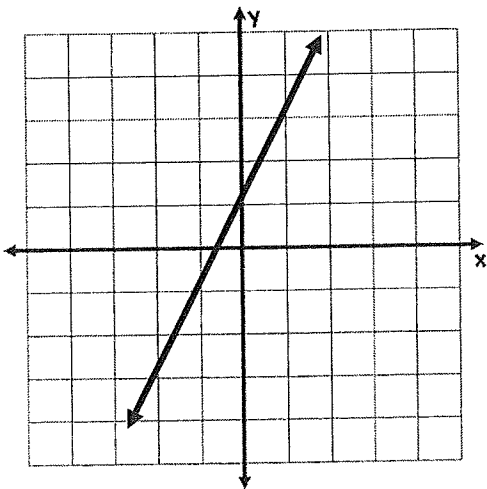
(-2, 7) and (5, 4)

(1, -3) and (0, 8)

(-1, -9) and (4, 0)

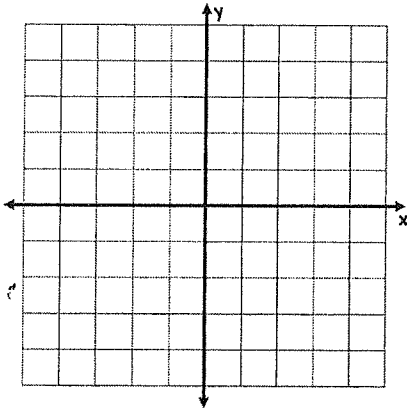
(-8, 8) and (-2, 8)

(-4, 9) and (-4, -8)

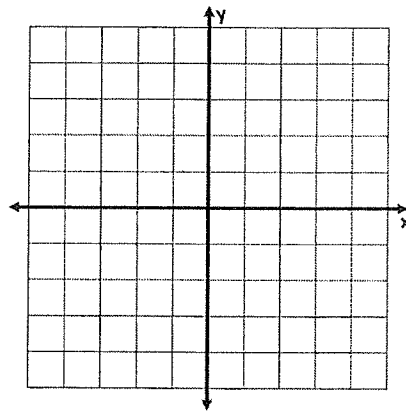


GRAPHING IN SLOPE-INTERCEPT FORM

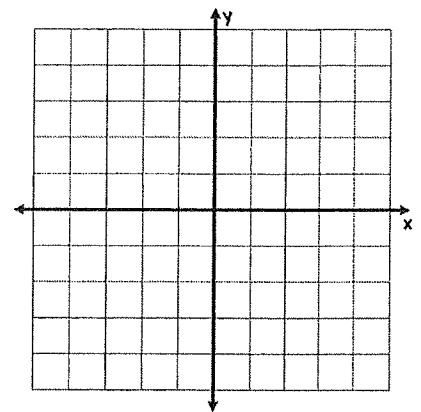
$$y = x + 3$$



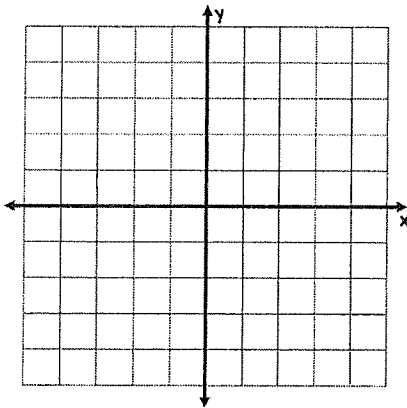
$$y = x - 1$$



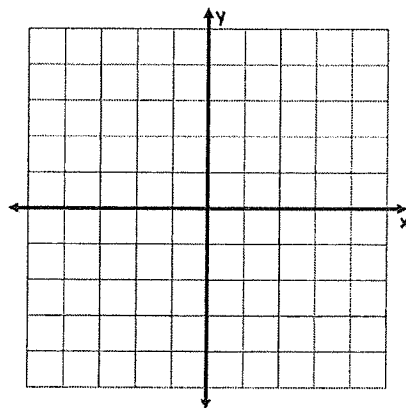
$$y = 2x + 3$$



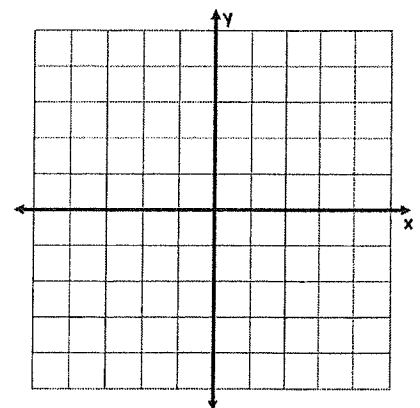
$$y = -2x$$



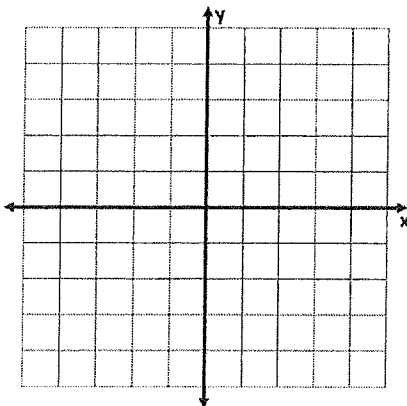
$$y = -x + 3$$



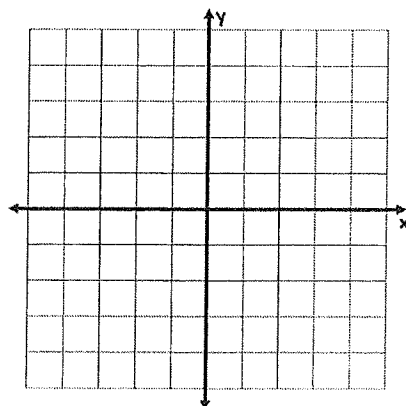
$$y = -3x + 3$$



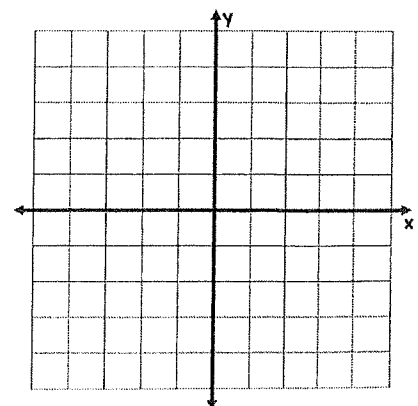
$$y = \frac{1}{2}x - 4$$



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



$$y = \frac{4}{3}x - 3$$



PARALLEL & PERPENDICULAR

Circle whether each pair of equations is parallel, perpendicular, or neither.

slope:

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

parallel perpendicular neither

slope:

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

parallel perpendicular neither

slope:

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

parallel perpendicular neither

slope:

$$\begin{cases} y = 3x + 3 \\ x - 3y = 9 \end{cases}$$

parallel perpendicular neither

slope:

$$\begin{cases} 2x + 3y = 6 \\ 3x - 2y = 4 \end{cases}$$

parallel perpendicular neither

slope:

$$\begin{cases} y = \frac{2}{5}x + 3 \\ 2x - 5y = 10 \end{cases}$$

parallel perpendicular neither

slope:

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

parallel perpendicular neither

slope:

$$\begin{cases} y = 5x + 3 \\ x + 4y = 8 \end{cases}$$

parallel perpendicular neither

SOLVING MULTI-STEP EQUATIONS

Solve each equation. Simplify your answer.

$$3(x + 4) = 2.5(x - 6)$$

$$2(x - 5) + 7 = -3(2x - 6)$$

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

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

$$\frac{2}{3}(5x + 6) = \frac{3}{2}(8x - 4)$$

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

SOLVING INEQUALITIES

Solve the inequalities.

$$30 + 2x < 17$$

$$15 < -4x + 18$$

$$6 \leq 4x + 80$$

$$10 - 2x \leq 17$$

$$-12 > -3x - 12$$

$$-9 \leq -5x - 33$$

$$8 + 2x < -x + 17$$

$$4x - 9 \leq 5x + 80$$

$$5 - 2x \geq 6(x - 3)$$

$$-3(3 + x) \leq -6x - 11$$

SUBSTITUTION TO SOLVE SYSTEMS

Solve each system by substitution.

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

$$\begin{cases} y = 3x + 3 \\ x - 3y = 9 \end{cases}$$

$$\begin{cases} 2x + y = 6 \\ x = 2y - 1 \end{cases}$$

$$\begin{cases} y = \frac{2}{5}x + 3 \\ 2x - 5y = 10 \end{cases}$$

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

$$\begin{cases} 2x + 3y = 6 \\ y = -3x - 1 \end{cases}$$

FACTORING TRINOMIALS

Factor each trinomial.

$$x^2 + 5x + 4$$

$$x^2 + 8x + 16$$

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

$$x^2 - 6x - 7$$

$$x^2 + 5x + 6$$

$$x^2 - 10x + 25$$

$$2x^2 + 7x + 3$$

$$3x^2 - 13x + 4$$

$$5x^2 + 7x - 6$$

Solve the polynomial equation.

$$x^2 + 9x = -8$$

$$2x^2 = 7x - 3$$

$$3x^2 + 15x = -18$$

SIMPLIFYING RADICALS

Simplify each radical expression.

$\sqrt{4}$

$\sqrt{6}$

$\sqrt{8}$

$\sqrt{9}$

$\sqrt{10}$

$\sqrt{12}$

$\sqrt{18}$

$\sqrt{25}$

$\sqrt{28}$

$\sqrt{32}$

$\sqrt{40}$

$\sqrt{48}$

$\sqrt{50}$

$\sqrt{55}$

$\sqrt{60}$

$\sqrt{64}$

$\sqrt{72}$

$\sqrt{90}$

$\sqrt{99}$

$\sqrt{120}$

$\sqrt{150}$

$\sqrt{160}$

$\sqrt{200}$

$\sqrt{256}$

$\sqrt{300}$

OPERATIONS WITH RADICALS

Simplify each radical expression.

$$\sqrt{2} + \sqrt{2}$$

$$4\sqrt{3} + \sqrt{3}$$

$$5\sqrt{6} + 2\sqrt{6}$$

$$\sqrt{2} - \sqrt{2}$$

$$4\sqrt{3} - \sqrt{3}$$

$$5\sqrt{6} - 2\sqrt{6}$$

$$\sqrt{2} \cdot \sqrt{2}$$

$$4\sqrt{3} \cdot \sqrt{3}$$

$$5\sqrt{6} \cdot 2\sqrt{6}$$

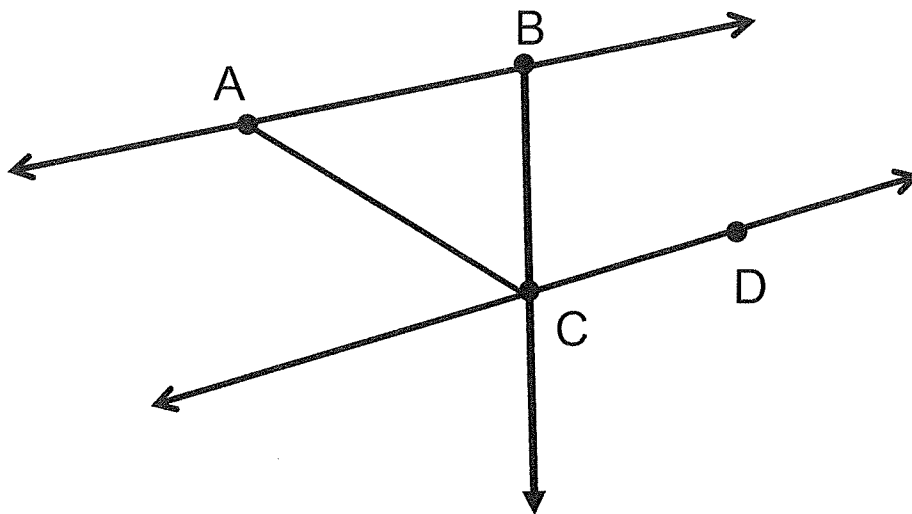
$$\sqrt{72} + \sqrt{50}$$

$$4\sqrt{45} - \sqrt{125}$$

$$5\sqrt{27} + 2\sqrt{5}$$

CLASSIFYING SEGMENTS, RAYS, & LINES

Determine the segments, rays, and lines from the diagram.



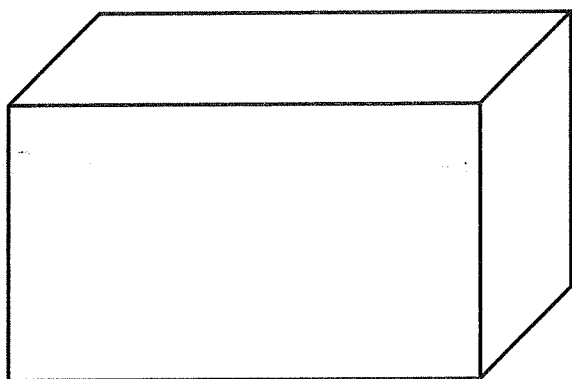
| SEGMENTS | RAYS | LINES |
|----------|------|-------|
| | | |

Determine whether each statement is true or false.

| | |
|---|--|
| Two lines can intersect at exactly one point. | |
| Two lines can intersect at exactly two points. | |
| There are an infinite number of points on a line. | |
| A ray has an arrow at one end. | |
| A segment and a line are identical. | |

NUMBER OF EDGES & VERTICES

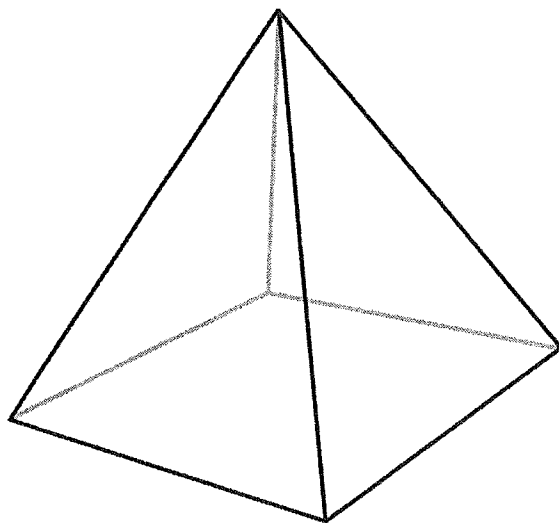
List the number of edges and vertices for each figure.



rectangular prism

edges:

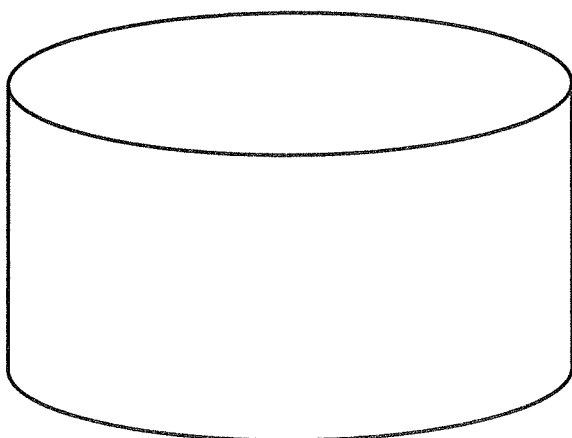
vertices:



square pyramid

edges:

vertices:



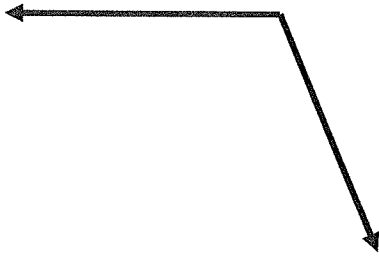
cylinder

edges:

vertices:

ANGLE MEASUREMENTS

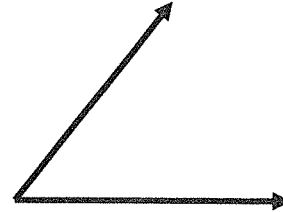
Circle the type of angle shown and the best approximate measure of the angle.



acute 60

obtuse 100

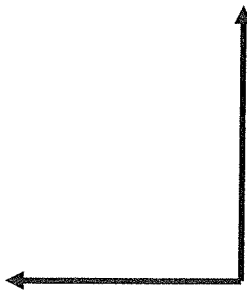
right 90



acute 60

obtuse 100

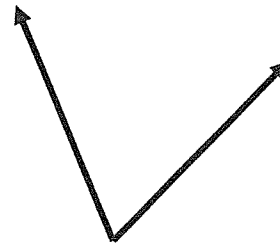
right 90



acute 60

obtuse 100

right 90



acute 60

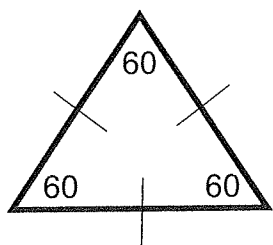
obtuse 100

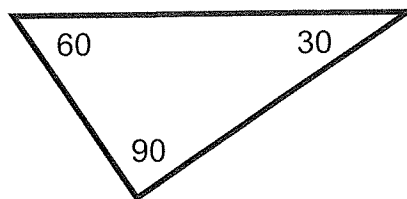
right 90

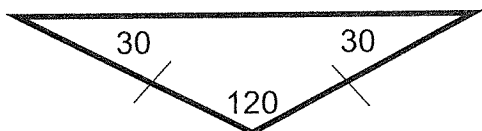
TYPES OF TRIANGLES

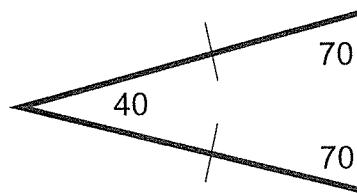
Name the triangle based on its sides and angles.

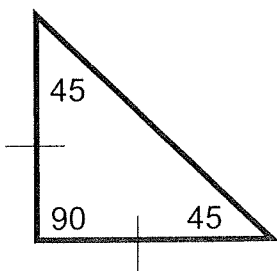
Names include equilateral, isosceles, and scalene, acute, obtuse, and right.

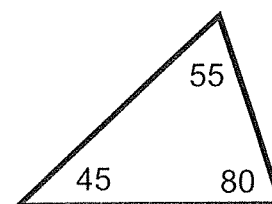






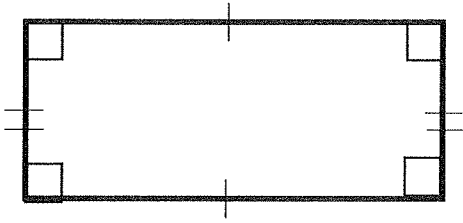


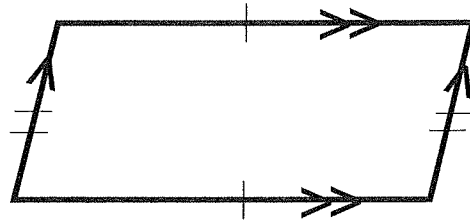


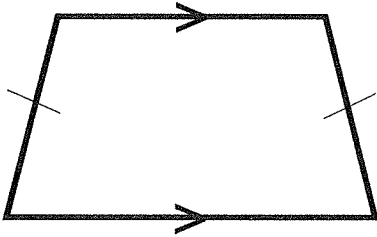


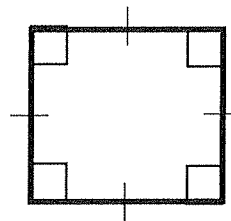
TYPES OF QUADRILATERALS

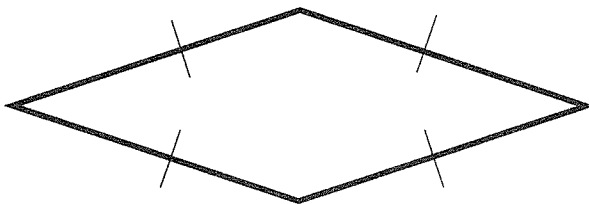
Determine if the quadrilateral is a square, rectangle, rhombus, trapezoid, isosceles trapezoid, parallelogram, or more than one of those names.







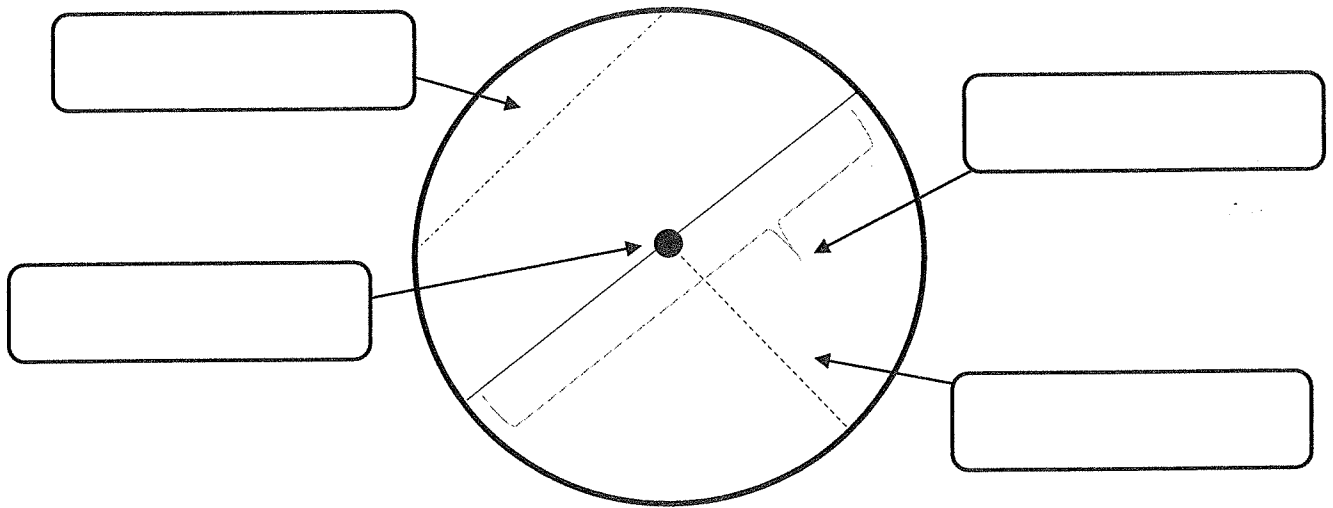




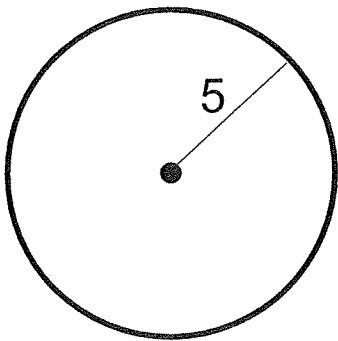


PARTS OF A CIRCLE

Given the circle, name each part.

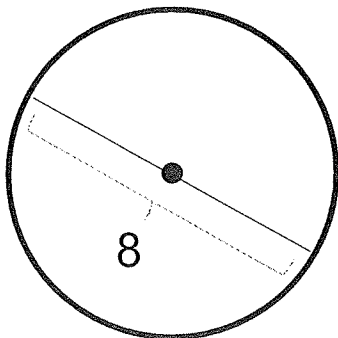


Find the circumference and area of each circle.



Circumference: $C = 2\pi r$

Area: $A = \pi r^2$

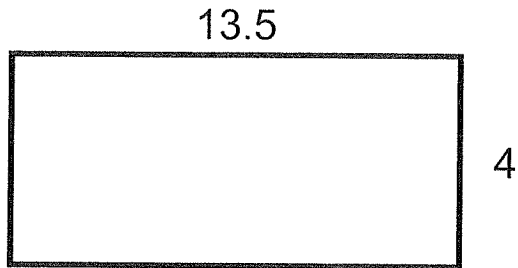


Circumference: $C = \pi d$

Area: $A = \pi r^2$

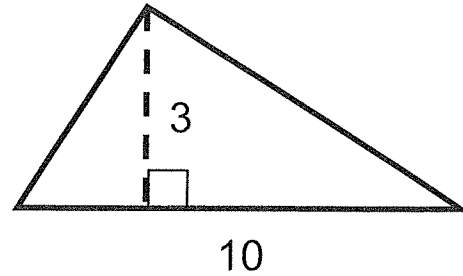
AREA FORMULAS

Calculate the area of each figure.



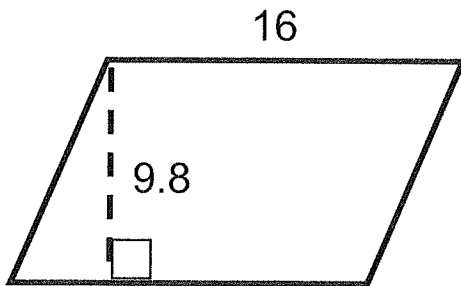
rectangle

$$A = lw$$



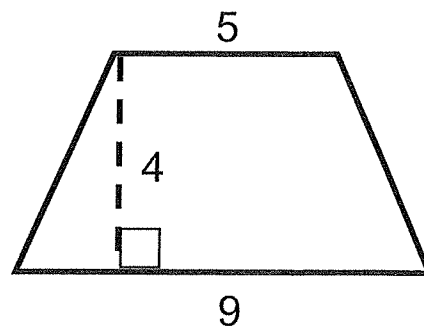
triangle

$$A = \frac{1}{2}bh$$



parallelogram

$$A = bh$$

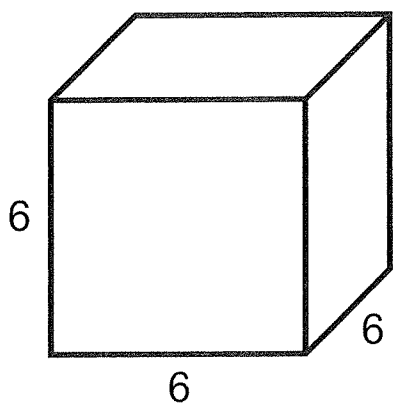


trapezoid

$$A = \frac{1}{2}h(b_1 + b_2)$$

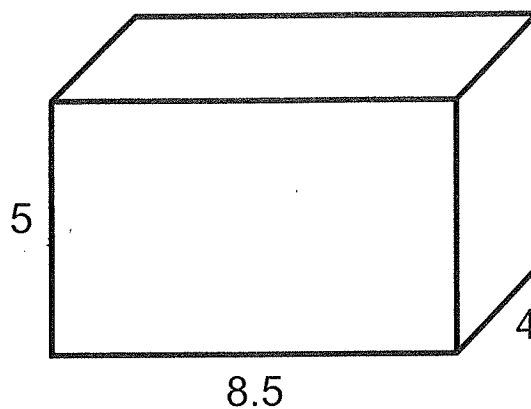
VOLUME FORMULAS

Calculate the volume of each figure.



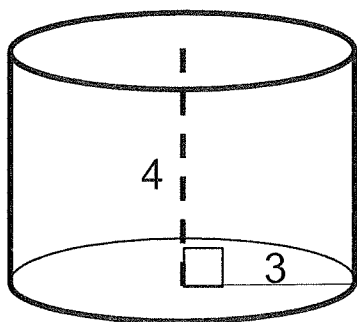
cube

$$V = s^3$$



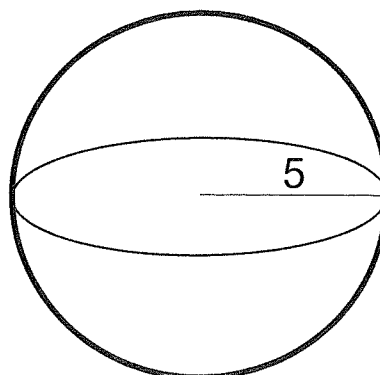
rectangular prism

$$V = lwh$$



cylinder

$$V = \pi r^2 h$$



sphere

$$V = \frac{4}{3}\pi r^3$$