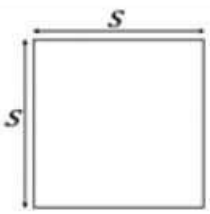
GEOMETRY

SHAPES AND SOLIDS

SQUARE

$P = 4s$

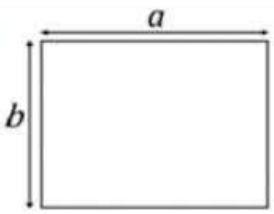
$A = s^2$



RECTANGLE

$P = 2a + 2b$

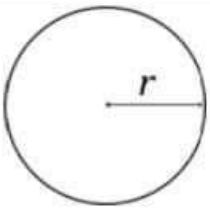
$A = ab$



CIRCLE

$P = 2\pi r$

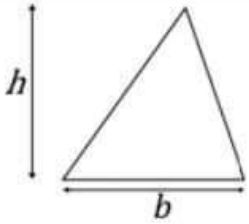
$A = \pi r^2$



TRIANGLE

$P = a + b + c$

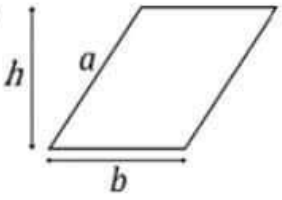
$A = \frac{1}{2}bh$



PARALLELOGRAM

$P = 2a + 2b$

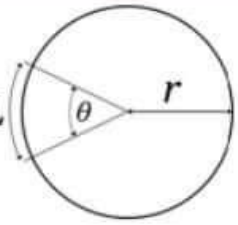
$A = bh$



CIRCULAR SECTOR

$L = \pi r \frac{\theta}{180°}$

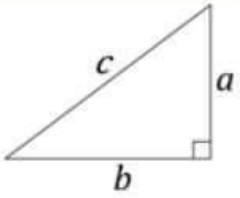
$A = \pi r^2 \frac{\theta}{360°}$



PYTHAGOREAN THEOREM

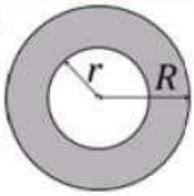
$a^2 + b^2 = c^2$

$c = \sqrt{a^2 + b^2}$



CIRCULAR RING

$A = \pi(R^2 - r^2)$



SPHERE

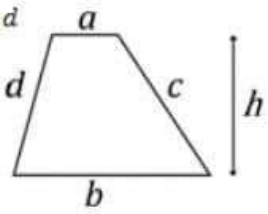
$S = 4\pi r^2$

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

TRAPEZOID

$P = a + b + c + d$

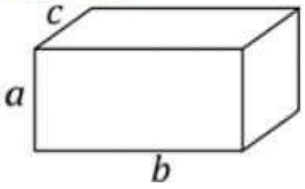
$A = h\frac{a+b}{2}$



RECTANGULAR BOX

$A = 2ab + 2ac + 2bc$

$V = abc$

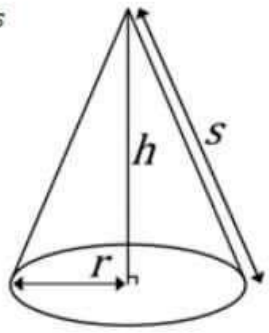


RIGHT CIRCULAR CONE

$A = \pi r^2 + \pi rs$

$s = \sqrt{r^2 + h^2}$

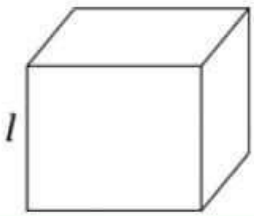
$V = \frac{1}{3}\pi r^2 h$



CUBE

$A = 6l^2$

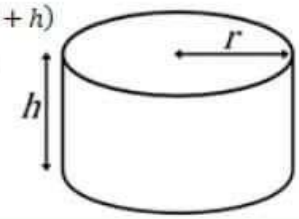
$V = l^3$



CYLINDER

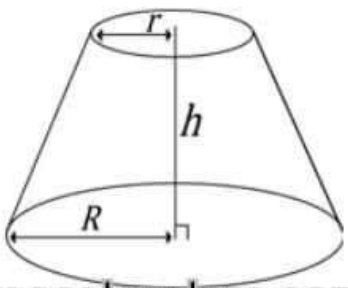
$A = 2\pi r(r + h)$

$V = \pi r^2 h$

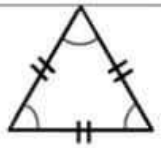
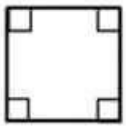
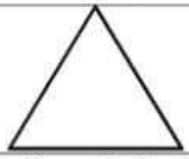
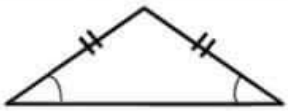
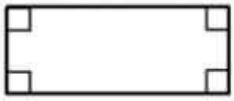
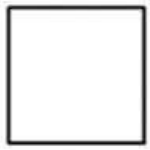
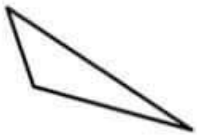
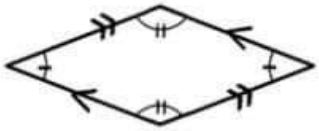
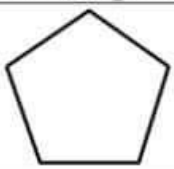
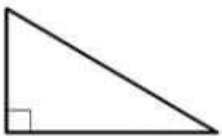
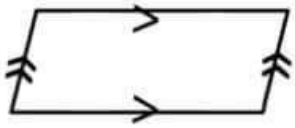
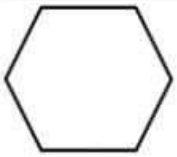
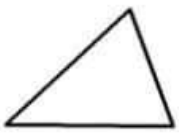
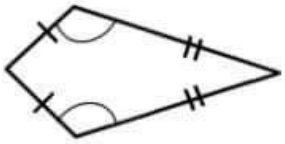
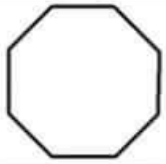
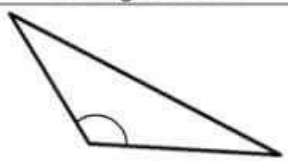
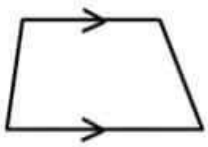
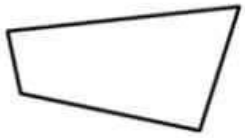
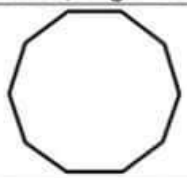


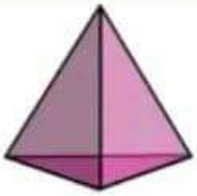
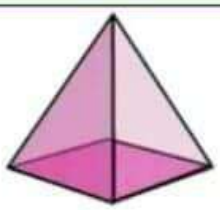
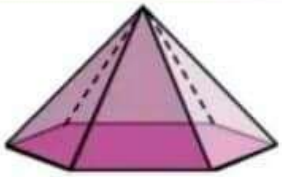
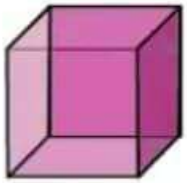
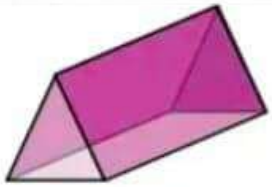
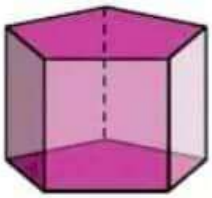
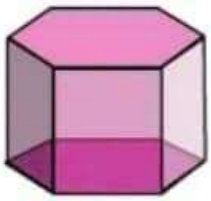
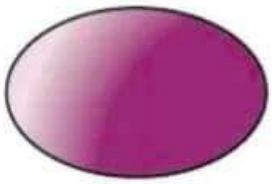
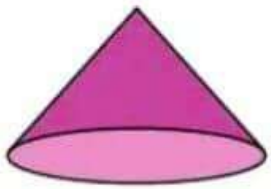
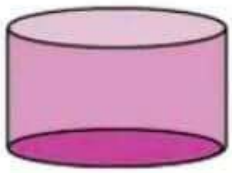
FRUSTUM OF A CONE

$V = \frac{1}{3}\pi h(r^2 + rR + R^2)$



GEOMETRY FORMULA SHEET

TRIANGLES	QUADRILATERALS		REGULAR POLYGONS
			
Equilateral triangle All sides equal; interior angles 60°	**Square** All sides equal; all angles 90°		**Equilateral triangle** 3 sides; angle 60°
			
Isosceles triangle 2 sides equal; 2 congruent angles	**Rectangle** Opposite sides equal, all angles 90°		**Square** 4 sides; angle 90°
			
Scalene triangle No sides or angles equal	**Rhombus** All sides equal; 2 pairs of parallel lines; opposite angles equal		**Regular Pentagon** 5 sides; angle 108°
			
Right triangle 1 right angle	**Parallelogram** Opposite sides equal, 2 pairs of parallel lines		**Regular Hexagon** 6 sides; angle 120°
			
Acute triangle All angles acute	**Kite** Adjacent sides equal; 2 congruent angles		**Regular Octagon** 8 sides; angle 135°
			
Obtuse triangle 1 obtuse angle	**Trapezoid** 1 pair of parallel sides	**Trapezium** No pairs of parallel sides	**Regular Decagon** 10 sides; angle 144°

		
Tetrahedron Faces: 4; Edges: 6; Vertices: 4	Square pyramid Faces: 5; Edges: 8; Vertices: 5	Hexagonal pyramid Faces: 7; Edges: 12; Vertices: 7
		
Cube Faces: 6; Edges: 12; Vertices: 8	Cuboid Faces: 6; Edges: 12; Vertices: 8	Triangular prism Faces: 5; Edges: 9; Vertices: 6
		
Octahedron Faces: 8; Edges: 12; Vertices: 6	Pentagonal prism Faces: 7; Edges: 15; Vertices: 10	Hexagonal prism Faces: 8; Edges: 18; Vertices: 12
		
Dodecahedron Faces: 12; Edges: 30; Vertices 20	Sphere Faces: 0 or 1; Edges: 0; Vertices 0	Ellipsoid Faces: 0 or 1; Edges: 0; Vertices 0
		
Icosahedron Faces: 20; Edges: 30; Vertices: 12	Cone Faces: 1 or 2; Edges: 0 or 1; Vertices: 0 or 1	Cylinder Faces: 2 or 3; Edges: 0 or 2; Vertices: 0

GEOMETRY FORMULA SHEET

Distance Formula [1.05]

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

Midpoint Formula [1.05]

$$M = \frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2}$$

Slope Intercept Form 2.04]

$$y = mx + b$$

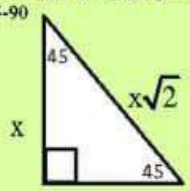
Point Slope Form [2.04]

$$(y - y_1) = m(x - x_1)$$

Slope Formula [2.03]

$$m = \frac{(y_2 - y_1)}{(x_2 - x_1)}$$

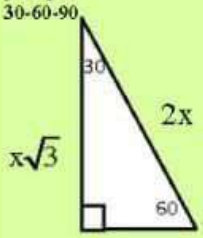
Special Right Triangle [4.10]
45-45-90



Pythagorean Theorem [4.09]

$$a^2 + b^2 = c^2$$

Special Right Triangle [4.10]
30-60-90



Midsegments of a Trapezoid [5.08]

$$\text{Midsegment} = \frac{1}{2}(b_1 + b_2)$$

Area of a Trapezoid [6.05]

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

Area of a Rhombus or Kite [6.04 and 6.05]

$$\frac{1}{2} d_1 d_2$$

Interior Measure of a Polygon (sum of the angles) [6.01]

$$(n-2)180$$

One angle [6.01]

$$\frac{(n-2)180}{n}$$

Exterior Measure of a Polygon (Sum) [6.01]

360 degrees

One exterior Angle

$$\frac{360}{n}$$

Right Prism [6.08, 6.09 and 6.11]

$$LA = ph$$

$$SA = LA + 2B$$

$$V = Bh$$

Rectangle

Perimeter [6.02]

$$P = 2b + 2h \text{ or } 2l + 2w$$

Area [6.03]

$$A = bh$$

Square

Perimeter 6.02]

$$P = 4s$$

Area [6.03]

$$A = s^2$$

Regular Pyramid [6.08, 6.10 and 6.12]

$$LA = \frac{1}{2}pl$$

$$SA = LA + B$$

$$V = \frac{1}{3}Bh$$

Area of a Parallelogram [6.04]

$$A = bh$$

Area of a Triangle [6.05]

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

Area of a Regular Polygon [6.07]

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

Area of an Equilateral Triangle [6.07]

$$A = \frac{1}{4}(s^2)(\sqrt{3})$$

Circle ~ Length of Arc [7.04]

$$\text{Length of } AB = \frac{m\,AB}{360} \cdot 2\pi r$$

Equation of a Circle [7.02]

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

Area of a Sector of a Circle [7.06]

$$A = \frac{arc}{360}\pi r^2$$

Area of a Segment of a Circle [7.06]

$$A = \frac{arc}{360}\pi r^2 - \frac{1}{2}bh$$

Right Cylinder [7.12]

$$LA = \pi d h \text{ or } LA = 2\pi r h$$

$$SA = LA + 2B$$

$$SA = \pi d h + 2\pi r^2$$

$$V = Bh \text{ or } V = \pi r^2 h$$

Right Cone [7.12]

$$LA = \pi r l$$

$$SA = LA + B$$

$$SA = \pi r l + \pi r^2$$

$$V = \frac{1}{3}Bh \text{ or } V = \frac{1}{3}\pi r^2$$

Sphere [7.12]

$$SA = 4\pi r^2$$

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

Area of an Annulus of a Circle [7.05]

$$A = \pi R^2 - \pi r^2$$

Circle
Circumference [7.03]

$$C = 2\pi r \text{ or } \pi d$$

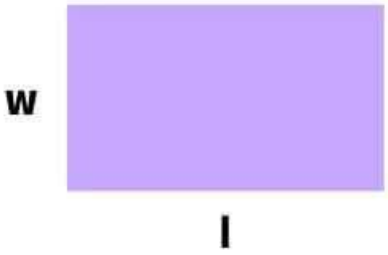
Area [7.03]

$$A = \pi r^2$$

AREA FORMULAS

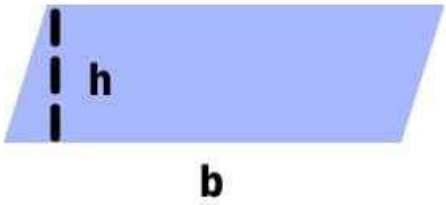
square

$A = s^2$



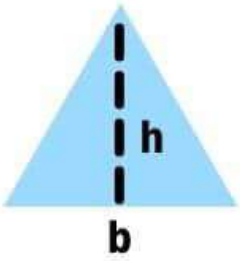
rectangle

$A = lw$



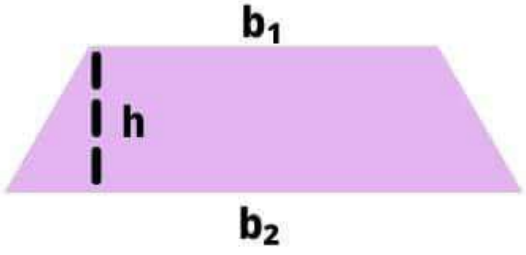
parallelogram

$A = bh$



triangle

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



trapezoid

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

circle

$A = \pi r^2$

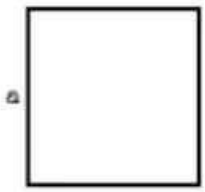
GEOMETRY FORMULAS

SHAPES — perimeter (P) and area (A)

SQUARE

$P = 4a$

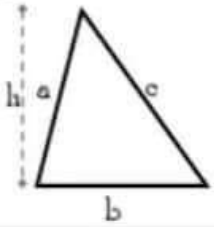
$A = a^2$



TRIANGLE

$P = a+b+c$

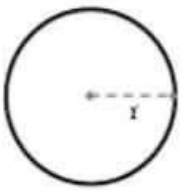
$A = \frac{1}{2}bh$



CIRCLE

$C = 2\pi r$

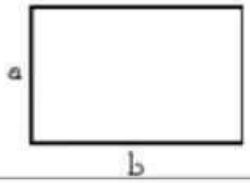
$A = \pi r^2$



RECTANGLE

$P = 2a+2b$

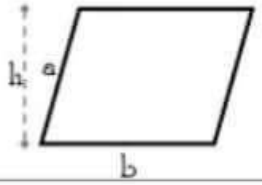
$A = ab$



PARALLELOGRAM

$P = 2a+2b$

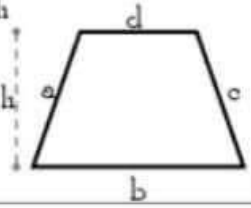
$A = bh$



TRAPEZOID

$P = a+b+c+d$

$A = \frac{b+d}{2}h$

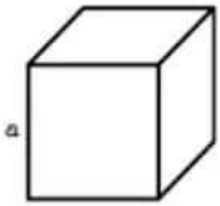


SOLIDS — surface area (SA) and volume (V)

CUBE

$SA = 6a^2$

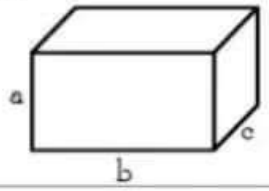
$V = a^3$



RECTANGULAR PRISM

$SA = 2ab+2ac+2bc$

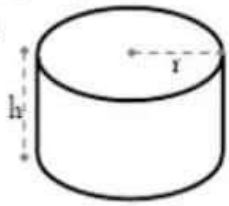
$V = abc$



CYLINDER

$SA = 2\pi r(r+h)$

$V = \pi r^2 h$



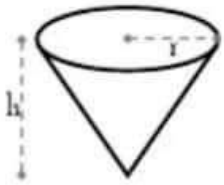
SPHERE

$SA = 4\pi r^2$

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

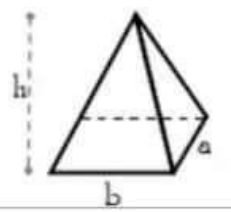
CONE

$V = \frac{1}{3}\pi r^2 h$



RECTANGULAR PYRAMID

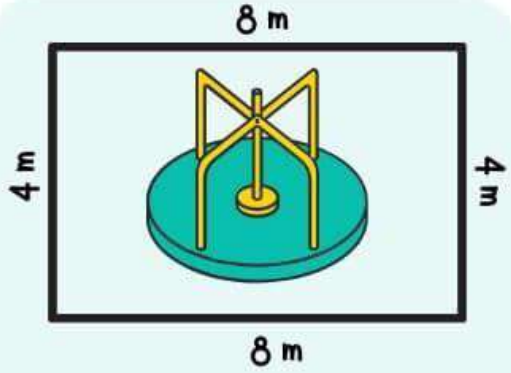
$V = \frac{1}{3}abh$



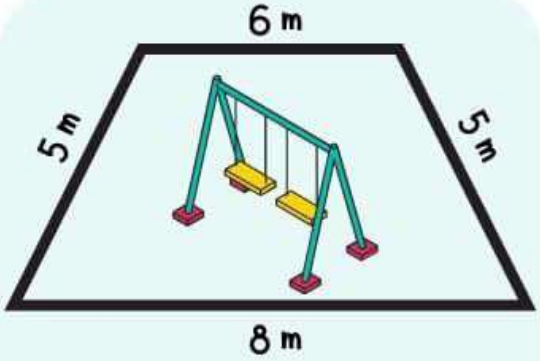
Name _____

PLAYGROUND PERIMETER

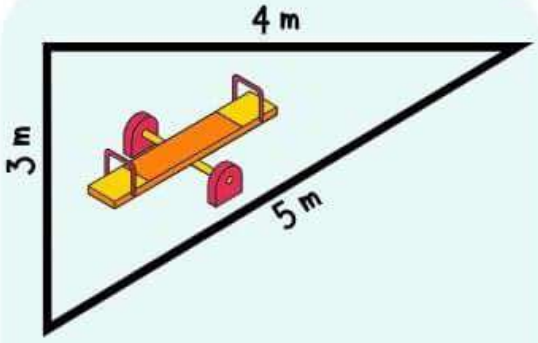
Directions: Find the perimeter of each shape below.



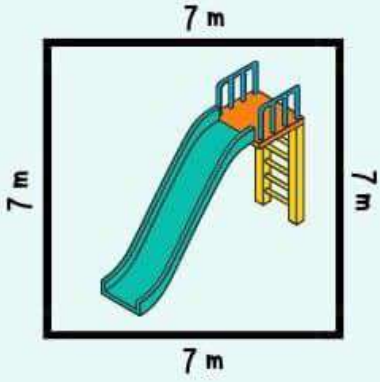
Answer _____



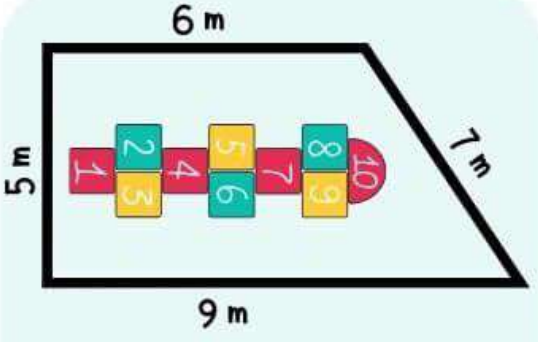
Answer _____



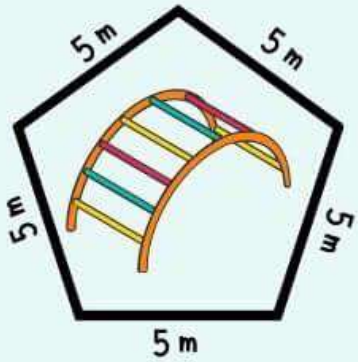
Answer _____



Answer _____



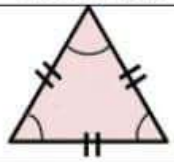
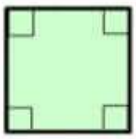
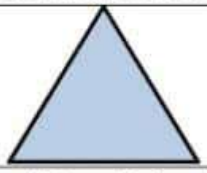
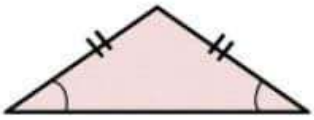
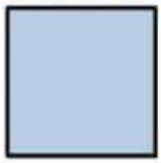
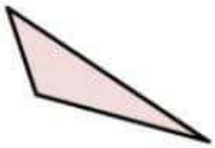
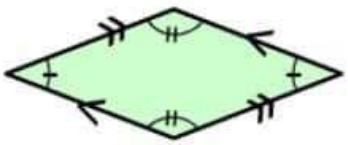
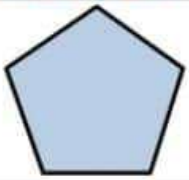
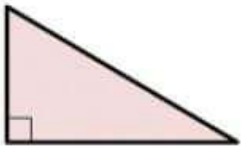
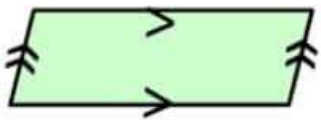
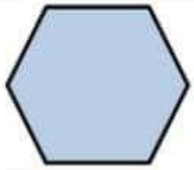
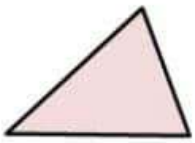
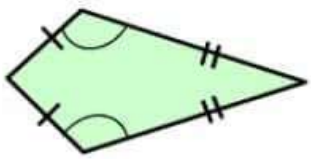
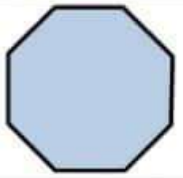
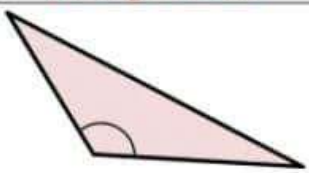
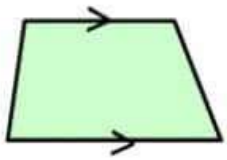
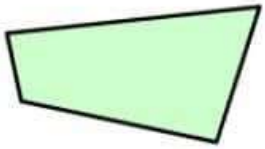
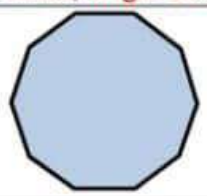
Answer _____



Answer _____

Name Date

GEOMETRY QUICK GUIDE

TRIANGLES	QUADRILATERALS		REGULAR POLYGONS
			
Equilateral triangle All sides equal; interior angles 60°	**Square** All sides equal; all angles 90°		**Equilateral triangle** 3 sides; angle 60°
			
Isosceles triangle 2 sides equal; 2 congruent angles	**Rectangle** Opposite sides equal, all angles 90°		**Square** 4 sides; angle 90°
			
Scalene triangle No sides or angles equal	**Rhombus** All sides equal; 2 pairs of parallel lines; opposite angles equal		**Regular Pentagon** 5 sides; angle 108°
			
Right triangle 1 right angle	**Parallelogram** Opposite sides equal, 2 pairs of parallel lines		**Regular Hexagon** 6 sides; angle 120°
			
Acute triangle All angles acute	**Kite** Adjacent sides equal; 2 congruent angles		**Regular Octagon** 8 sides; angle 135°
			
Obtuse triangle 1 obtuse angle	**Trapezium** 1 pair of parallel sides	**Trapezoid** No pairs of parallel sides	**Regular Decagon** 10 sides; angle 144°

AREA, PERIMETER & CIRCUMFERENCE

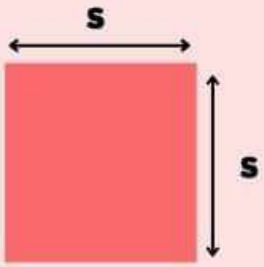
FORMULAS

A = Area
The amount of space inside a shape.

P = Perimeter
The total distance around the outside of a shape.

C = Circumference
The distance around the edge of a circle.

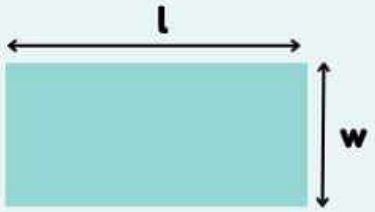
SQUARE



Area
$A = s \times s$

Perimeter
$P = 4 \times s$

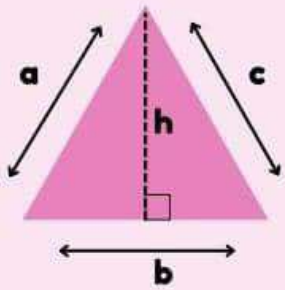
RECTANGLE



Area
$A = l \times w$

Perimeter
$P = (l+w) \times 2$

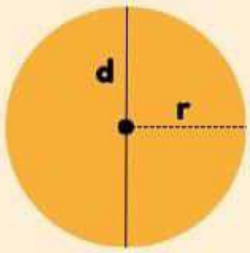
TRIANGLE



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

Perimeter
$P = a+b+c$

CIRCLE



Area
$A = \pi r^2$

Circumference
$C = 2\pi r$