

Perimeter and Area Unit Notes

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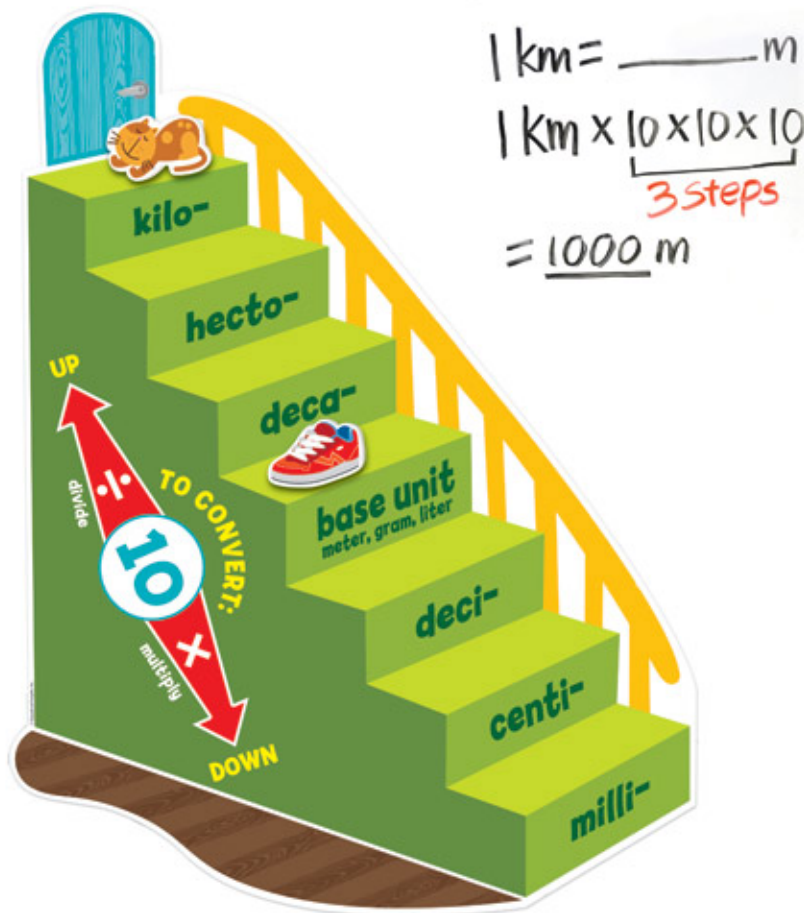
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Metric Conversions: Metric Staircase

The Metric System is an internationally agreed upon decimal system of measurement introduced in France in 1799.

Scientists need a universal way to communicate data (SI Units)

Almost all other countries but the United States are using the metric system.



Prefix	Meaning	Length	Mass	Capacity
kilo-	thousand (1000)	<u>kilometer</u>	<u>kilogram</u>	<u>kiloliter</u>
hecto-	hundred (100)	<u>hectometer</u>	<u>hectogram</u>	<u>hectoliter</u>
deka-	ten (10)	<u>dekameter</u>	<u>dekagram</u>	<u>dekaliter</u>
“base unit”	ones (1)	meter	gram	liter
deci-	tenths (0.1)	<u>decimeter</u>	<u>decigram</u>	<u>deciliter</u>
centi-	hundredths (0.01)	<u>centimeter</u>	<u>centigram</u>	<u>centiliter</u>
milli-	thousandths (0.001)	<u>millimeter</u>	<u>milligram</u>	<u>milliliter</u>

How to Convert between Units:

How many spaces?

The scale of the metric staircase is a base 10 so when converting units, count the number of steps you need to move, and then move the decimal that number of steps.

Which direction?

When you are moving up the staircase, you are dividing by factors of 10, so move the decimal to the left. When you are moving down the staircase, you are multiplying by factors of 10, so move the decimal to the right.

Use **DRUL** to remember: **Down-Right-Up-Left**

Squared Units:

If you are converting squared units for area, you need to remember that the steps are a base 100 (10^2), so for each step moved, you need to move the decimal 2 places.

Cubic Units: Not tested until grade 9

If you are converting cubic units (for volume), you need to remember that the steps are a base 1000 (10^3), so for each step moved, you need to move the decimal 3 places.

Lines, Line Segments, and Rays:

A Line: A line extends infinitely in both directions.



A Line Segment: A line segment is part of a line with a definite starting and stopping point.



A Ray: A ray extends infinitely in one direction. It is like half a line.



Polygon Names

Polygon: A polygon is an enclosed shape made up of straight lines.

Regular polygon: All sides and angles are equal

Irregular polygon: Sides and angles are not equal

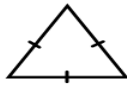
Sides	Name
3	Triangle **see below for classifications of triangles
4	Quadrilateral **see types in chart below.
5	Pentagon
6	Hexagon
7	Septagon/Heptagon
8	Octagon
9	Nonagon
10	Decagon
11	Hendecagon
12	Dodecagon

Classifying Triangles

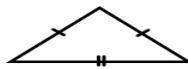
By Sides: Equilateral, Isosceles, Scalene

By Angle: Acute, obtuse, right

Classifying Triangles by their Sides



Equilateral - all sides congruent

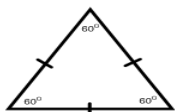


Isosceles - two sides congruent

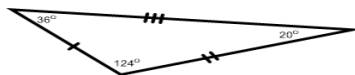


Scalene - no sides are congruent

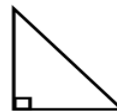
Classifying Triangles by their Angles



Acute - all angles acute



Obtuse - one obtuse angle



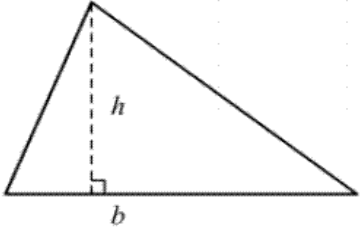
Right - one right angle

Properties of Shapes:

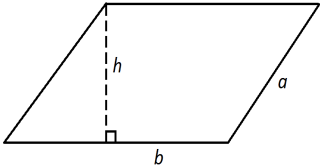
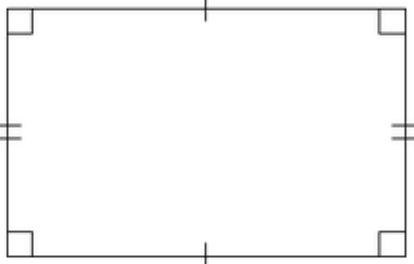
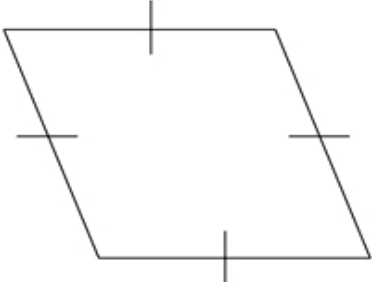
Property: An attribute, quality, or characteristic of the shape.

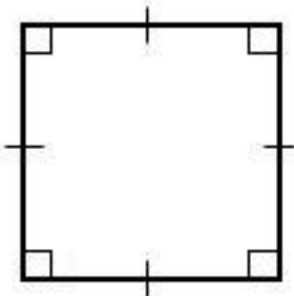
Perimeter: The distance around a polygon. Measured in units (mm, cm, dm, m,dam,hm,km)

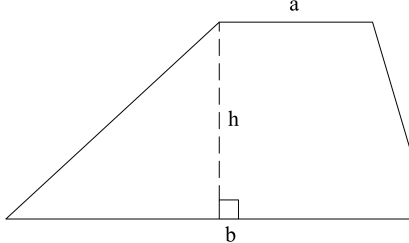
Area: The size of the surface. The amount of space inside the boundary of a flat (2-D) object such as a triangle or circle. Measured in square units (mm², cm², dm², m²,dam²,hm²,km²).

Shape	Properties	Perimeter Formula	Area Formula
TRIANGLES			
Triangle	 <p data-bbox="479 1591 771 1627">-A three sided polygon</p>	$P = \sum s$ Perimeter is the sum of all sides. P: Perimeter \sum : sum s: Sides	$A = \frac{bh}{2}$ OR $A = \frac{1}{2}bh$ A: Area b: base h: height *base and height are perpendicular

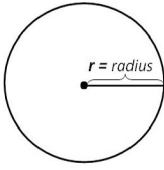
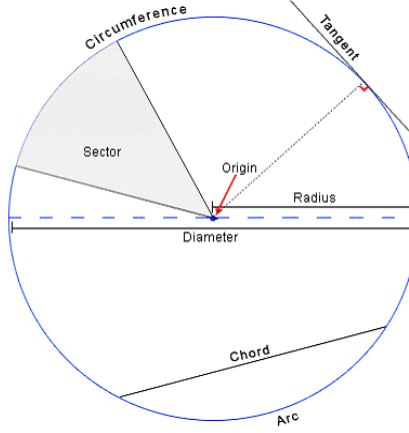
QUADRILATERALS

<p>Parallelogram</p>	 <p>-pairs of opposite sides are equal -opposite angles are equal -diagonals bisect each other</p>	<p>$P = \sum s$ Perimeter is the sum of all sides.</p> <p>P: Perimeter \sum: sum s: Sides</p>	<p>$A = bh$</p> <p>A: area b: base h: height</p> <p>*base and height are perpendicular</p>
<p>Rectangle</p>	 <p>-all properties of parallelograms -diagonals are equal -all angles are 90°</p>	<p>$P = \sum s$ Perimeter is the sum of all sides.</p> <p>P: Perimeter \sum: sum s: Sides</p>	<p>$A = bh$</p> <p>A: area b: base h: height</p> <p>*base and height are perpendicular</p>
<p>Rhombus</p>	 <p>-all properties of parallelograms -all sides are congruent -diagonals perpendicular (meet at 90°) and bisect opposite angles.</p>	<p>$P = \sum s$ Perimeter is the sum of all sides.</p> <p>P: Perimeter \sum: sum s: Sides</p>	<p>$A = bh$</p> <p>OR</p> $A = \frac{d_1(d_2)}{2}$ <p>A: Area b: base h: height d: diagonals</p>

<p>Square</p>	 <p>-all properties of parallelograms -all properties of rectangles -all properties of the Rhombus</p> <p>**Therefore a square is a specific type of rectangle and rhombus.</p>	<p>$P = \sum s$ Perimeter is the sum of all sides.</p> <p>P: Perimeter \sum: sum s: Sides</p>	<p>$A = bh$</p> <p>A: area b: base h: height</p> <p>*base and height are perpendicular</p>
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<p>Trapezoid</p>		<p>$P = \sum s$ Perimeter is the sum of all sides.</p> <p>P: Perimeter \sum: sum s: Sides</p>	<p>$A = \frac{h(b1 + b2)}{2}$</p> <p>OR</p> <p>$A = \frac{1}{2}h(b1 + b2)$</p> <p>A: Area b1: base 1 b2: base 2 h:height</p>
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CIRCLES **Not tested this year

<p>Circle</p>  <p>** Circles are not polygons</p>		<p>$C = \pi d$ OR $C = 2\pi r$</p> <p>C:circumference (perimeter of a circle) π : pi (3.14159 etc) d: diameter r: radius</p>	<p>$A = \pi r^2$</p> <p>A: Area π : pi (3.14159 etc) r: radius</p>
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