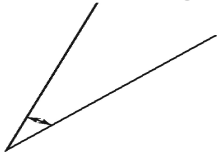
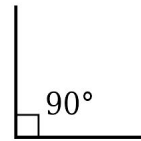


## Types of Angles

**Right Angle** - exactly 90 degrees

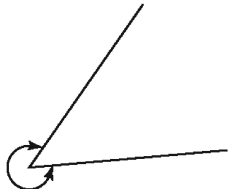


**Acute Angle** - LESS than 90 degrees

**Obtuse Angle** - more than 90 degrees but less than 180 degrees



**Reflex Angle** - greater than 180 degrees



**Straight Angle** - 180 degrees (line)

**Full circle** - 360 degrees

### Angles in shapes:

**Triangles** - 3 angles that equal 180 degrees

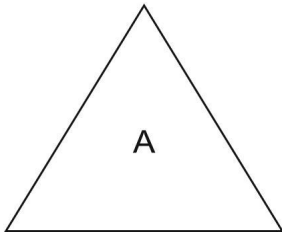
**Circles** - 360 degrees

**Quadrilaterals** - 4 angles/sides - 360 degrees

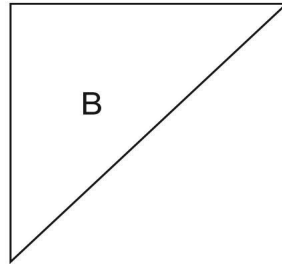
**Polygons** - (many) any shape that has more than 3 angles/sides that equal - 360 degrees

**Estimating angles** - Are you able to use our reference angles to estimate the degree of angle you see. (45, 90, 180, 270)

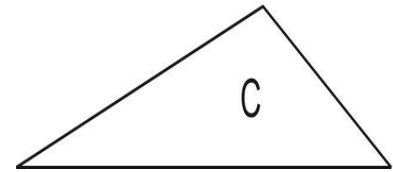
There are different kinds of **TRIANGLES** that we can organize and sort according to **angles** and **line** characteristics (6):



**Equilateral triangle** – has 3 equal sides, 3 equal angles



**Isosceles triangle** - has 2 equal sides, 2 Equal angles



**Scalene triangle** – has no equal sides or angles

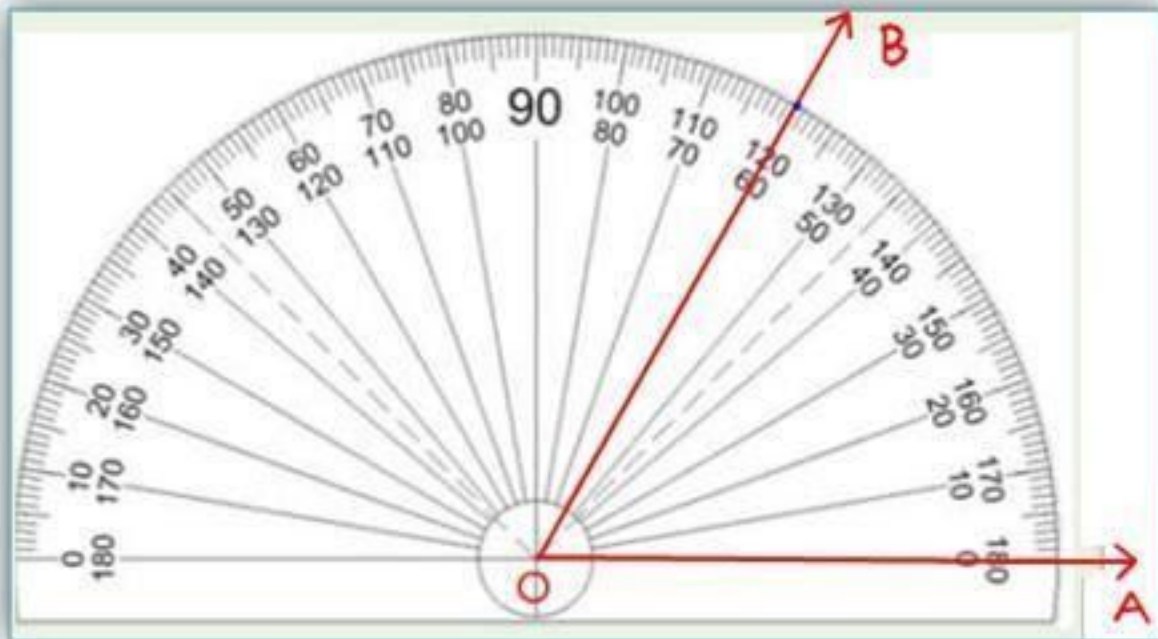
**Acute triangle** – all angles that measure less than 90 degrees

**Right triangle** – one angle is exactly 90 degrees

**Obtuse triangle** – has one angle that is more than 90 degrees

**To measure angles** - Use a protractor to measure the degree of an angle.

- 1) Align one of the angle arms in line with 0 of the protractor
- 2) Align the center of the angle with the center line on the protractor
- 3) Look to see where the other angle arm is on your protractor to find the

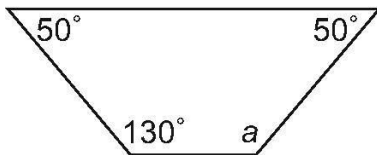


Drawing triangles - Use a ruler and protractor.

<p>Draw triangle ABC. The measure of <math>\angle B</math> is <math>30^\circ</math>. The length of side AB is 5 cm. The length of side BC is 3 cm.</p>	<p style="text-align: center;"><b>Directions</b></p>
	<ol style="list-style-type: none"><li>1) Sketch the triangle</li><li>2) Label each angle (A, B, C)</li><li>3) Use a ruler to measure the actual side length of AB – 5cm and BC – 3cm</li><li>4) Use your protractor to measure angle B</li><li>5) Use your ruler and protractor to measure the other 2 angles and distance</li></ol>

**Find missing angles**

- 1) Calculate how many degrees are in different shapes (180 in a triangle 360 in a circle and quadrilateral)
- 2) Add the angles you know together
- 3) Subtract this number from the total number of degrees you know that you need for that shape



- 1) 360 degrees in this shape
- 2) Add the known angles together  
( $50 + 50 + 130 = 230$ )
- 3) Subtract ( $360^\circ - 230^\circ = 130$ )
- 4) the unknown angle = 130 degrees

**We are also reviewing the following concepts:**

**Perimeter** – is the distance AROUND an object or a shape (think of a fence around a house). The formula to solve for perimeter is  $P = \text{Side} + \text{Side} + \text{Side} + \text{Side}$ .

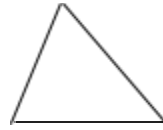
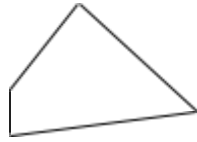
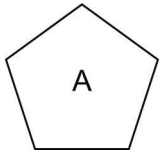
**Area** – is the measurement of the surface area space of an object or a shape.

The formula to solve for area is  $A = \text{length} \times \text{width}$ . Try filling in the chart below:

Rectangle	Length (cm)	Width (cm)	Area (cm <sup>2</sup> )
A	14	6	
B	25		300

**Volume** – the amount of space occupied by an object or the amount of space inside an object. The formula for Volume is  $V = \text{length} \times \text{width} \times \text{height}$

3. There are different kinds of **POLYGONS** that we can organize and sort according to their angles and line characteristics (4):



**Regular Polygon** – has all sides and angles equal

**Irregular Polygon** - does not have all sides and angles equal

**Convex Polygon** - all angles are less than 180 degrees

**Concave Polygon** has at least one angle greater than 180 degrees

4. When polygons match exactly (same angle measurements and line measurements), the polygons are **CONGRUENT**:

