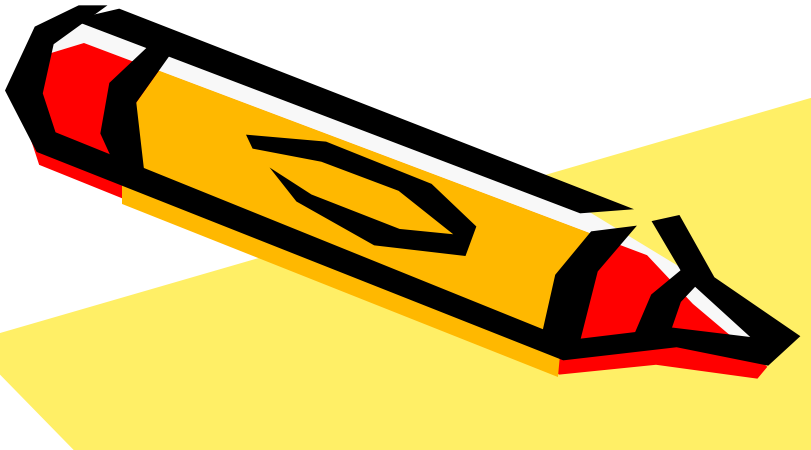


Geometry

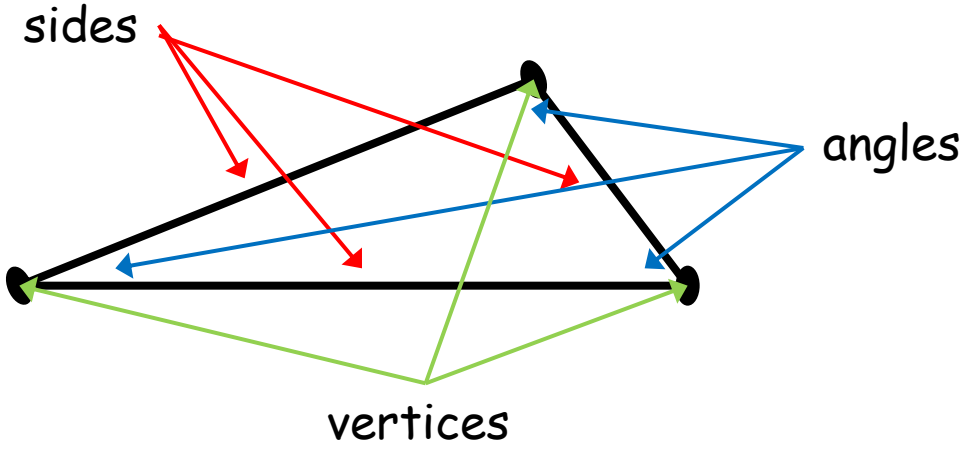
Classifying Triangles

Vocabulary

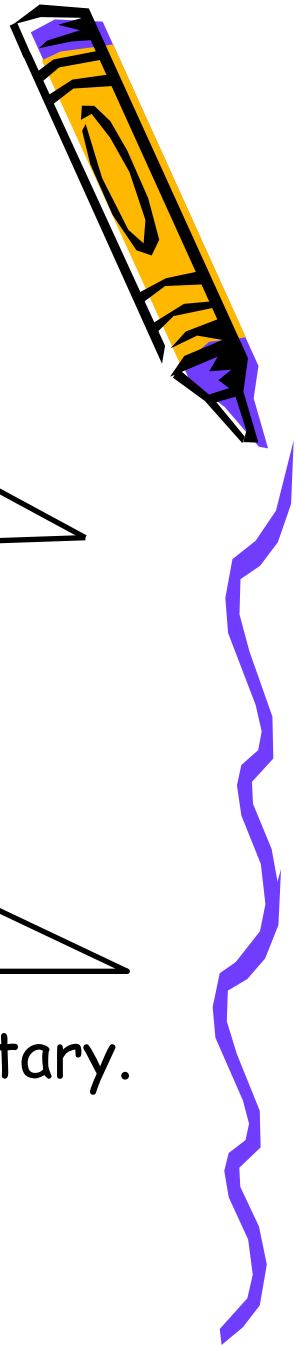
- Triangle:

  A 3-sided polygon. Triangles contain 3 sides (made of line segments) and 3 interior angles. The points defining the triangle are called vertices (each being the vertex of the interior angle).

  The 3 interior angles of a triangle always add up to 180 degrees.

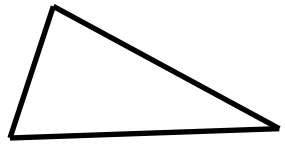


Classifying Triangles Based on their Angles



- Acute Triangle:

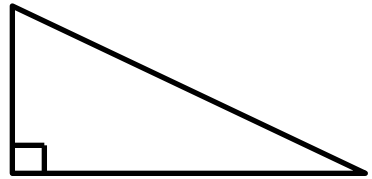
  A triangle having 3 acute angles



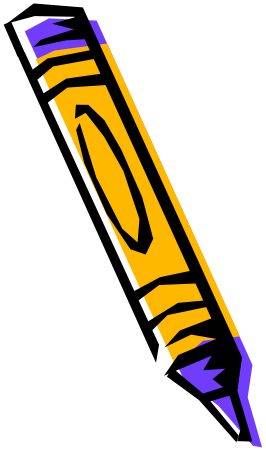
- Right Triangle:

  A triangle having 1 right angle.

  The other 2 must be acute and complimentary.



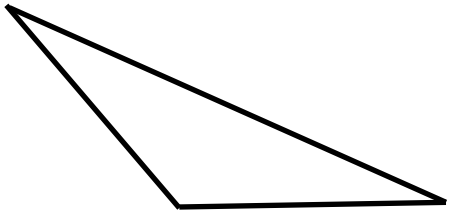
Classifying Triangles Based on their Angles



- Obtuse Triangle:

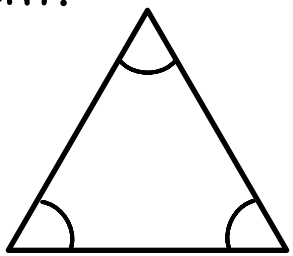
  A triangle having 1 obtuse angle.

  The other 2 must be acute.



- Equiangular Triangle:

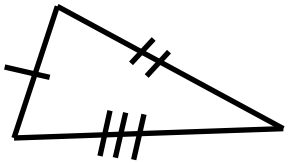
  A triangle where all 3 angles have equal measurements, or all 3 angles are congruent.



Classifying Triangles Based on their Sides

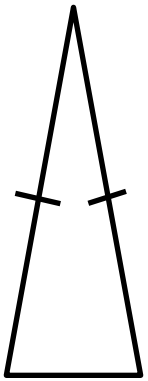
- Scalene Triangle:

  All sides have different lengths.



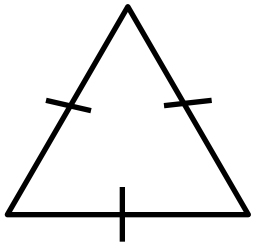
- Isosceles Triangle:

  At least 2 sides are congruent

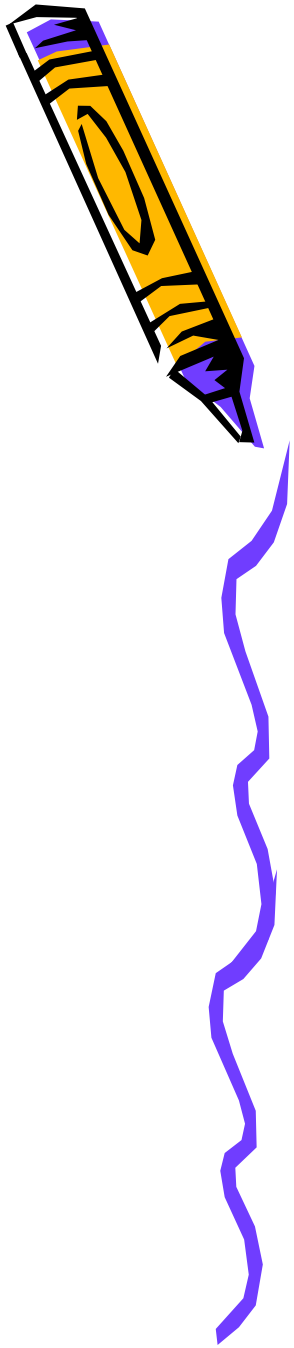


- Equilateral Triangle:

  All 3 sides are congruent



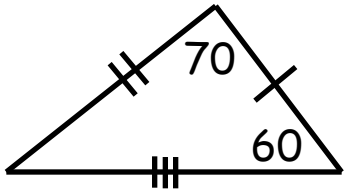
Angle / Side Relationships in Triangles



Angles	Sides
3 angles congruent	3 sides congruent
2 angles congruent	2 sides congruent
0 angles congruent	0 sides congruent

Classify each triangle based on its sides and angles

1.



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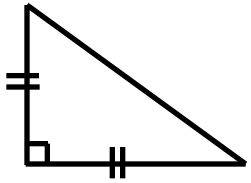
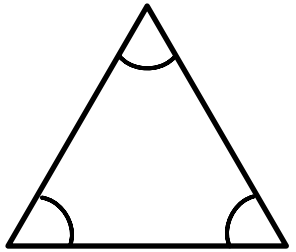
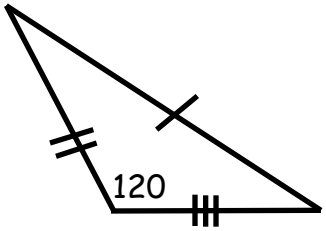


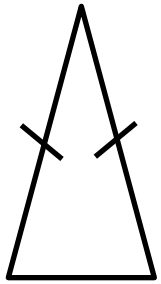
3.



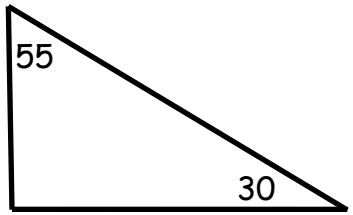
4.



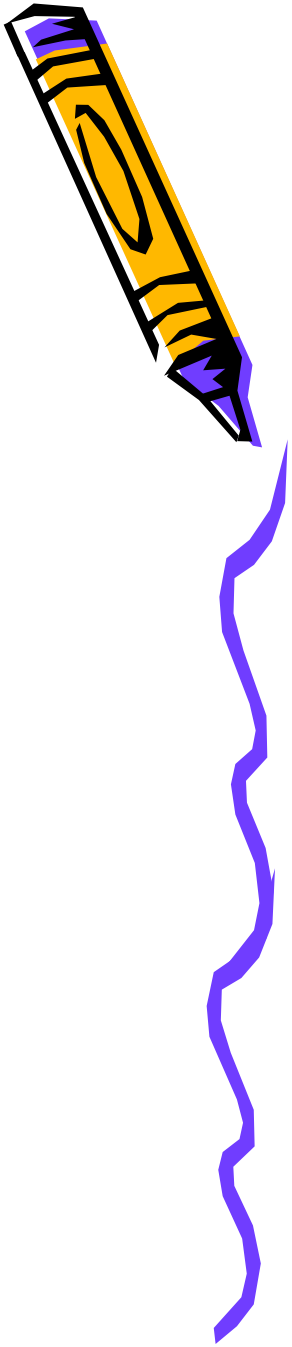
5.



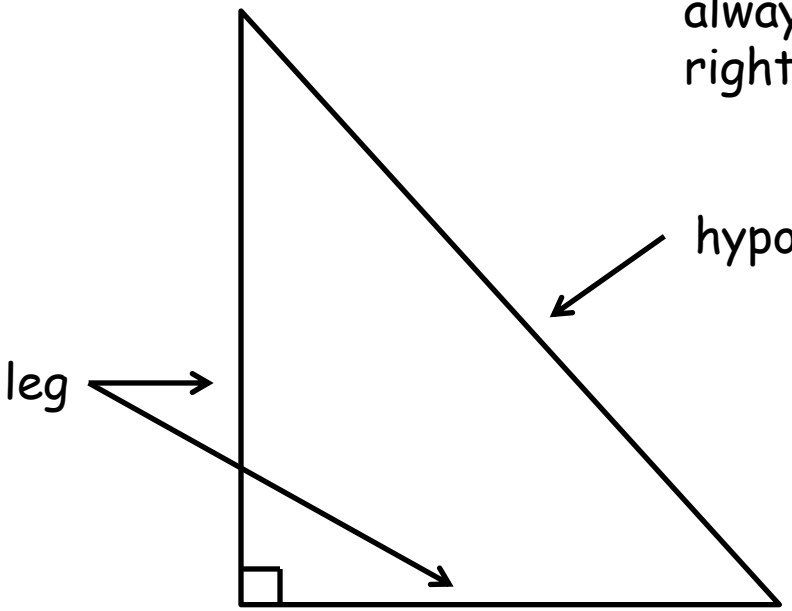
6.



Right Triangle (special vocabulary)



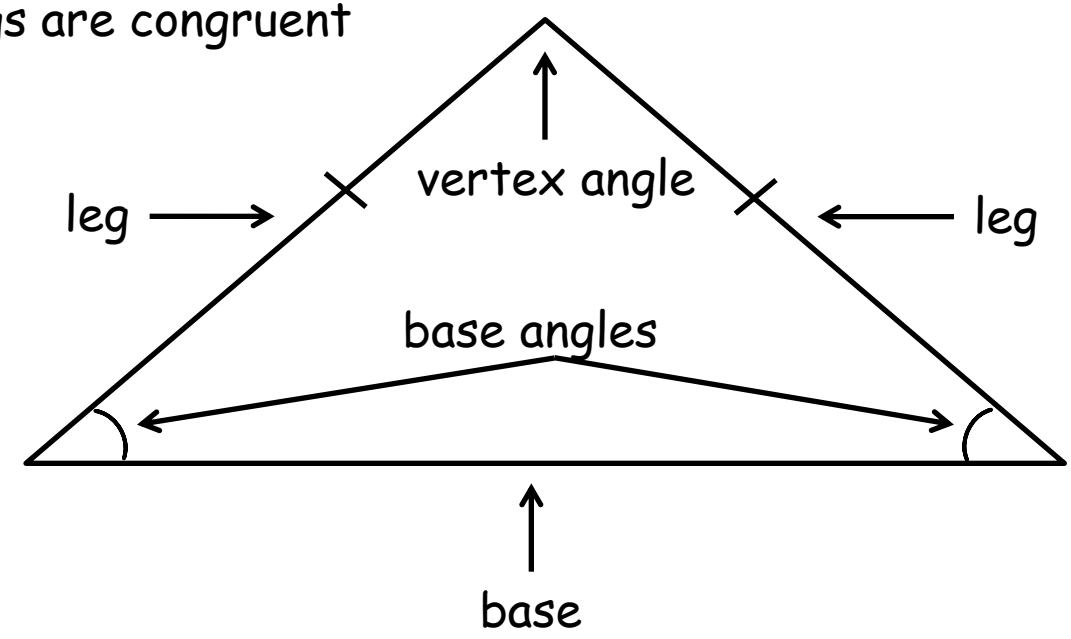
The hypotenuse is always opposite the right angle



The 2 acute angles will always be complimentary.

Isosceles Triangle (special vocabulary)

The legs are congruent



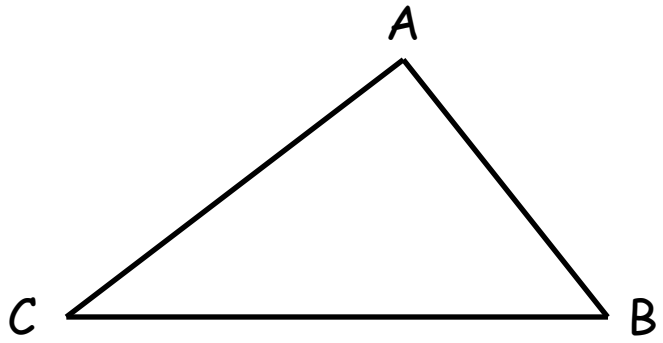
Base Angles are congruent

The base is always opposite the vertex angle

Triangles

Triangles are named by the 3 vertices.

We can name this triangle:



△ABC

△ACB

△BCA

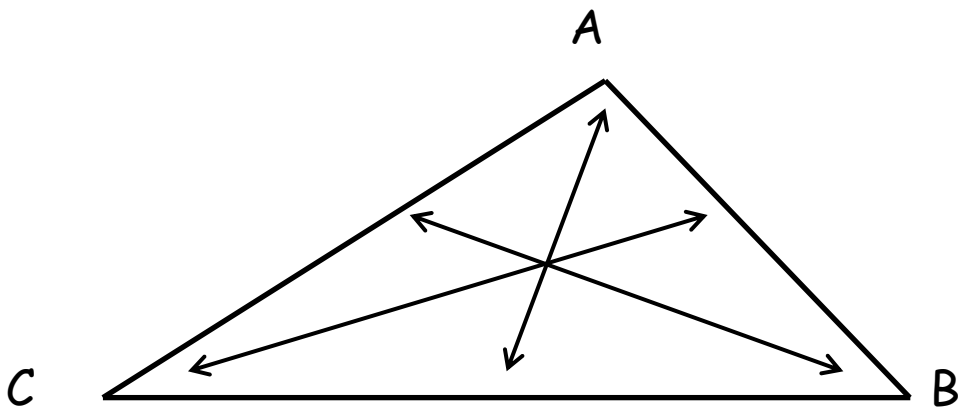
△BAC

△CAB

△CBA

Triangles

In any triangle, it is important that we can identify the sides and angles that are opposite each other.



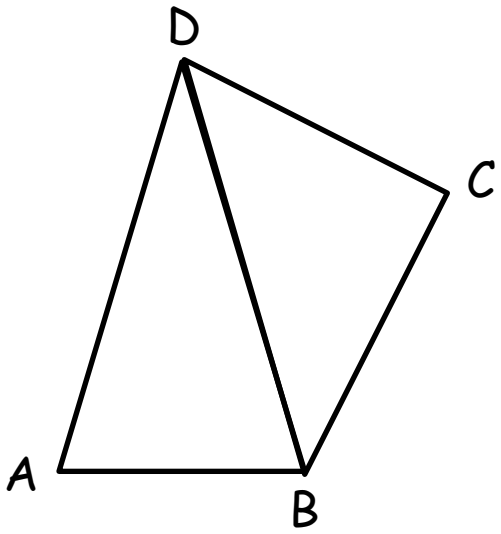
In $\triangle ABC$...

$\angle A$ is opposite side $\overline{CB}$

$\angle B$ is opposite side $\overline{AC}$

$\angle C$ is opposite side $\overline{AB}$

Practice



$\overline{AD} = \overline{BD}$

$\overline{DC} \perp \overline{BC}$

Name…

1. An acute triangle
2. The hypotenuse
3. The vertex angle
4. Complimentary angles
5. The base
6. The right angle
7. The base angles
8. The legs of the isosceles triangle
9. The side opposite $\angle DBC$
10. The angle opposite $\overline{AD}$

Solve (draw it, label it, then solve it)

1. Isosceles triangle DOG has $\angle G$ as its vertex angle.

   $DG = 22,\ DO = x + 2,\ GO = 3x + 4.$

   Find x and the measure of each side of the triangle.

2. Given right triangle CAT, with $\overline{AT} \perp \overline{CT}$.

   $m\angle TAC = 4x - 1,\ m\angle ACT = 3x + 14.$

   Find x and the measure of each angle.

   Classify the triangle based on its sides.

3. Classify the triangle given its vertices:

   $A(4, 2),\quad B(7, 5),\quad C(0, 6)$