

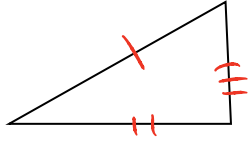
# Triangle Congruence – Triangles

Notes Section 4.1

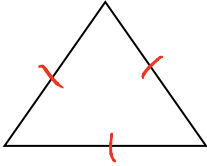
Name \_\_\_\_\_

## Classify by Sides

Scalene triangle - A triangle with all three sides having different lengths.

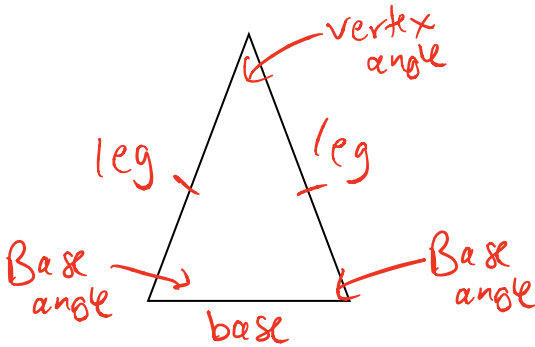


Equilateral triangle - All sides of a triangle are congruent.



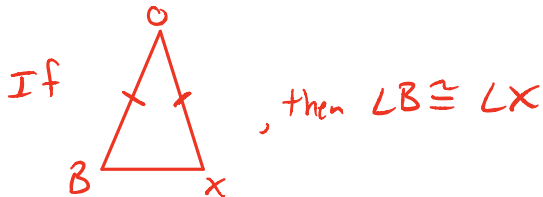
Isosceles triangle - A triangle with at least two sides congruent.

- Legs of an isosceles triangle - The congruent sides in an isosceles triangle.
- Vertex angle - The angle formed by the legs in an isosceles triangle.
- Base - The side opposite the vertex angle.
- Base angles - The angles formed by the base.

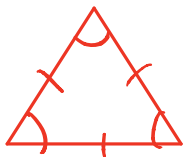


### Isosceles Triangle Theorem

If two sides of a triangle are congruent, then the angles opposite those sides are congruent.



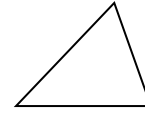
Corollary 4-1 - A triangle is equilateral if and only if it is equiangular.



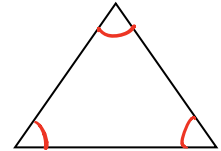
## Classify by Angles

Acute triangle - A triangle with all acute angles.

- Acute angle - An angle greater than  $0^\circ$  and less than  $90^\circ$ .

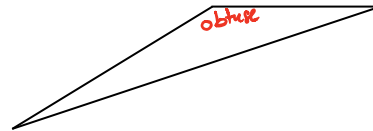


Equiangular triangle - A triangle with all angles congruent.



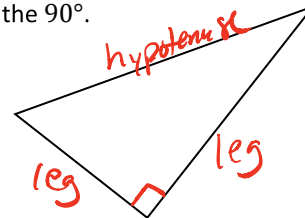
Obtuse triangle - A triangle with one obtuse angle.

- Obtuse angle - An angle more than  $90^\circ$  and less than  $180^\circ$ .



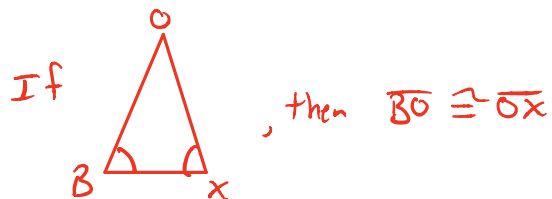
Right triangle - A triangle with one right angle.

- Right angle - An angle that is  $90^\circ$ .
- Hypotenuse - The side opposite the right angle in a right triangle.
- Legs of a right triangle - The two sides that form the  $90^\circ$ .

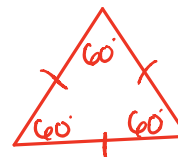


### Converse to the Isosceles Triangle Theorem

If two angles of a triangle are congruent, then the sides opposite those angles are congruent.



Corollary 4-2 - Each angle of an equilateral triangle measures  $60^\circ$ .

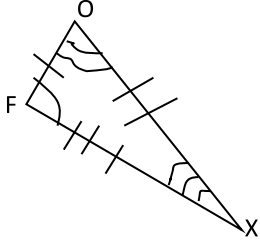
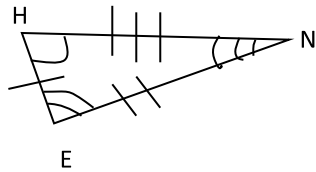


# Triangle Congruence – Triangles

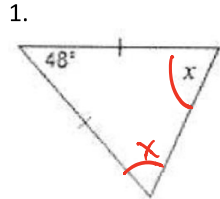
Notes Section 4.1

Name \_\_\_\_\_

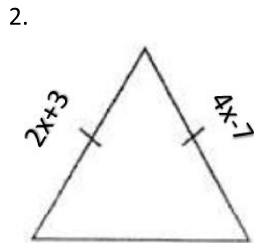
Definition of Congruent Triangles (CPCTC) - Two triangles are congruent iff their corresponding parts are congruent.



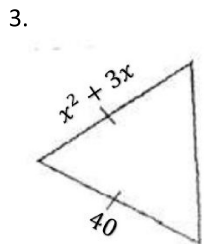
Find the value of x.



$$\begin{aligned} 48 + x + x &= 180 \\ 48 + 2x &= 180 \\ 24 + x &= 90 \\ x &= 66 \end{aligned}$$

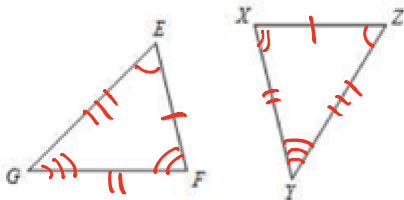
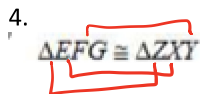


$$\begin{aligned} 2x + 3 &= 4x - 7 \\ 3 &= 2x - 7 \\ 10 &= 2x \\ 5 &= x \end{aligned}$$



$$\begin{aligned} x^2 + 3x &= 40 \\ x^2 + 3x - 40 &= 0 \\ (x + 8)(x - 5) &= 0 \\ x + 8 = 0 & \quad x - 5 = 0 \\ x = -8 & \quad x = 5 \end{aligned}$$

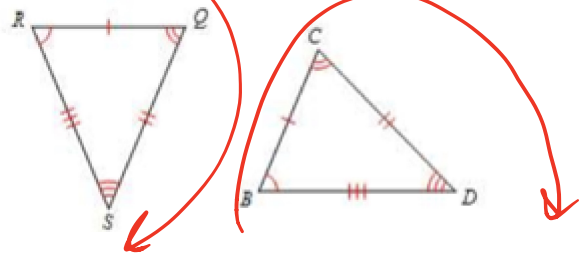
List pairs of corresponding parts.



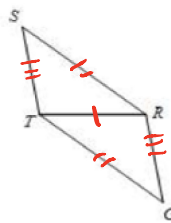
$$\begin{aligned} LE &\cong LZ & EF &\cong ZX \\ LF &\cong LY & FG &\cong XY \\ LG &\cong LX & GE &\cong YZ \end{aligned}$$

Name congruent figures.

5.  $\Delta RQS \cong \Delta BCD$



6.  $\Delta RTS \cong \Delta TRG$

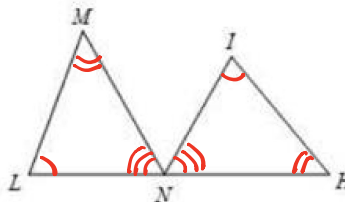


$\overline{SR} \cong ? \overline{GT}$

7.  $\Delta ZXY \cong \Delta ZXJ$

$\overline{YZ} \cong ? \overline{JZ}$

8.  $\Delta LMN \cong \Delta IHN$



$\angle MNL \cong ? \angle HNI$