

Fill in left side **DO NOW**

$$\textcircled{1} \frac{AB}{AD} \cong$$

$$\frac{AD}{BD}$$

$$BD$$

$$\triangle ABD$$

$$\triangle ADB$$

$$\triangle DAB$$

$$\textcircled{2} \frac{EN}{EM}$$

$$\frac{EM}{MN}$$

$$MN$$

$$\triangle MNE$$

WORK ON WS

SECTIONS 4.1

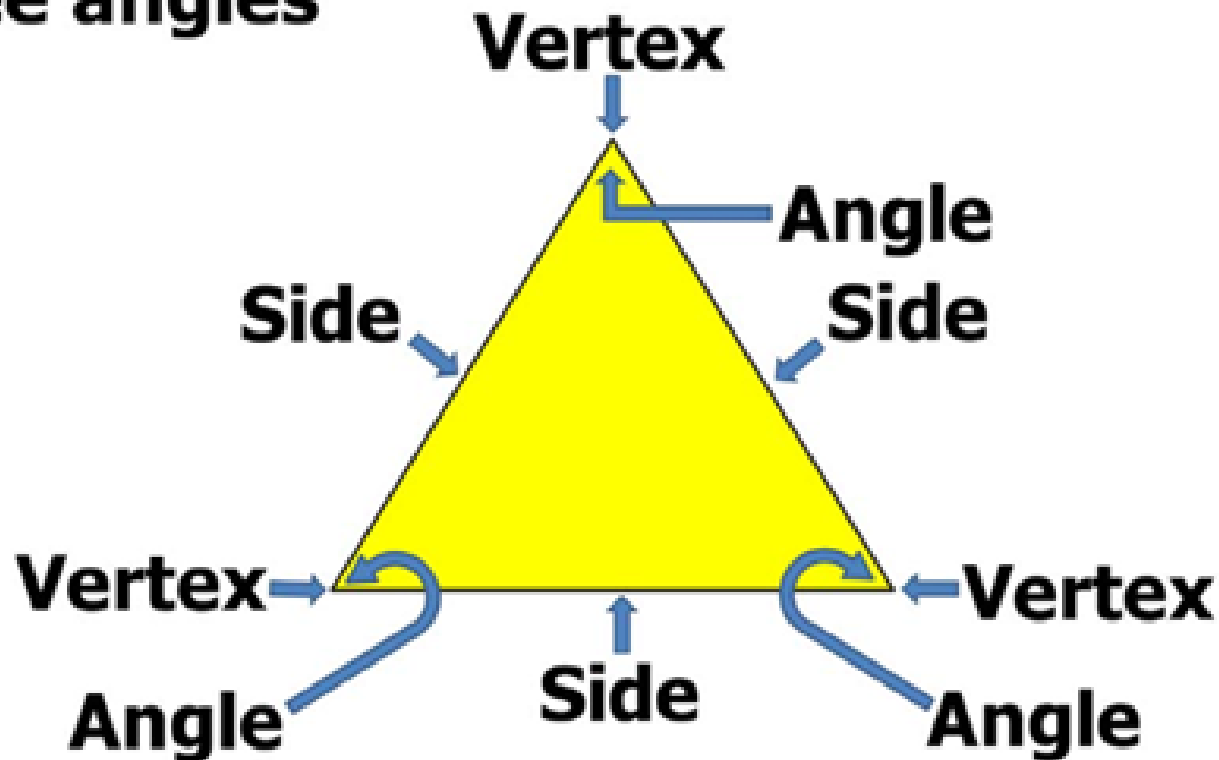
APPLY ANGLE SUM PROPERTIES (CLASSIFYING TRIANGLES)

Homework

p.221

#1-6, 14-18

Triangle - polygon with three sides and three angles



Tri - means three, derived from Latin word *trēs*, *tria*, Greek *treîs*, *tría*; Therefore triangle literally means "three angles"

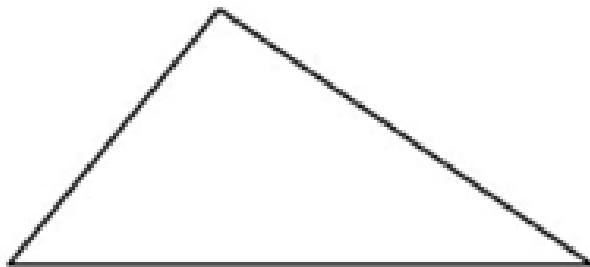
Apply Triangle Sum Properties

Triangles...

Classifications by Sides

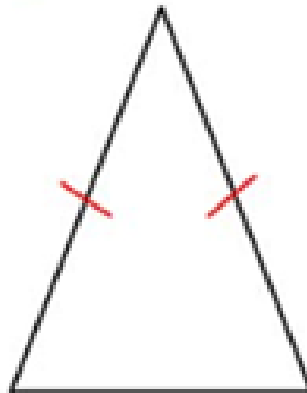
1) Scalene

-no congruent sides



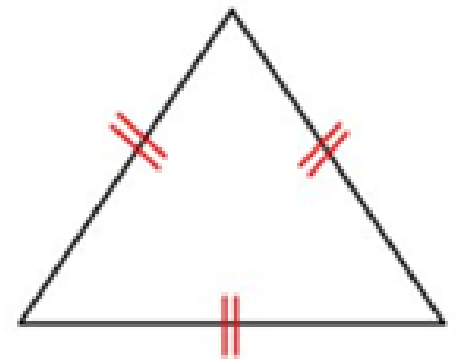
2) Isosceles

-at least two
congruent sides



3) Equilateral

-all three
sides congruent

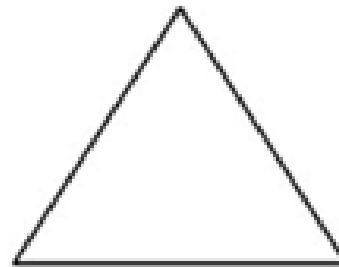
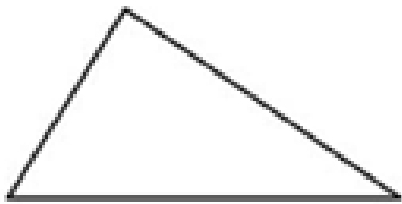


Apply Triangle Sum Properties

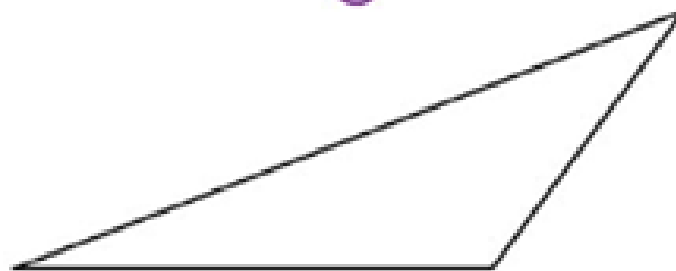
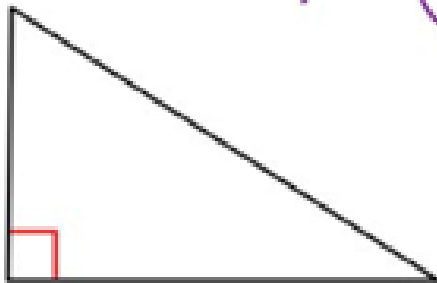
Triangles...

Classifications by Angles

- 1) Acute - All 3 angles $< 90^\circ$ 2) Equiangular All 3 Angle = 60°

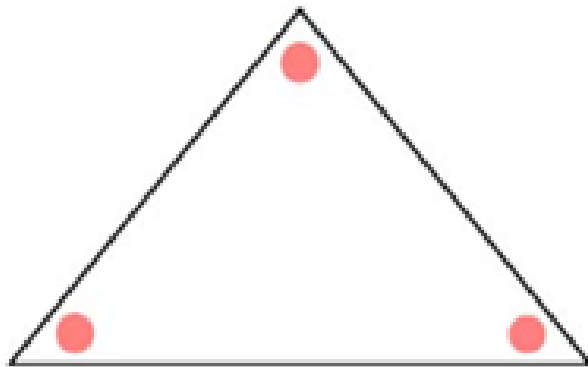


- 3) Right - Only 1 Angle = 90° 4) Obtuse - 1 Angle $> 90^\circ$



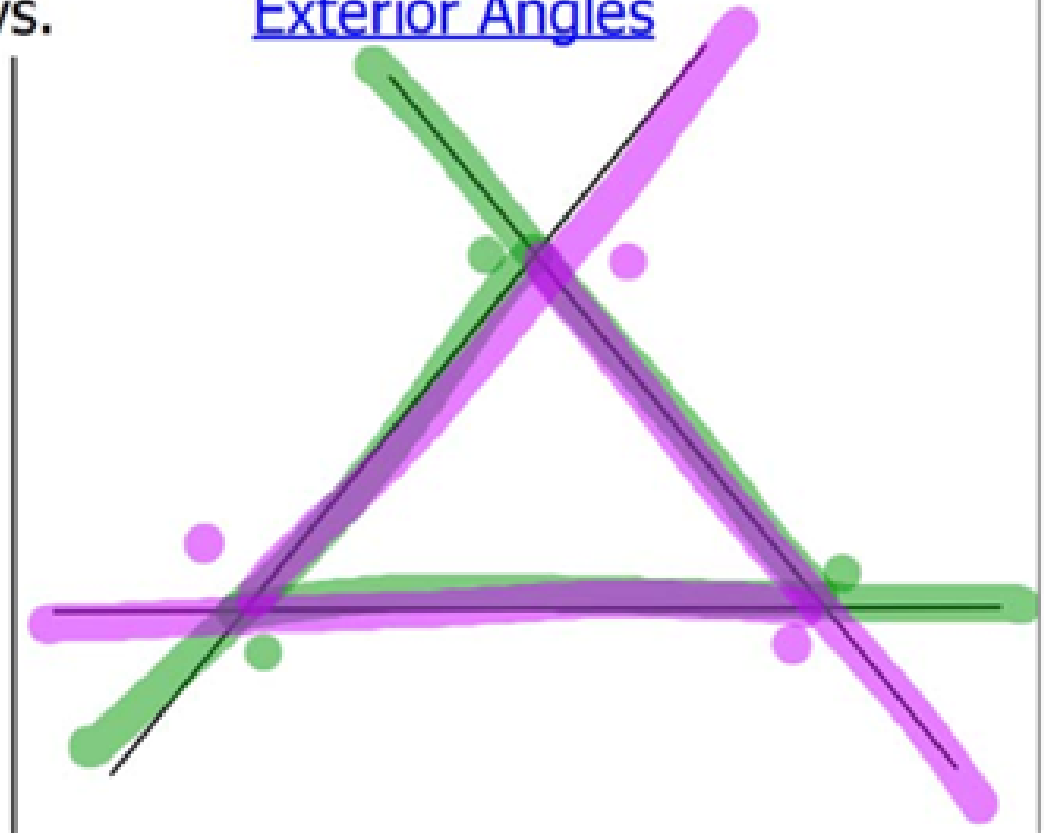
Apply Triangle Sum Properties

Interior Angles



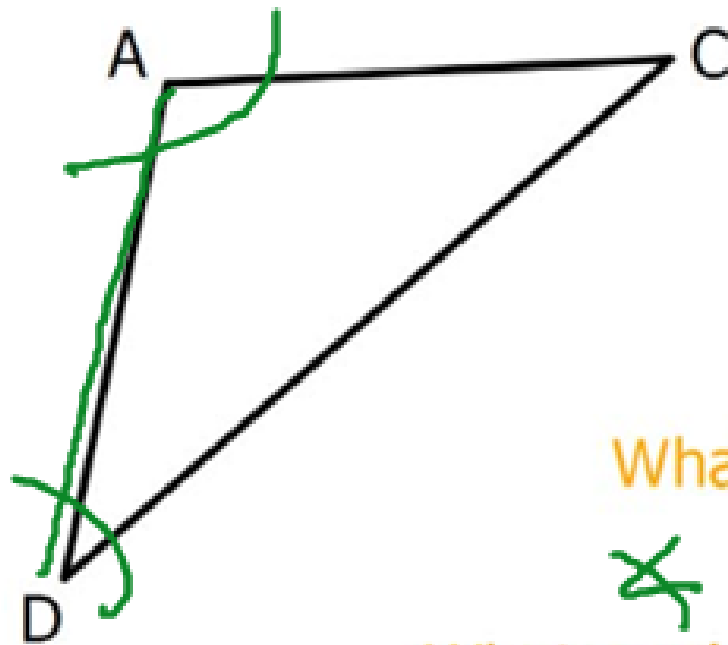
vs.

Exterior Angles



Apply Triangle Sum Properties

More terminology... **Adjacent sides...** next to
Opposite... directly across from



Which sides are adjacent $\angle C$?

\overline{AC} & \overline{CD}

Which side is opposite $\angle C$?

\overline{AD}

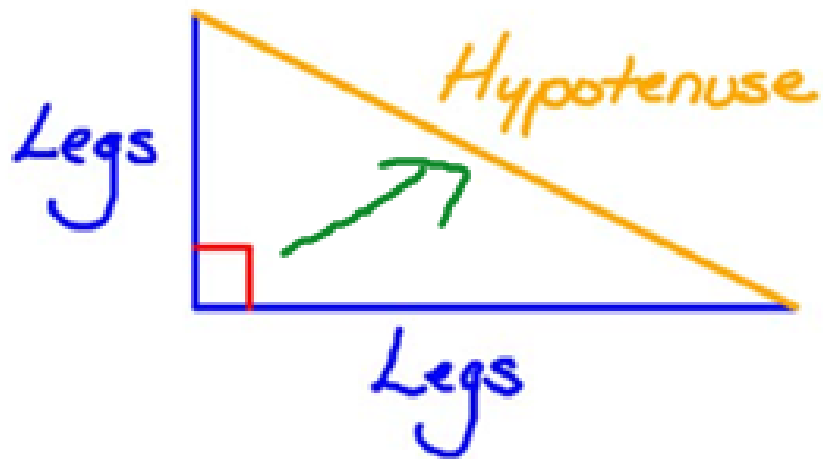
What angles are adjacent segment \overline{AD} ?

$\angle CDA$ & $\angle CAD$

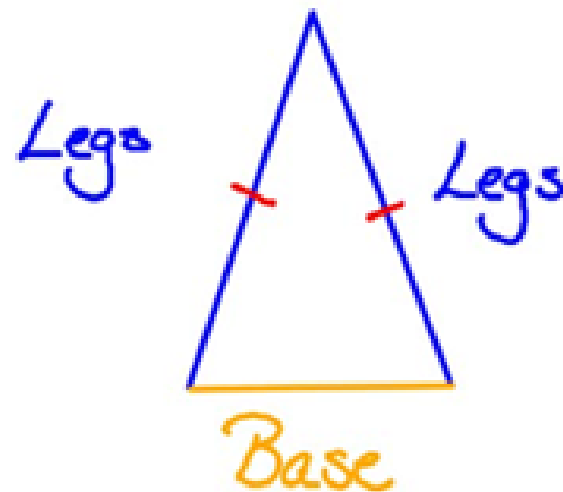
What angle is opposite segment \overline{DC} ?

$\angle DAC$

In a right triangle...



In a isosceles triangle...

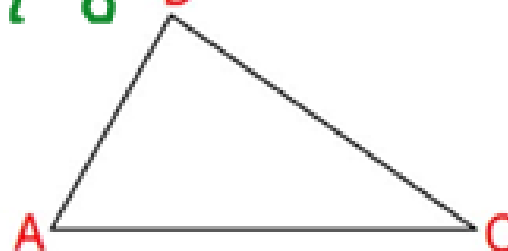


Apply Triangle Sum Properties

Triangle Sum Theorem

The sum of the measures of the interior angles of a triangle is 180° .

$$\angle A + \angle B + \angle C = 180$$

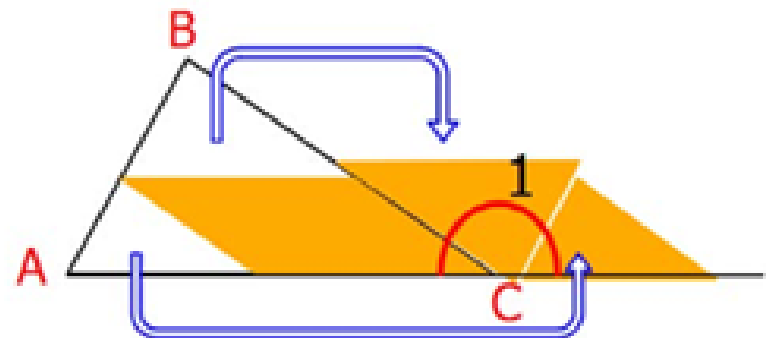
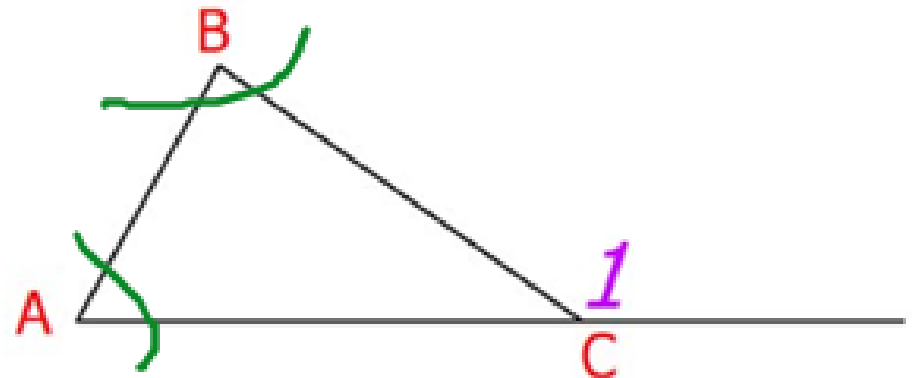


Apply Triangle Sum Properties

Exterior Angle Theorem

The measure of an exterior angle of a triangle is equal to the sum of the measures of the two nonadjacent interior angles.

$$\angle 1 = \angle A + \angle B$$



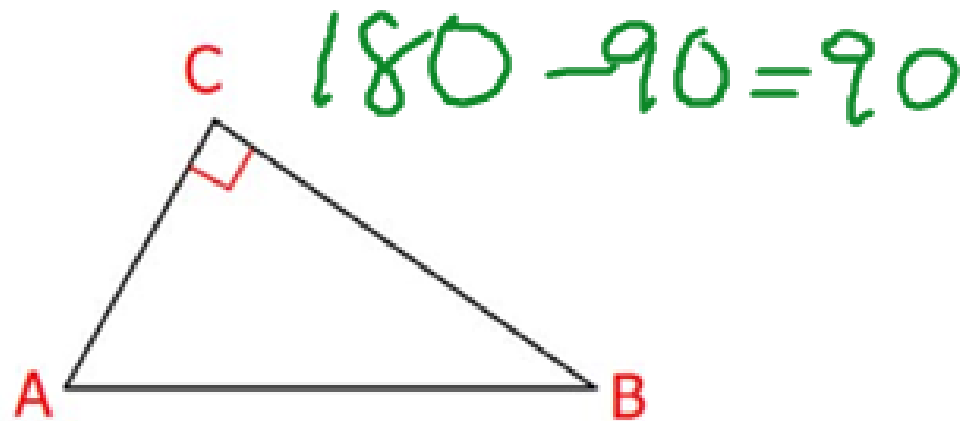
Apply Triangle Sum Properties

Corollary to a Theorem - statement that can be proved easily using the theorem.

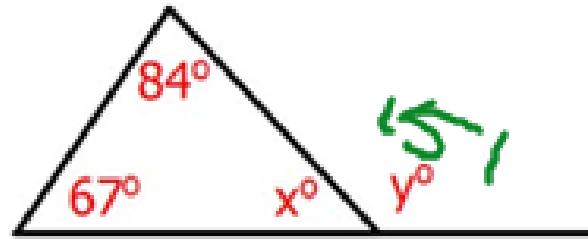
Corollary to the Triangle Sum Theorem

The acute angles of a right triangle are complementary.

$$m\angle A + m\angle B = 90^\circ$$



Example 1: Find x and y.



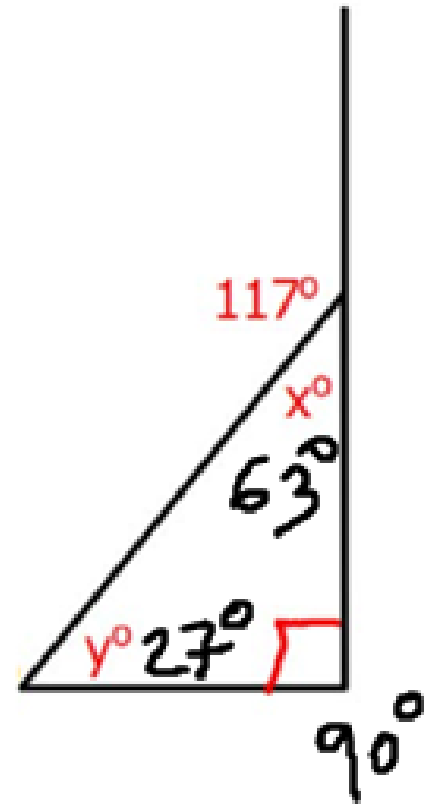
$$y = 67 + 84 \\ = 151^\circ$$

$$84 + 67 + x = 180 \\ 151 + x = 180$$

$$x = 29^\circ$$

Example 2: Find x and y.

$$\begin{array}{r} y + 90 = 117 \\ - 90 \quad - 90 \\ \hline y = 27 \end{array}$$



$$90 - 63 = 27$$