

Name:

Date:

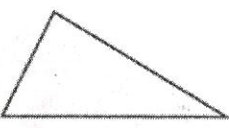
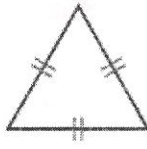
Period: 3

Classifying Triangles

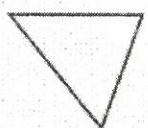
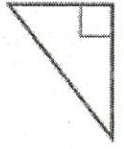
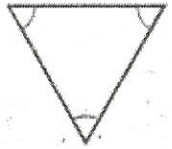
Lesson Objective

INBAT classify Δ s by their angles and sides; prove the Δ sum thm.

Classifying Triangles by their SIDES

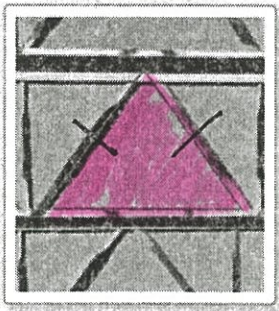
Scalene Triangle	Isosceles Triangle	Equilateral Triangle
		
No congruent sides	At least 2 congruent sides	3 congruent sides

Classifying Triangles by their ANGLES

Acute Triangle	Right Triangle	Obtuse Triangle	Equiangular Triangle
			
3 acute angles	1 right angle	1 obtuse angle	3 congruent angles

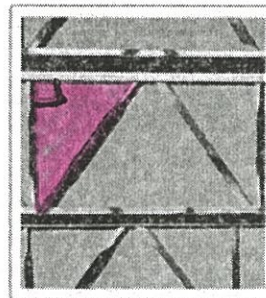
Example:

1. Classify the triangular shape of the support beams in the diagram by its sides.



isosceles

2. Classify the triangular shape of the support beams in the diagram by its angles.



right

In the Coordinate Plane

3. Classify ΔOPQ by its sides. Then determine whether it is a right triangle.

$$PQ = 5\sqrt{2}$$

$$OP = \sqrt{5}$$

$$OQ = 3\sqrt{5}$$

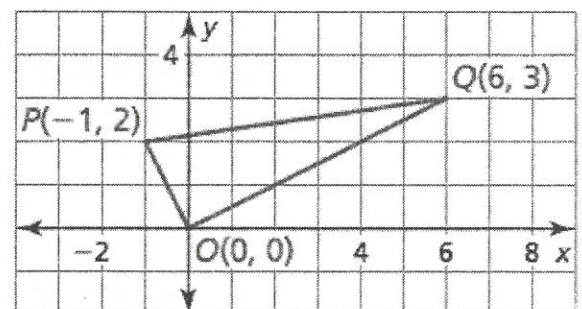
Scalene

$$m_{\overline{OP}} = \frac{-2}{1} = -2$$

$$m_{\overline{OQ}} = \frac{3}{6} = \frac{1}{2}$$

$$(-2)\left(\frac{1}{2}\right) = -1$$

$$m\angle O = 90^\circ \text{ since } \overline{OQ} \perp \overline{OP} \rightarrow \text{right } \Delta$$

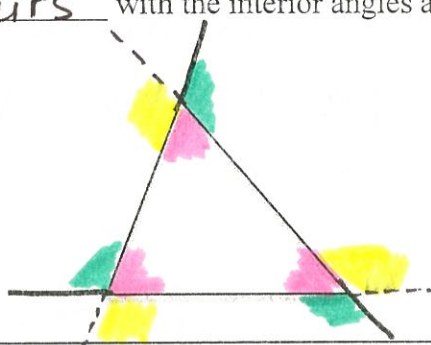
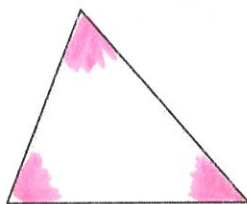


Finding Angle Measures of Triangles

When the sides of a polygon are extended, other angles are formed.

→ The ORIGINAL angles are the interior angles

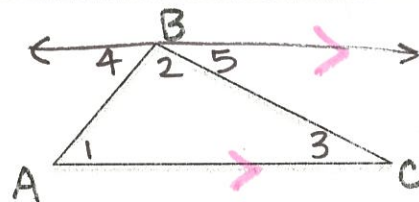
→ The angles that form linear pairs with the interior angles are the exterior angles.



Triangle Sum Theorem

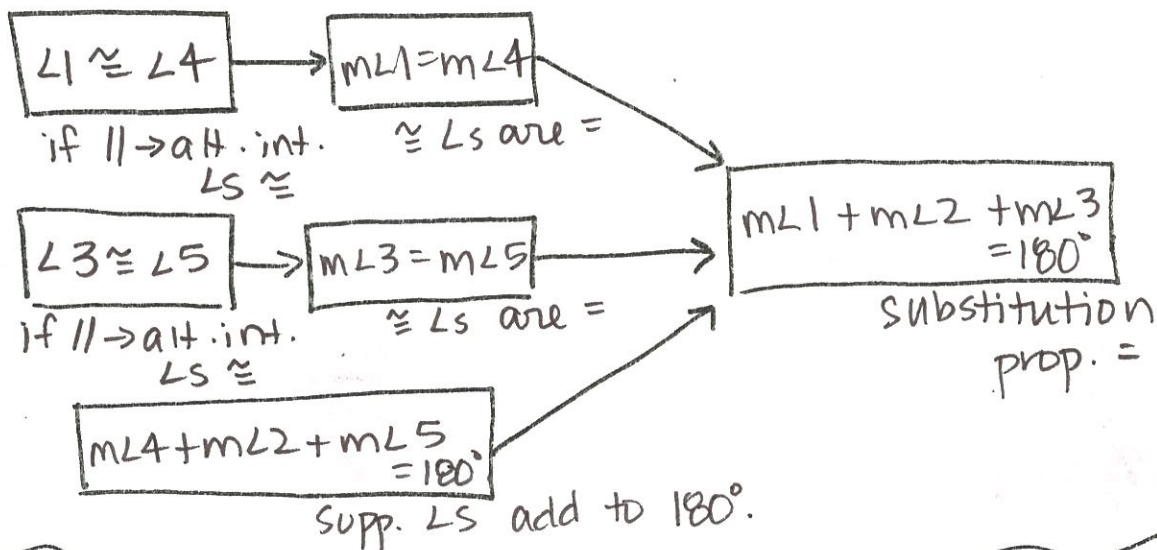
The sum of the measures of the interior angles of a triangle is 180° .

$$m\angle A + m\angle B + m\angle C = 180^\circ$$



PROOF: *hint: draw a line parallel to any side of the triangle through its opposite vertex

FLOW
CHART



TWO
COLUMN

statements	Reasons
① $\angle 1 \cong \angle 4$	① if $\parallel \rightarrow$ alt. int. $\angle s \cong$
② $\angle 3 \cong \angle 5$	② if $\parallel \rightarrow$ alt. int. $\angle s \cong$
③ $m\angle 1 = m\angle 4$ $m\angle 3 = m\angle 5$	③ $\cong \angle s$ are =
④ $m\angle 4 + m\angle 2 + m\angle 5 = 180^\circ$	④ supp. $\angle s$ add to 180°
⑤ $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$	⑤ substitution prop. =