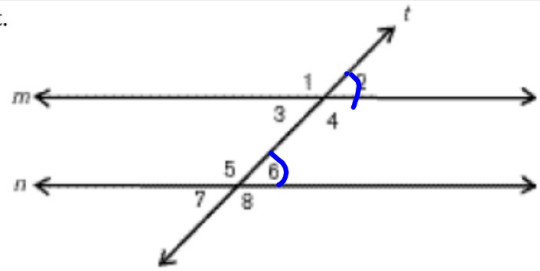
For #1 and #2, use the diagram to the right.



1. Given: $m \| n$ **Prove:** $\angle 6 \cong \angle 3$

Statements	Reasons
1) m ∥ n	1) Given
2) $\angle 2 \cong \angle 6$	2) corresp. ∠'s ≅
3) $\angle 2 \cong \angle 3$	3) vert. ∠'s ≅
4) $\angle 6 \cong \angle 3$	4) Subst.

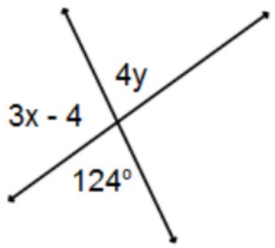
2. Given: $m \| n$ **Prove:** $m\angle 3 + m\angle 8 = 180°$

Statement	**Reason**
1) $m \| n$	1) Given
2) $m\angle 3 = m\angle 6$	2) alt int ∠'s ≅.
3) m∠6+m∠8=180	3) Definition of Linear Pair
4) $m\angle 3 + m\angle 8 = 180°$	4) Subst.

3. Solve for x and y.

x = 20

y = 31



$4y = 124$

$y = 31$

$3x - 4 + 4(31) = 180$

$3x - 4 + 124 = 180$

$3x + 120 = 180$

$3x = 60$

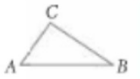
Geometry **3-4: Parallel Lines and the Triangle Angle-Sum Theorem**

Objective 1: To classify triangles and find the measure of their angles.

Theorem 3-12: Triangle Angle-Sum Theorem

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

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



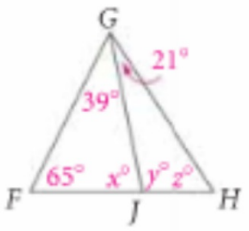
Example 1: Applying the Triangle Angle –Sum Theorem

A) Find the values of x and y.

To find the value of x, use

$65+39+X=180$

$X=76$



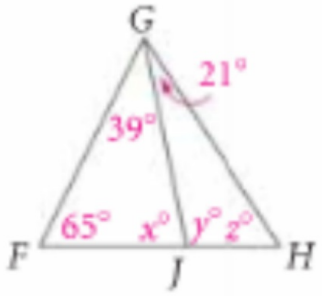
To find the value of y,

$76+y=180$

$y=104$

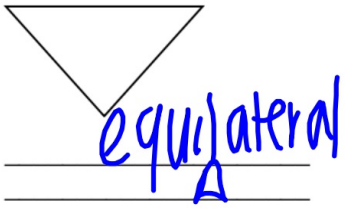
B) Find the value of z two different ways using the Triangle Angle-Sum Theorem.

$z=55$

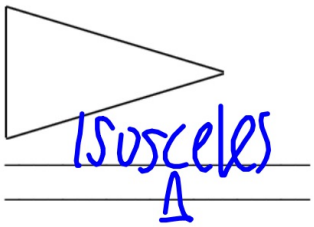


In Chapter 1, you classified an angle by its measure. You can also classify a triangle by its angles and sides.

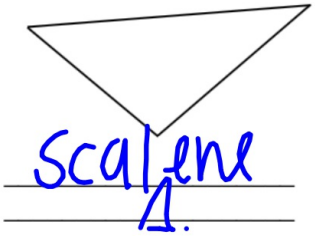
By Sides:



equilateral △

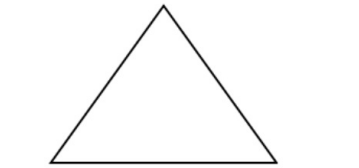


Isosceles △

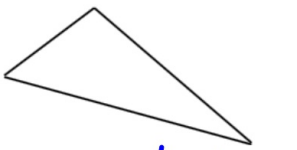


Scalene △

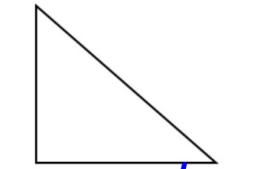
By Angles:



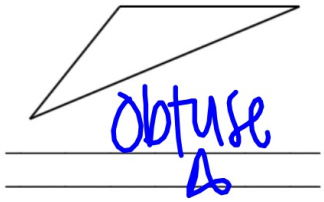
equiangular △



acute △



right △



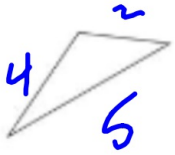
obtuse △

Example 2: Classifying a Triangle

A: Classify each triangle by its sides and its angles.

Isosceles

acute

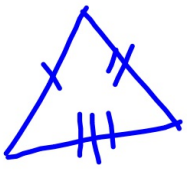


obtuse

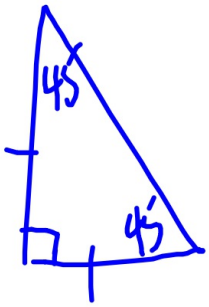
scalene

B: Draw and mark a triangle to fit each description. If no triangle can be drawn, write *not possible* and explain why.

a.) acute scalene



b.) isosceles right

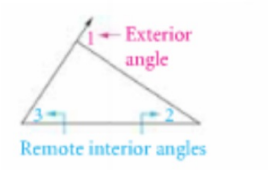


c.) obtuse equiangular

not possible

Objective 2: To use exterior angles of triangles

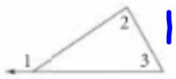
An exterior ∠ of a polygon is an angle formed by a side and an extension of an adjacent side. For each exterior angle of a triangle, the two nonadjacent interior angles are its remote interior ∠s.



Theorem 3-13: Triangle Exterior Angle Theorem

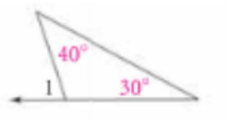
The measure of each exterior angle of a triangle equals the sum of remote int ∠s

$m\angle 1 = m\angle 2 + m\angle 3$



Example 3: Using the Exterior Angle Theorem to find each missing angle measure

A.



$m\angle 1 = 40 + 30$

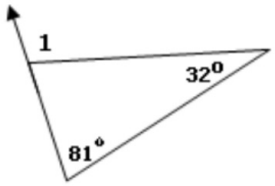
$= 70°$

B.

$113 - 70 = 2$

$\angle 2 = 43$

C.



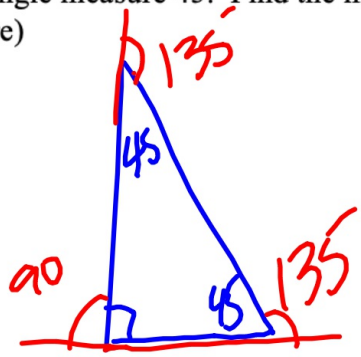
$m\angle 1 = 81 + 32$

$= 113$

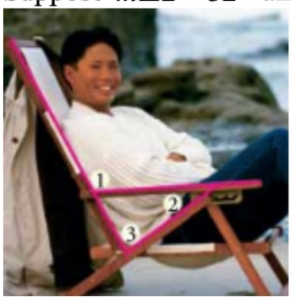
D. Explain how you can find the measure of $\angle 1$ in Ex C without using the Exterior Angle Theorem.

find the 3rd measure of Δ subt result from 180 b.c. measures are Supp!

E. Two angles of a triangle measure 45. Find the measure of an exterior angle at each vertex. (Hint: draw a picture)



Example 4: The lounge chair has different settings that change the angles formed by its parts. Suppose $m\angle 2 = 32°$ and $m\angle 3 = 81°$. Find $m\angle 1$, the angle formed by the back and the arm rest.



$32 + 81$

$m\angle 1 = 113°$

Hwk #17 -

Sect. 3-4

Pages: 150-151

Problems: 4-6, 16-20, 25, 26, 31, 32

IXL #9 - D.7 and F.1 due Friday at 4pm!