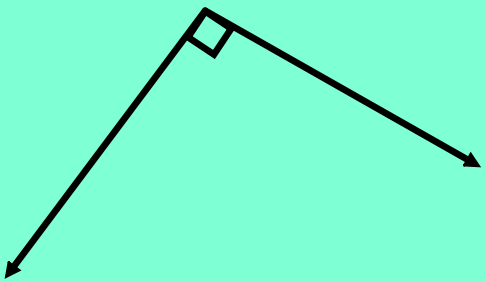
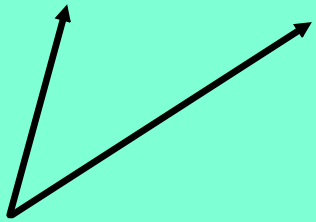
Do Now!!!

Classify each angle as *acute, right, or obtuse*.





Solve each equation.

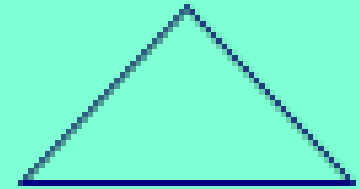
$6(x+3)-(4x-3)=27$

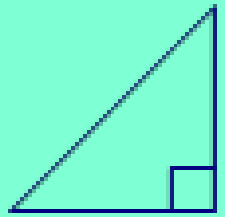
$3x-6+\frac{3}{2}(8x-4)=18$

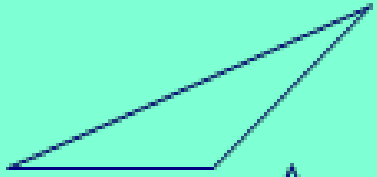
Geometry Handout 3.4

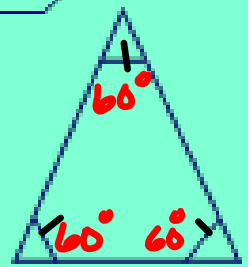
Parallel lines and the Triangle-Sum Theorem

Classifying triangles by angles.

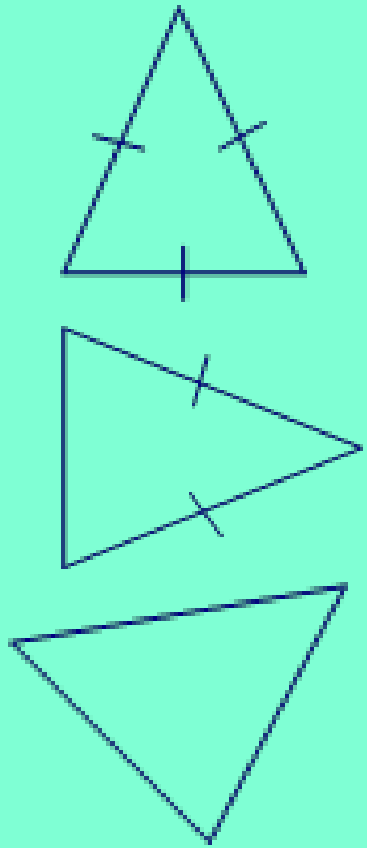




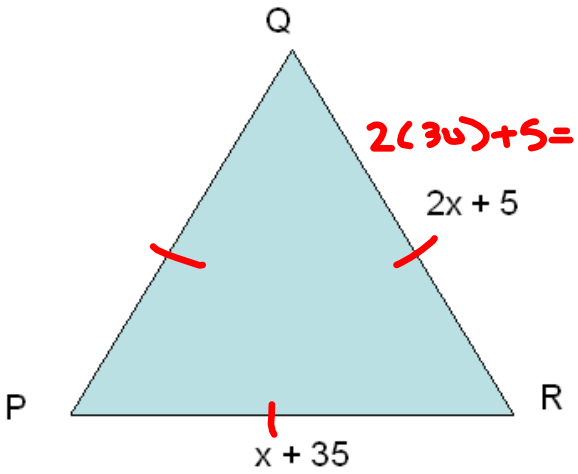




Classifying triangles by sides



Ex 1) If ΔPQR is an equilateral, find the value for x.



$2(30)+5 = 65$

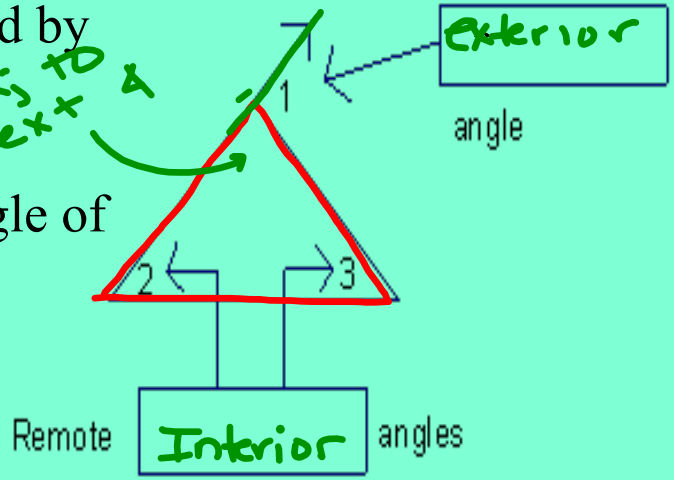
$30 + 35 = 65$

$2x+5 = x+35$

$-x \quad -5 \quad -x \quad -5$

$x = 30$

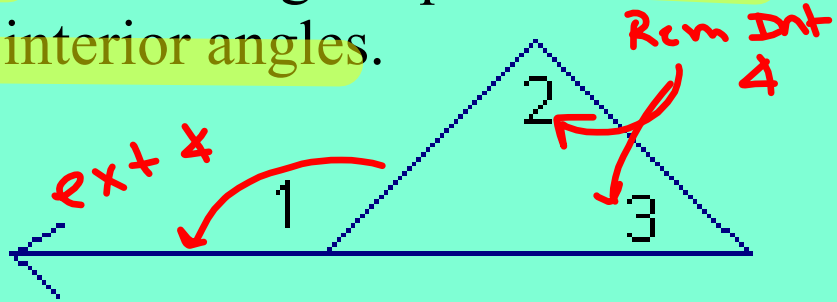
An **exterior angle** of a polygon is an angle formed by a side and an extension of an adjacent side.
Remote interior angles are the two nonadjacent interior angles corresponding to each exterior angle of a triangle.



Theorem 3-13: Triangle Exterior Angle Theorem

The measure of each exterior angle of a triangle equals the sum of the measures of its two remote interior angles.

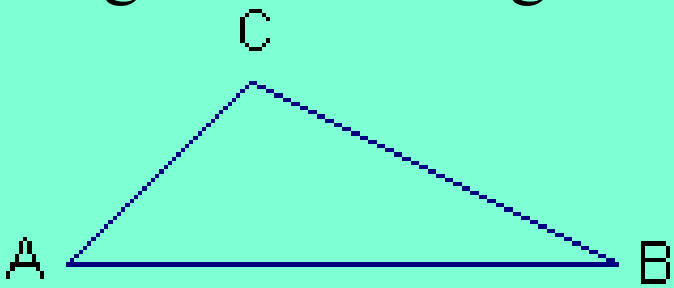
$$m\angle 1 = m\angle 2 + m\angle 3$$



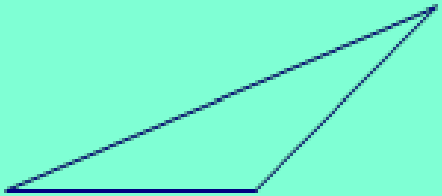
Theorem 3-12: Triangle Angle-Sum Theorem

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

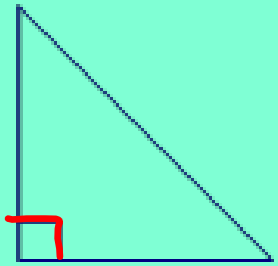
$$m\angle A + m\angle B + m\angle C = 180$$



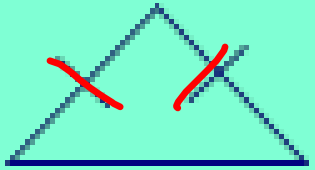
1. Classify the triangle by its sides and angles.



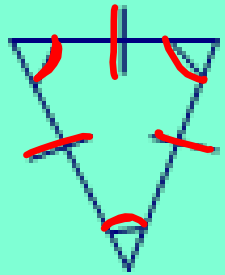
Obtuse, Scalene Δ



Right, Scalene Δ

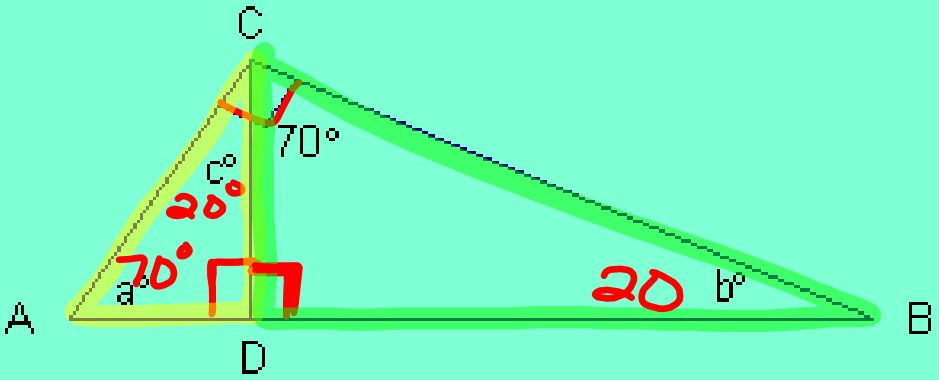


Acute, Isosceles Δ



Equiangular, Equilateral Δ

2. In triangle ABC, $\angle ACB$ is a right angle, and $\overline{CD} \perp \overline{AB}$. Find the values of a, b, and c.

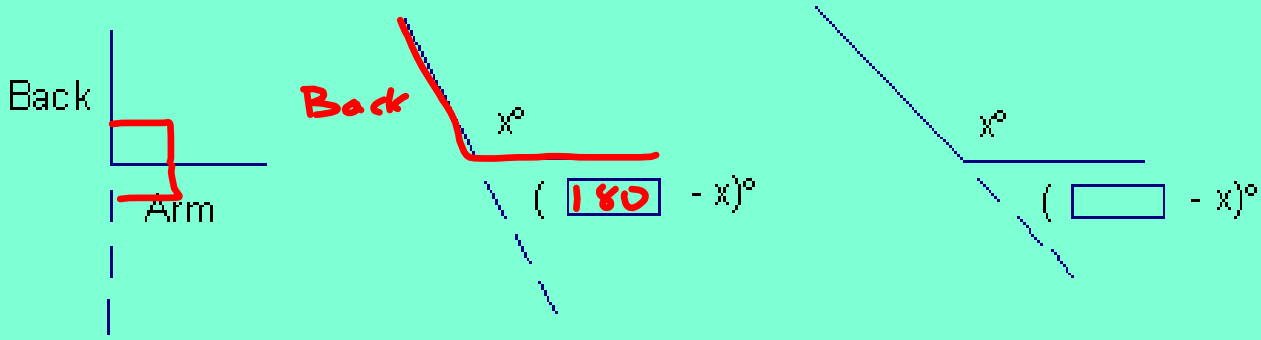


a = 70°

b = 20°

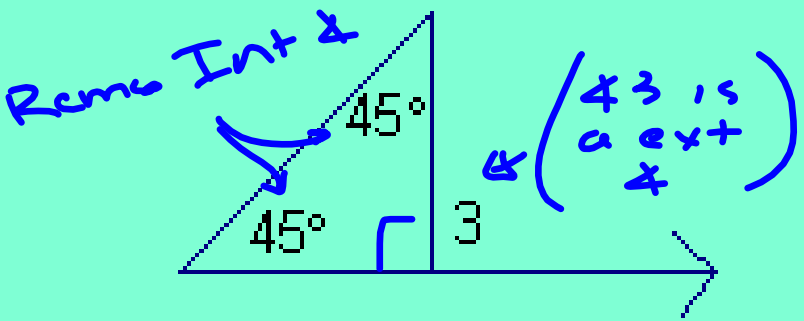
c = 20°

3. Explain what happens to the angle formed by the back of the chair and the armrest as you make a lounge chair recline more.



The exterior angle and the angle formed by the back of the chair and the armrest are adj. ∠'s, which together form a straight ∠. As one measure increase the other measure decreases. The angle formed by the back of the chair and the armrest increases as you make a lounge chair recline more.

4. a) Find $m\angle 3$

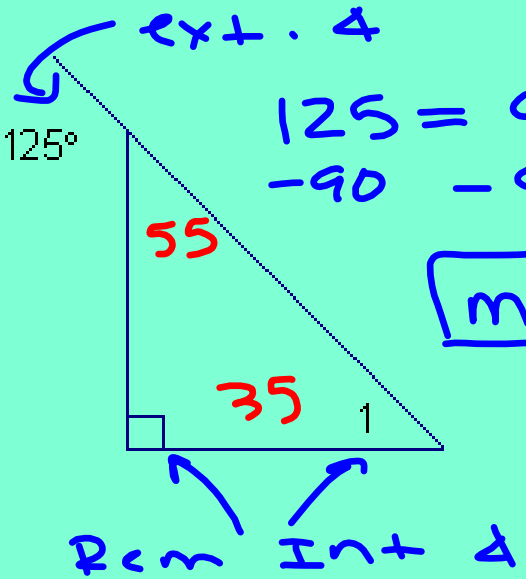


$m\angle 3 = 90°$

b) Is it true that if acute angles of a triangle are complementary, then the triangle must be a right triangle? Explain.

Yes

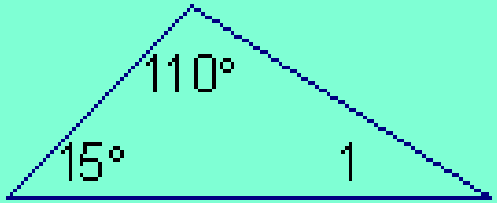
5. Find $m\angle 1$.



$125 = 90 + m\angle 1$
$-90 \quad -90$

$m\angle 1 = 35$

6. Find $m\angle 1$.

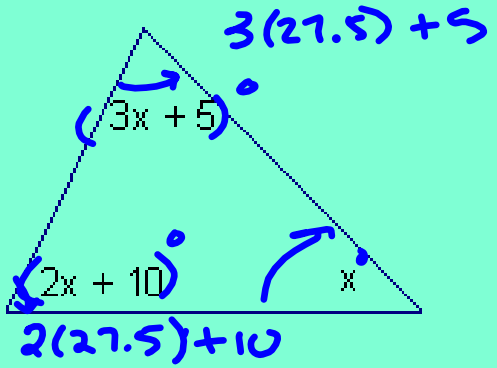


$m\angle 1 + 15 + 110 = 180$

$m\angle 1 + 125 = 180$
$-125 \quad -125$

$m\angle 1 = 55$

7. Find x.



$3x + 5 + 2x + 10 + x = 180$

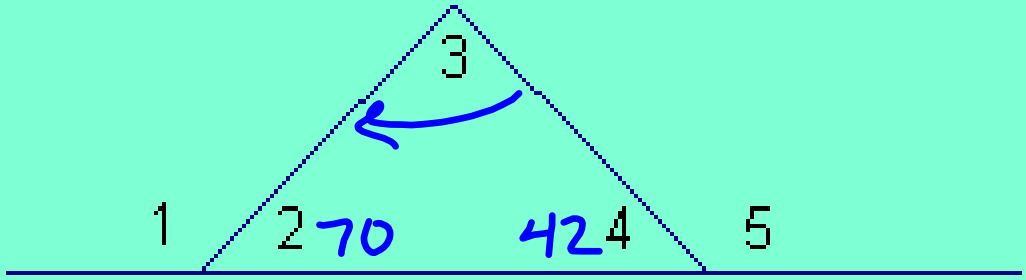
$6x + 15 = 180$

$-15 \quad -15$

$6x = 165$

$x = 27.5$

$27.5°, 65°, 87.5°$



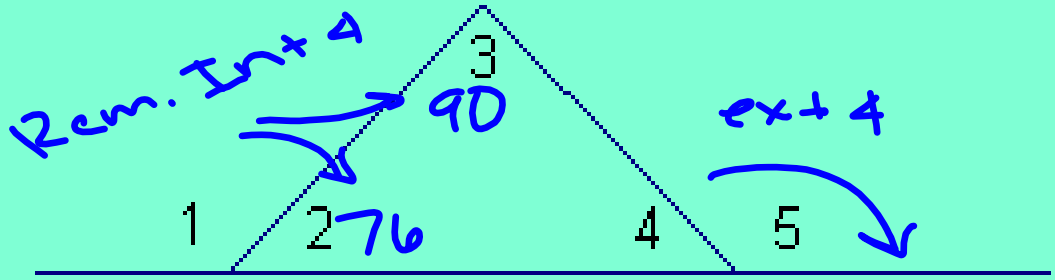
8. Use the diagram at the right

a) Find $m\angle 3$ if $m\angle 2 = 70$ and $m\angle 4 = 42$.

$m\angle 3 + 70 + 42 = 180$

$m\angle 3 + 112 = 180$

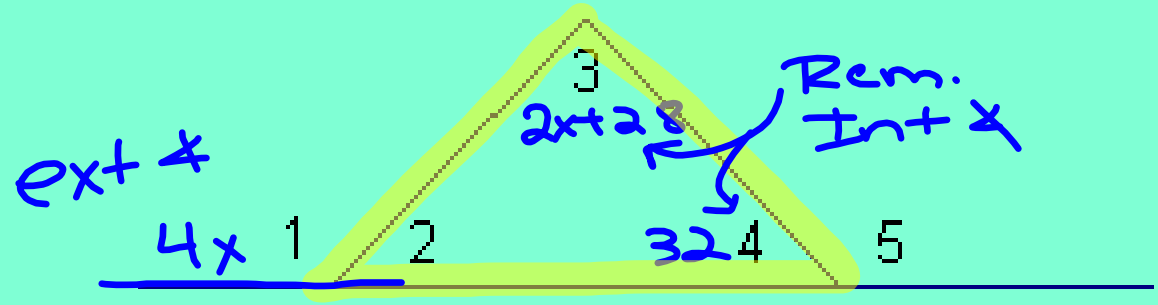
$m\angle 3 = 68^\circ$



b) Find $m\angle 5$ if $m\angle 2 = 76$ and $m\angle 3 = 90$.

$m\angle 5 = 76 + 90$

$m\angle 5 = 166^\circ$



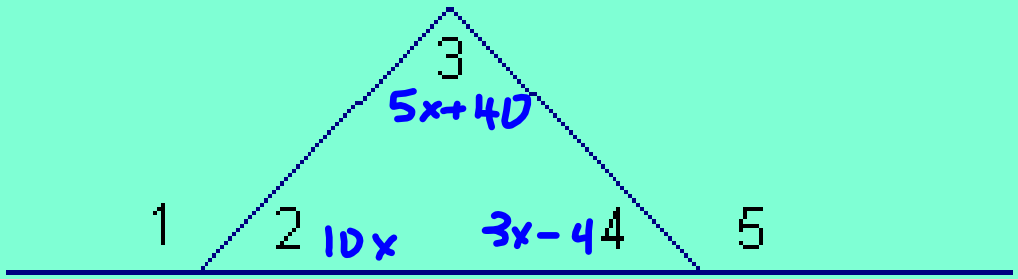
c) Find x if $m\angle 1 = 4x$, $m\angle 3 = 2x + 28$, and $m\angle 4 = 32$.

$4x = 2x + 28 + 32$

$-2x \quad -2x$

$2x = 60$

$x = 30$

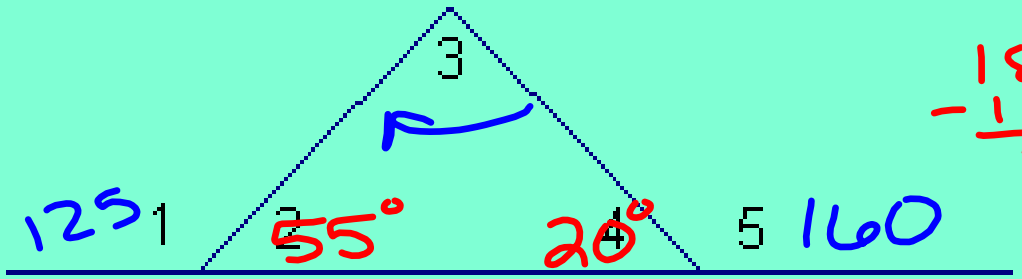


d) Find x if $m\angle 2 = 10x$, $m\angle 3 = 5x + 40$, and $m\angle 4 = 3x - 4$.

$10x + 5x + 40 + 3x - 4 = 180$

180 − 125 = 55

180 − 160 = 20



e) Find $m\angle 3$ if $m\angle 1 = 125$ and $m\angle 5 = 160$.

$m\angle 3 + 55 + 20 = 180$

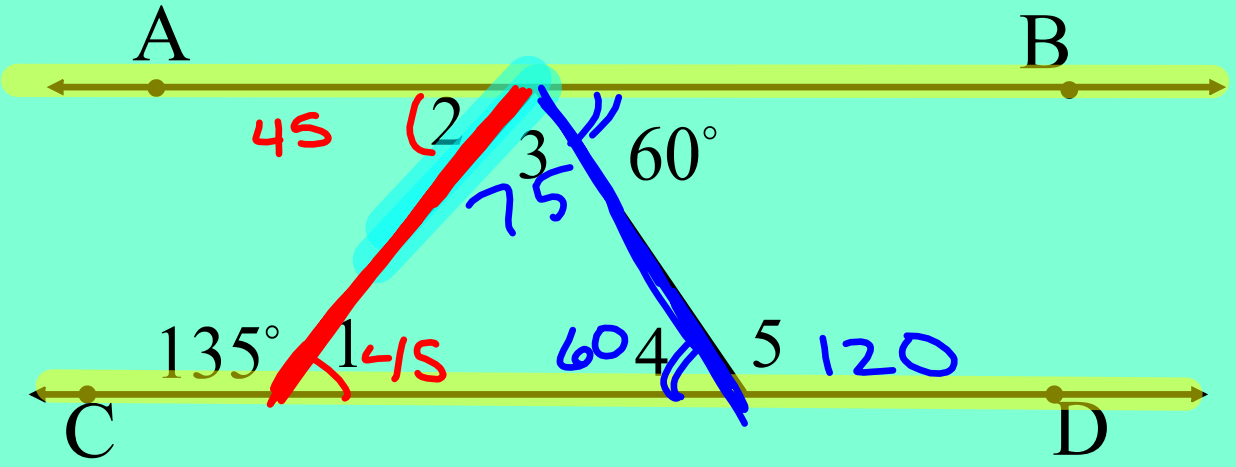
$m\angle 3 + 75 = 180$

$m\angle 3 = 105$

Example: AB || CD. Find the measures of all the angles.

180
-135
45

45+60+m∠3=180
m∠3+105=180



Assignment:

Day 1: pgs 150-153 1-6,10-15,23-25,27, 28,30,31,32