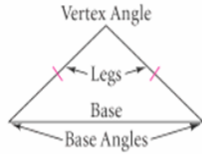**Objectives:** *To be able to use the properties of isosceles and equilateral riangles in order to find missing angle measures.*

Recall: Isosceles Triangles
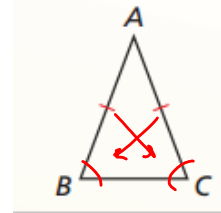
Triangle with 2 congruent sides
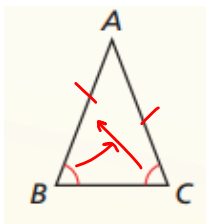
Parts of an Isosceles Triangle

Vertex Angle
← Legs →
Base
Base Angles

Dec 22-2:22 PM

Isos △ thm

Base Angles Theorem: If two sides of a triangle are congruent, then the angles opposite the congruent sides (base angles) are congruent.
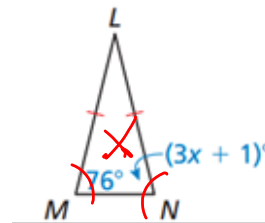
A
B   C

May 3-11:29 AM

Converse of the Base Angles Theorem:
If two angles of a triangle are congruent, then the sides opposite the congruent angles are congruent.
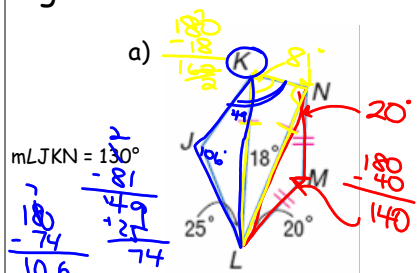
A
B   C

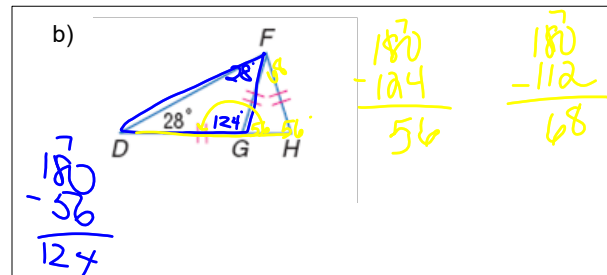May 3-12:15 PM

Example #1
Solve for x.

L
$(3x + 1)°$
76°
M   N

$3x + 1 = 76$
$3x = 75$
$\boxed{x = 25}$

May 3-12:31 PM

Example 2: Solve for the remaining angle measures.

a)
180
-18
$\ \ $
K   81°
N
20°
J   96°   18°
mLJKN = 130°
-81
49
M
180
-40
140
180
-74
106
$+25$
74
25°   20°
L

Dec 22-2:27 PM

---

b)
F
28°   124°
D   G   H
180
-56
124
180
-124
56
180
-112
68

Dec 22-2:37 PM

Example 3: Solve for x.

$3x + 8$ $(3x + 8)°$

$(2x + 20)°$

$3x + 8 + 3x + 8 + 2x + 20 = 180$

$8x + 36 = 180$

$8x = 144$

$x = 18$

Dec 22-2:38 PM

Corollaries:
1. If a triangle is equilateral, then the triangle is equiangular.

$60°$

$60°$ $60°$

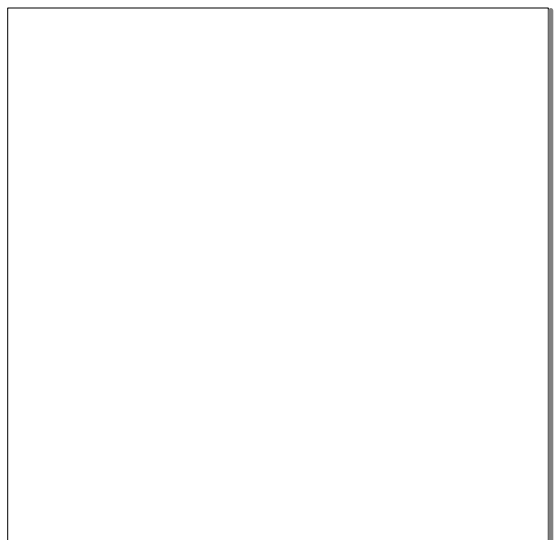2. If a triangle is equiangular, then the triangle is equilateral.

Dec 22-2:40 PM

Example 4: Solve for x.

A

$12 = x$ 12

B   C

Dec 22-2:43 PM

Example 5: Solve for x.

$60°$ $3x - 13$

$2x + 5$

$2x + 5 = 3x - 13$

$18 = x$

Dec 22-2:44 PM

Feb 3-12:32 PM

2