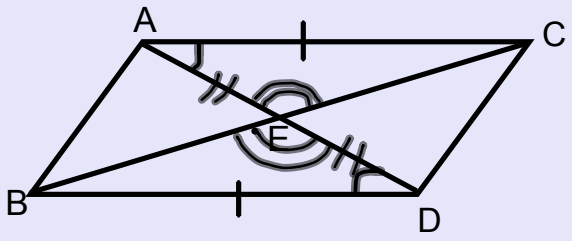
Bellwork
10/25/2011

Tell which triangles you can show are congruent in order to prove $\overline{AE} \cong \overline{DE}$. What postulate or theorem would you use?

1.



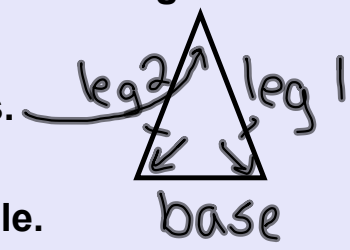
$\triangle AEC \cong \triangle DEB$

AAS Thm.

Geometry
4.7 Use Isosceles and Equilateral Triangles
Standard(s): 3,7

Vocabulary:

1. **Legs: The two congruent sides of an isosceles triangle.**
2. **Vertex Angle: The angle formed by the legs.**
3. **Base: The third side of the isosceles triangle.**
4. **Base Angles: The two angles adjacent to the base.**



THEOREMS *For Your Notebook*

THEOREM 4.7 Base Angles Theorem

If two sides of a triangle are congruent, then the angles opposite them are congruent.

If $\overline{AB} \cong \overline{AC}$, then $\angle B \cong \angle C$.

Proof: p. 265

THEOREM 4.8 Converse of Base Angles Theorem

If two angles of a triangle are congruent, then the sides opposite them are congruent.

If $\angle B \cong \angle C$, then $\overline{AB} \cong \overline{AC}$.

Proof: Ex. 45, p. 269

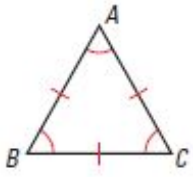
COROLLARIES *For Your Notebook*

Corollary to the Base Angles Theorem

If a triangle is equilateral, then it is equiangular.

Corollary to the Converse of Base Angles Theorem

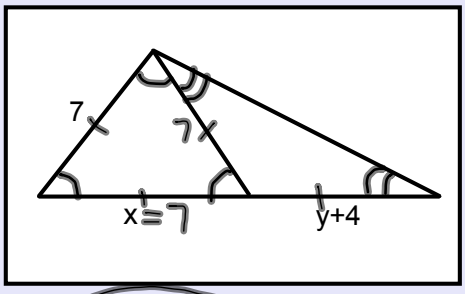
If a triangle is equiangular, then it is equilateral.



NOTE: If a △ is equiangular, then the measure of each ∠ = 60°

Use Isosceles and Equilateral Triangles

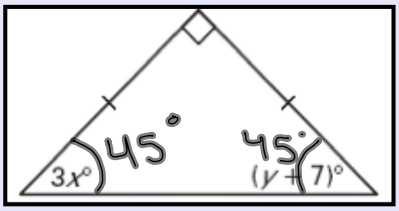
If possible, find the values of x and y in the diagram. Explain the reasoning.



$x = 7$

$y + 4 = 7$

$y = 3$



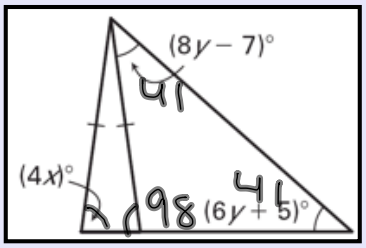
$3x = 45$

$x = 15$

$3x = y + 7$

$y + 7 = 45$

$y = 38$



$8y - 7 = 6y + 5$

$2y = 12$

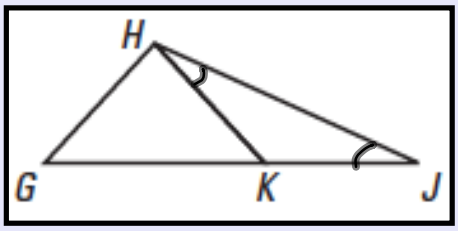
$y = 6$

$4x = 82$

$x = 20.5$

Apply the Base Angles Theorem

Copy and complete the statement.



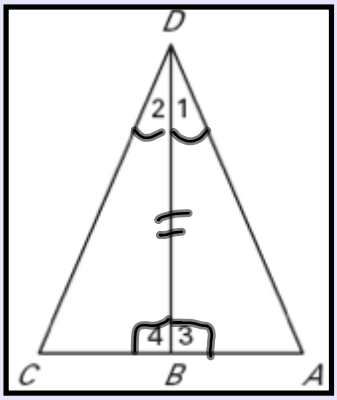
1. If $\overline{HG} \cong \overline{HK}$, then $\angle$ HGK $\cong \angle$ HKG.

2. If $\angle KHJ \cong \angle KJH$, then $\overline{HK} \cong \overline{JK}$.

Solve a Multi-Step Problem

Given: $\overline{BD}$ bisects $\angle ADC$
$\overline{DB} \perp \overline{AC}$

Prove: ΔADC is isosceles



1. $\overline{BD}$ bisects $\angle ADC$, $\overline{DB} \perp \overline{AC}$	1. Given
2. $\angle 1 \cong \angle 2$	2. Def. of an $\angle$ bisector
3. $\overline{DB} \cong \overline{DB}$	3. Reflexive
4. $\angle 4$ is a right $\angle$, $\angle 3$ is a right $\angle$	4. Def. of $\perp$ lines
5. $\angle 4 \cong \angle 3$	5. Right $\angle$'s $\cong$ them
6. $\Delta BDC \cong \Delta BDA$	6. ASA Post.
7. $\overline{DC} \cong \overline{DA}$	7. CPCTC
8. ΔADC is isosceles	8. Def. of an isosceles Δ

Homework Assignment

Worksheet 4.7B