Name: **Key** Date: _____ Period: _____

5.4 Isosceles & Equilateral Triangles CYU

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Completing Congruence Statements	1, 2		
Determining AAS, SAS, ASA, HL, SSS	1, 2		12
Equilateral Triangles	3, 4	6, 7, 10	13
Isosceles Triangles	5	6, 7, 9	8, 11, 12
Perimeter	9, 10		

Complete the statement. State which theorem you used. Be sure to mark your diagram.

1. If $\angle D \cong \angle CED$, then ___$\overline{CD}$___ $\cong$ ___$\overline{CE}$___. Base ∡'s Converse

2. If $\angle EBC \cong \angle ECB$, then ___$\overline{EB}$___ $\cong$ ___$\overline{EC}$___. Base ∡'s Converse
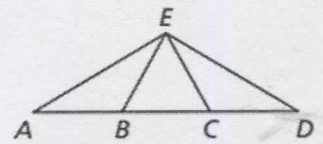
Find the value of x. Show work for full credit.

3.

$x = 16$

4.

$x = 60°$

5. **MODELING WITH MATHEMATICS** The dimensions of a sports pennant are given in the diagram. Find the values of x and y.

$x = 79$
$y = 22$

Find the values of x and y.

6.

$x = 60$
$y = 60$

7.

$x = 20$
$y = 70$

8. **REASONING** The base of isosceles ΔXYZ is $\overline{YZ}$. What can you prove? Select all that apply.

(A) $\overline{XY} \cong \overline{XZ}$ B) $\angle X \cong \angle Y$ (C) $\angle Y \cong \angle Z$ D) $\overline{YZ} \cong \overline{ZX}$

Find the perimeter of the triangle.

9.

7 in. $(x + 4)$ in. $P = 17$ in

$(4x + 1)$ in.

10.

$(21 - x)$ in. $P = 39$ in
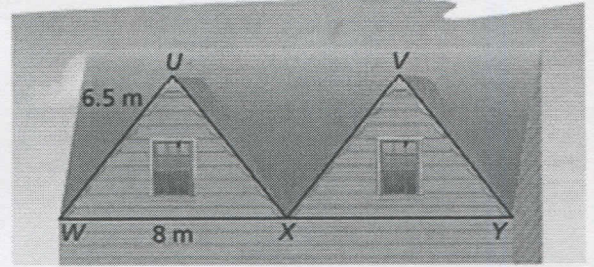
$(2x - 3)$ in. $(x + 5)$ in.

11. **PROBLEM SOLVING** The triangular faces of the peaks on a roof are congruent isosceles triangles with vertex angles U and V.

a) Name two angles congruent to ∠WUX. Explain your reasoning.

∠XVY ≅ ∠UXV
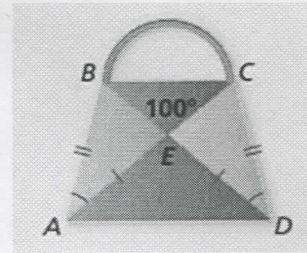vertex ∠'s of ≅ isosceles △

b) Find the distance between points U and V.

8 m

12. **HOW DO YOU SEE IT?** You are designing fabric purses to sell at the school fair.
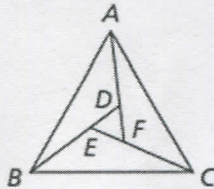
a) Explain why ΔABE ≅ ΔDCE.

SAS ≅ Thm

b) Name the isosceles triangles in the purse.

△AED ≅ △BEC

13. **PROOF** Using a two-column proof, use the diagram to prove that ΔDEF is equilateral.

Given △ABC is equilateral.
∠CAD ≅ ∠ABE ≅ ∠BCF

Prove △DEF is equilateral.

Statements	Reasons
1. △ABC is equilateral, ∠CAD ≅ ∠ABE ≅ ∠BCF	1. Given
2. △ABC is equiangular	2. Base ∠ Thm
3. ∠ABC ≅ ∠BCA ≅ ∠BAC	3. Def of equiangular
4. m∠CAD = m∠ABE = m∠BCF, m∠ABC = m∠BCA = m∠BAC	4. If ≅ ⟹ =
5. m∠ABC = m∠ABE + m∠EBC, m∠BCA = m∠BCF + m∠ACF, m∠BAC = m∠CAD + m∠BAD	5. Angle Add. Post.

Statements	Reasons
6. m∠ABE + m∠EBC = m∠BCF + m∠ACF = m∠CAD + m∠BAD	6. Substitution POE
7. m∠ABE + m∠EBC = m∠ABE + m∠ACF = m∠ABE + m∠BAD	7. Substitution POE
8. m∠EBC = m∠ACF = m∠BAD	8. Subtraction POE
9. ∠EBC ≅ ∠ACF ≅ ∠BAD	9. If = ⟹ ≅
10. ∠FEB ≅ ∠DFC ≅ ∠EDA	10. 3rd ∠'s Thm
11. ∠FEB & ∠FED, ∠DFC & ∠EFD, & ∠EDA & ∠FDE are supplementay	11. Linear Pair Postulate
12. ∠FED ≅ ∠EFD ≅ ∠FDE	12. ≅ Supplements Thm
13. △DEF is equiangular	13. Def. of equiangular △
14. △DEF is equilateral	14. Base ∠'s Converse Thm

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*

Rate your mastery level!
How confident are you with the skills this CYU covered? Circle the score you would give yourself.

1 2	3 4 5	6 7	8
Basic	Intermediate	Advanced	Solved ALL!