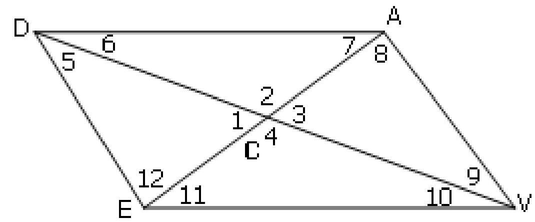
Math 1312 Notes: 3.1 review and 3.2

3.1 Review

Example 1



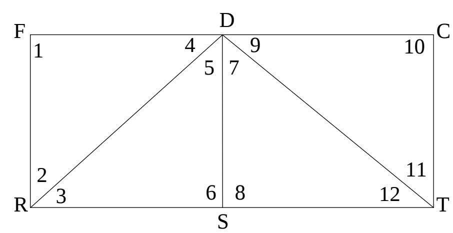
Refer to quadrilateral DAVE.

a. Name the included side for $\angle 1$ and $\angle 5$.

b. If $\angle 6 \cong \angle 10$, and $\overline{DC} \cong \overline{VC}$, then $\Delta DCA \cong \Delta$________ by ________.

c. Given that $\angle 7 \cong \angle 11$, $\overline{AD} \cong \overline{EV}$, and $\overline{DC} \cong \overline{VC}$. Can $\Delta ADC \cong \Delta EVC$? Explain.

Example 2.



a. Name the included side for $\angle 1$ and $\angle 4$.

b. $\overline{CT}$ is included between what two angles?

c. In ΔFDR, name a pair of angles so that $\overline{FR}$ is not included.

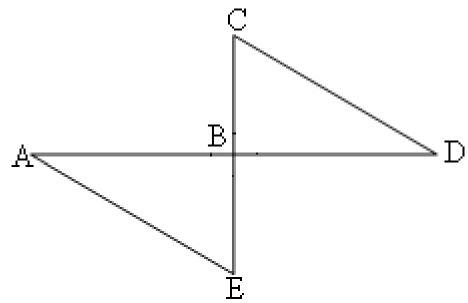
d. If $\angle 1 \cong \angle 6$, $\angle 4 \cong \angle 3$, and $\overline{FR} \cong \overline{DS}$, then $\Delta FDR \cong \Delta$________ by ________.

e. If $\angle 4 \cong \angle 9$, what sides would need to be congruent to show $\Delta FDR \cong \Delta CDT$?

f. If $\overline{RS} \cong \overline{TS}$ and $\overline{DR} \cong \overline{DT}$, name a pair of angles that would create an SAS relationship.

Given: $\overline{CD} \parallel \overline{AE}$, $\overline{CB} \simeq \overline{EB}$

Prove: $\Delta ABE \cong \Delta DBC$



Statements	Reasons

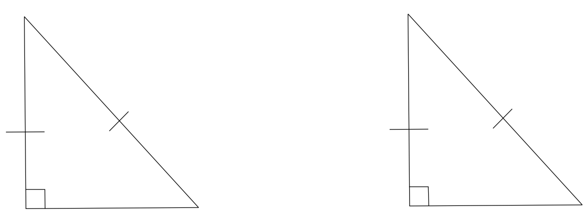
3.2

CPCTC – Corresponding Parts of Congruent Triangles are Congruent

Once we prove two triangles are congruent, we can state that any corresponding parts are congruent by CPCTC.

Right Triangles:

<u>Postulate HL</u> - if the hypotenuse and a leg of one right triangle are congruent to the hypotenuse and corresponding leg of another right triangle, then the triangles are congruent.

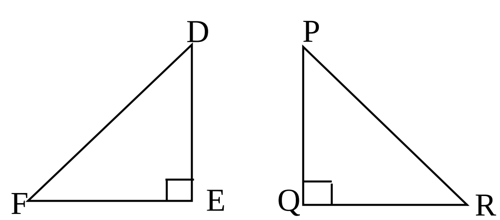


Example 1:
These triangles are congruent by HL. Find the values of "x" and "y".

x = ___________

y = ___________

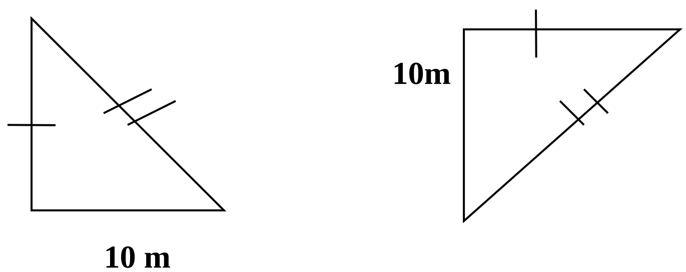
$\overline{FD} = 73$
$\overline{DE} = 37$
$\overline{PQ} = 2x - 1$
$\overline{RP} = 3y + 4$



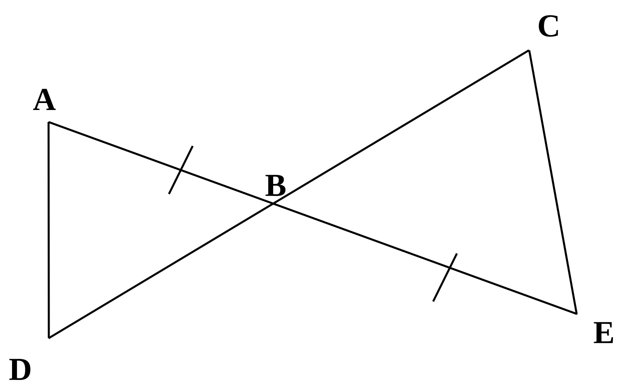
Example 2:
Decide if each of these triangles are congruent.

a.

b.

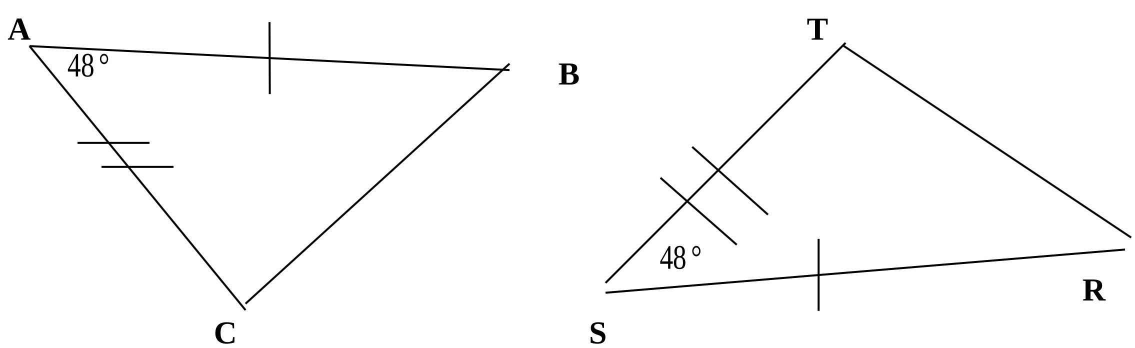


c.



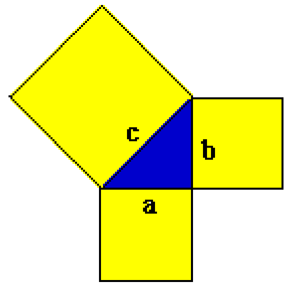
$\angle BAD \simeq \angle CEB$

d.



Pythagorean Theorem:

The sum of the squares of the lengths of the legs of a right triangle ('a' and 'b' in the triangle shown below) is equal to the square of the length of the hypotenuse ('c').



In other words, $a^2+b^2=c^2$

Since we are working with lengths of sides here $\text{if } x^2=p \text{, then } x=\sqrt{p}$ (we only need positive square root.

Example 3:

a. If $x^2=16$, then

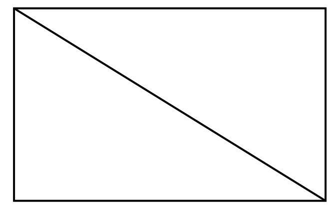
b. If $x^2=12$, then

Example 4: Given ΔABC is a right triangle. Use the information to find the length of the third side.

a. a = 4 and c = 8

b. a =2 and b = 1

Example 5: The sides of a rectangle are 5 and 12. find the length of the diagonal.



Example 6: Find the length of side of a square if a diagonal has a length of 8.