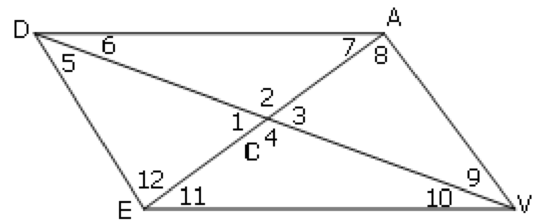
Math 1312
Section 3.1 review & Section 3.2
Congruent Triangles

Example 1



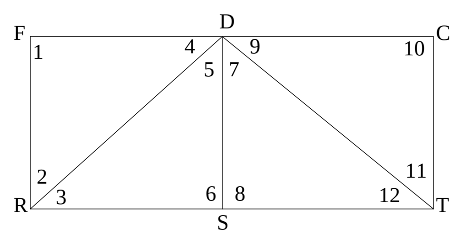
Refer to quadrilateral DAVE.

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 ________.

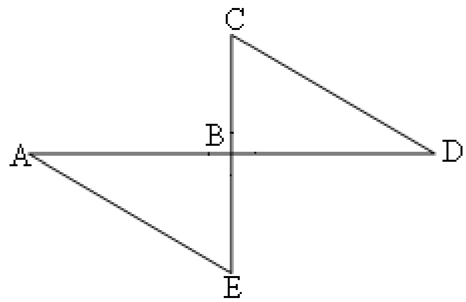
e. If $\angle 4 \cong \angle 9$, what sides would need to be congruent to show $\Delta FDR \cong \Delta CDT$?

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

Example 3

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

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



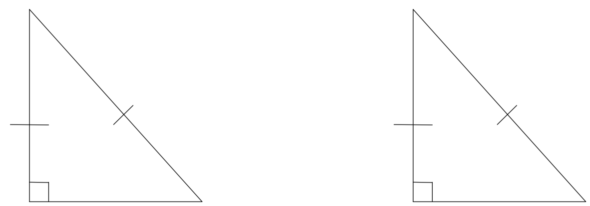
Statements	Reasons

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

Principle HL: 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 4

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

x = ___________

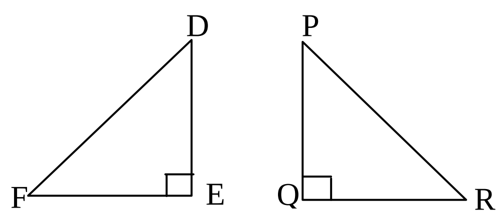
y = ___________

$\overline{FD}$ = 73

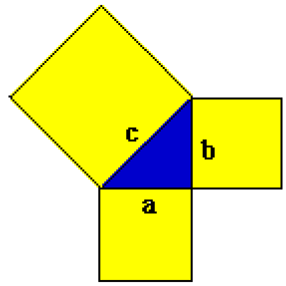
$\overline{DE}$ = 37

$\overline{PQ}$ = 2x - 1

$\overline{RP}$ = 3y + 4



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, $a^2 + b^2 = c^2$

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

Example 5:

a) Find *c* if *a* = *4* and *b* = *3*.

b) Find *b* if *a* =*15* and *c* = *17*.