What are the 6 ways to prove two triangles congruent?

Side - Side - Side (SSS)
Side - Angle - Side (SAS)
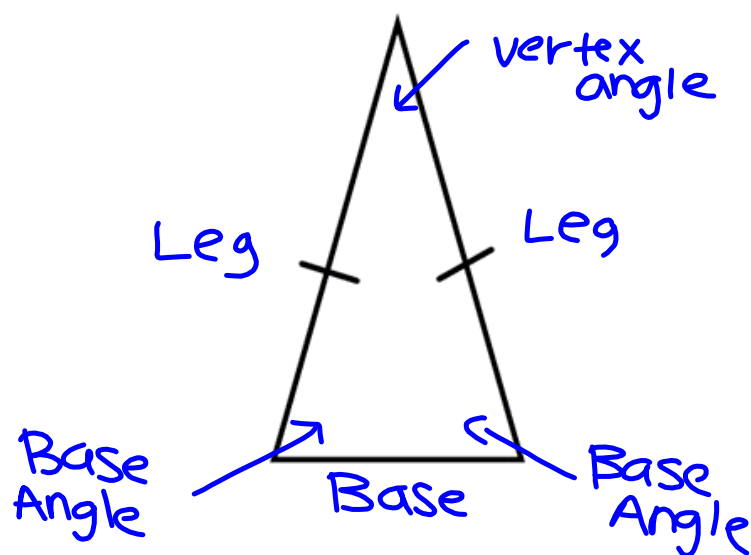Angle - Side - Angle (ASA)
Angle - Angle - Side (AAS)
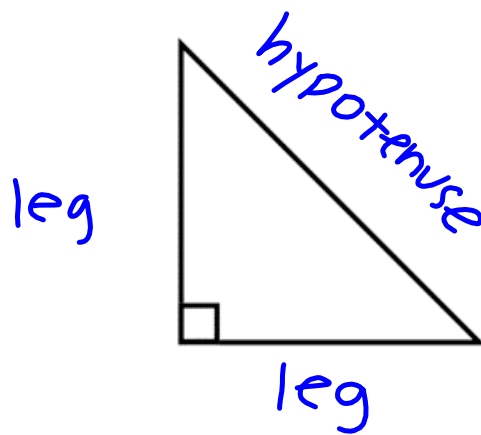Hypotenuse Leg (HL)
By Definition

What does CPCTC stand for?

Corresponding
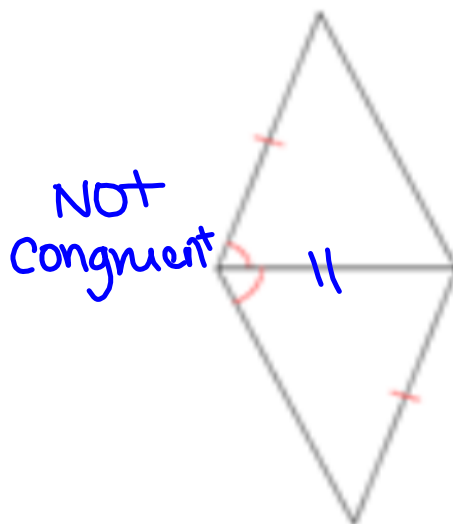Parts of
Congruent
Triangles are
Congruent

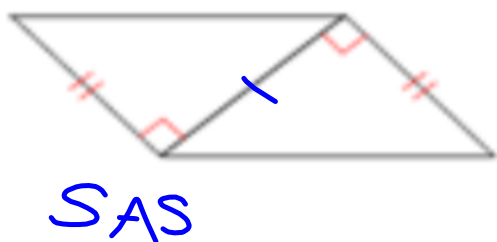# Label all of the parts on the isosceles triangle.

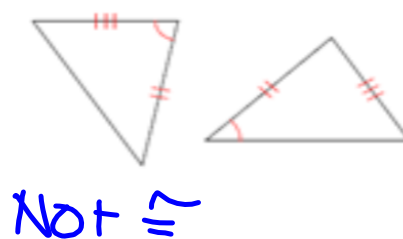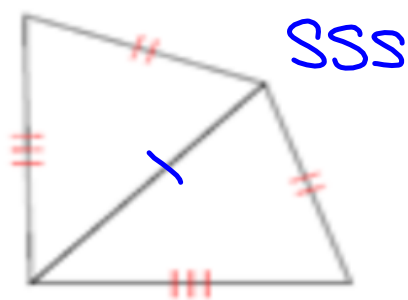vertex angle

Leg   Leg

Base Angle   Base   Base Angle

Label all of the parts of the right triangle.

hypotenuse

leg

leg

State if the two triangles are congruent. If they are, state by which way.

SAS

NOt Congruent

State if the two triangles are congruent. If they are, state by which way.
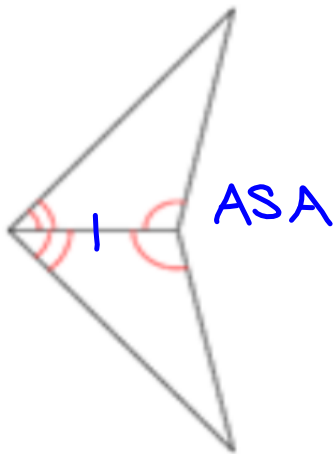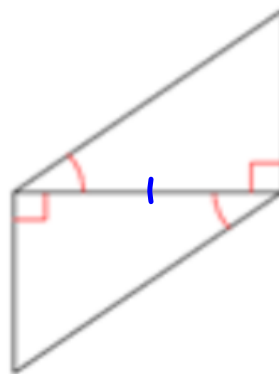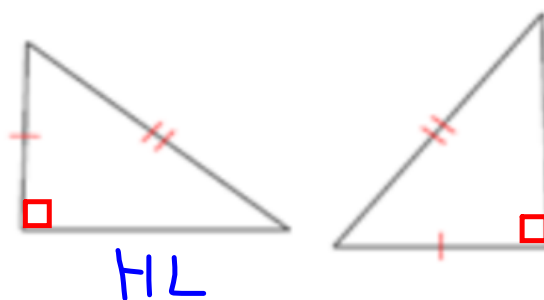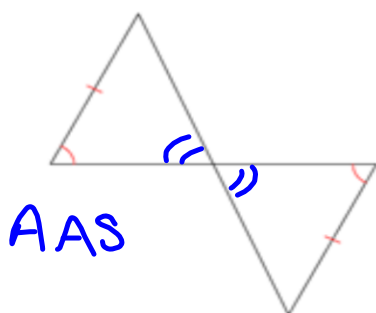
SSS

Not ≅

State if the two triangles are congruent. If they are, state by which way.
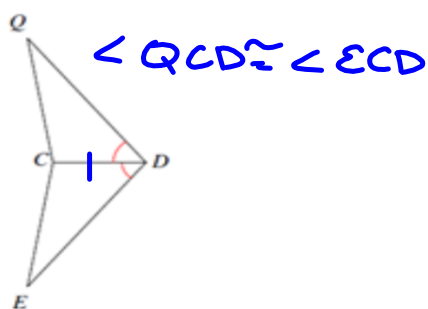
ASA

ASA

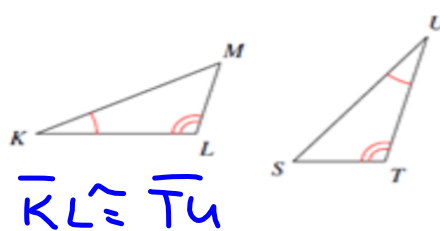State if the two triangles are congruent. If they are, state by which way.

AAS

HL

State what additional information is required in order to know that the triangles are congruent for the reason given.

ASA

$\angle QCD \cong \angle ECD$

ASA

$\overline{KL} \cong \overline{TU}$

State what additional information is required in order to know that the triangles are congruent for the reason given.

ASA

<DUT≅<SUT

SAS WV≅XK

State what additional information is required in order to know that the triangles are congruent by HL.

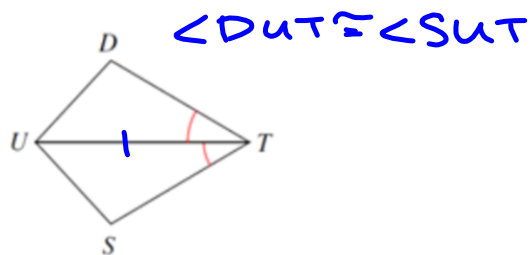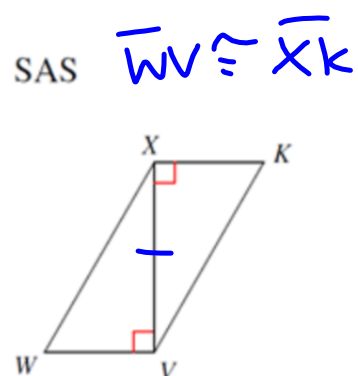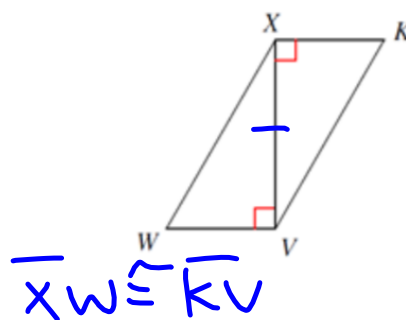$\overline{CB} \cong \overline{KL}$

$\overline{XW} \cong \overline{KV}$

State what additional information is required in order to know that the triangles are congruent for the reason given.

SAS

$\overline{CA} \cong \overline{LJ}$
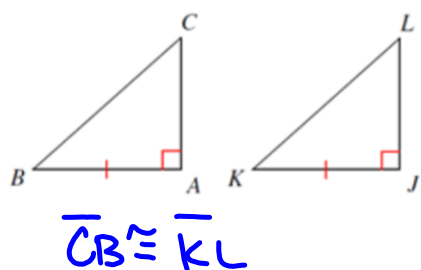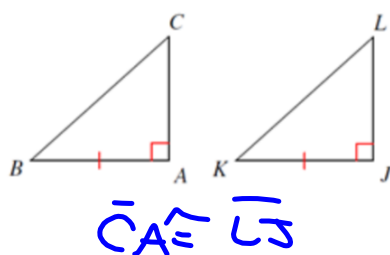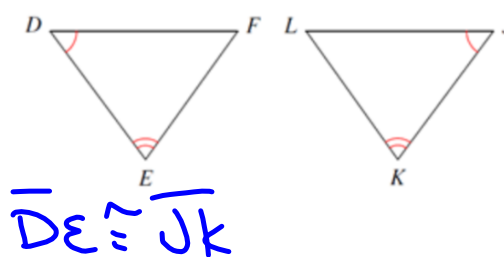
ASA

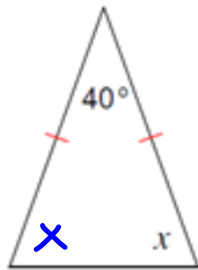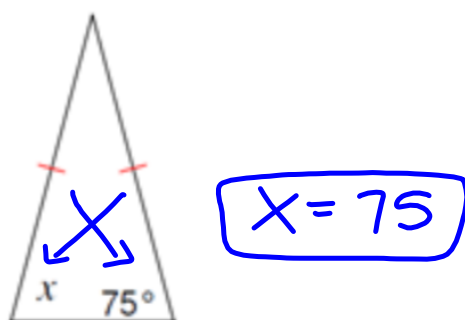$\overline{DE} \cong \overline{JK}$

Find the value of x.

$$x + x + 40 = 180$$
$$2x + 40 = 180$$
$$2x = 140$$
$$\boxed{x = 70}$$

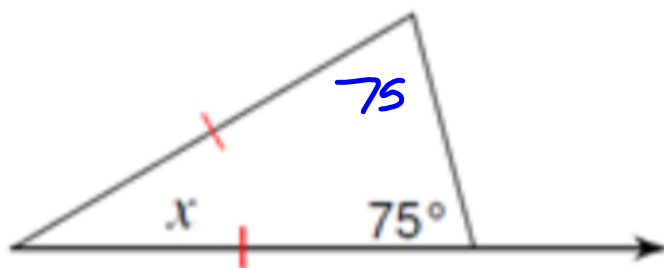Find the value of x.
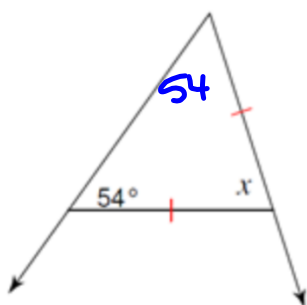
$X = 75$

Find the value of x.

$$x + 54 + 54 = 180$$
$$x + 108 = 180$$
$$\underline{-108 \quad -108}$$
$$\boxed{x = 72}$$

54

54°

x

Find the value of x.

75

x 75°

$X + 75 + 75 = 180$

$X + 150 = 180$

$X = 30$

Given : $\overline{MH} \cong \overline{MA}; <1 \cong <2$

Prove : $\triangle MTH \cong \triangle MTA$
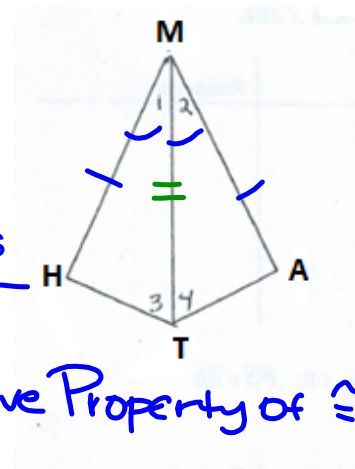
Statements	Reasons
1. $\overline{MH} \cong \overline{MA}; <1 \cong <2$	1. Given
2. $\overline{MT} \cong \overline{MT}$	2. Reflexive Property of $\cong$
3. $\triangle MTH \cong \triangle MTA$	3. SAS

$Given: \overline{HX} \cong \overline{XE}; < O \cong < M$

$Prove: \overline{HO} \cong \overline{ME}$
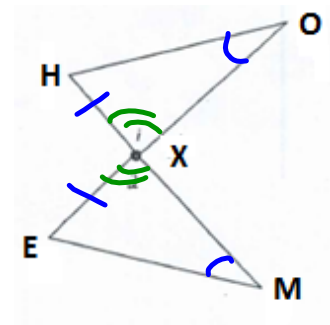
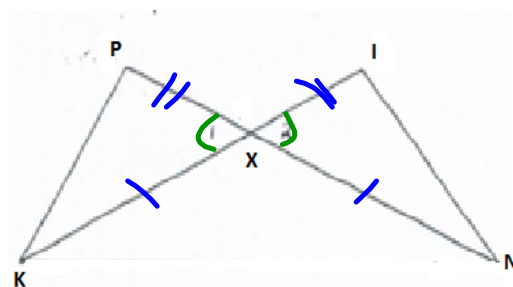| Statements	Reasons
1. $\overline{HX} \cong \overline{XE}; <O \cong <m$	1. Given
2. $<1 \cong <2$	2. Vertical angles $\cong$
3. $\triangle HOX \cong \triangle EmX$	3. AAS
4. $\overline{HO} \cong \overline{ME}$	4. CPCTC

$Given: \overline{KX} \cong \overline{NX}, \overline{PX} \cong \overline{XI}$

$Prove: \overline{PK} \cong \overline{IN}$

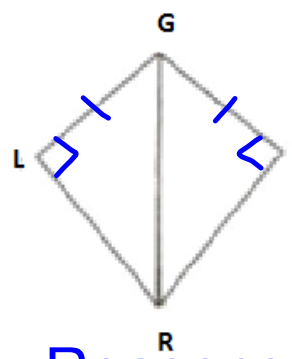| Statements	Reasons
1. $\overline{KX} \cong \overline{NX}$; $\overline{PX} \cong \overline{XI}$	1. Given
2. $\angle 1 \cong \angle 2$	2. vertical angles $\cong$
3. $\triangle PXK \cong \triangle IXN$	3. SAS
4. $\overline{PK} \cong \overline{IN}$	4. CPCTC

IG

$Given: \overline{GL} \cong \overline{IL}, < L \, and < I \, are \, right \, angles$

$Prove: \triangle GRL \cong \triangle GRI$

Statements

1. $\overline{GL} \cong \overline{IL}$; $<L + <I$ are right angles

2. $\triangle GRL + \triangle GRI$

3. $\overline{GR} \cong \overline{GR}$

4. $\triangle GRL \cong \triangle GRI$

Reasons

1. Given

2. Def. of Right Triangles

3. Reflexive property of congruence

4. HL