PROVING TRIANGLES CONGRUENT   *Reference!*

⑤ Ways to Prove Triangles are Congruent:		
SSS (Side-Side-Side)	Three pairs of congruent sides	
SAS (Side-Angle-Side)	Two sides and an <u>included angle</u>. (in *between*)	
ASA (Angle-Side-Angle)	Two angles and an included side.	
AAS (Angle-Angle-Side)	Two angles and a side opposite them.	
HL (Hypotenuse-Leg)	The hypotenuse and any one leg of <u>a right triangle</u>	

~~ASS~~
~~SSA~~

If $\triangle DEF \cong \triangle JKL$, $DE = 18$, $EF = 23$, $DF = 9x - 23$, $JL = 7x - 11$, and $JK = 3y - 21$, find the values of x and y.
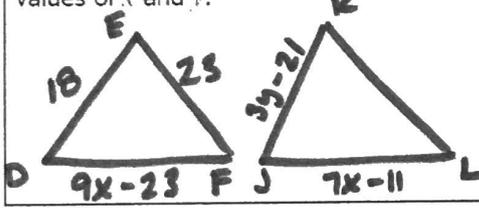

$$18 = 3y - 21$$
$$+21 \qquad +21$$
$$\overline{39 = 3y}$$
$$\frac{39}{3} = \frac{3y}{3}$$
$$\boxed{y = 13}$$

$$9x - 23 = 7x - 11$$
$$-7x \qquad -7x$$
$$2x - 23 = -11$$
$$+23 \quad +23$$
$$\frac{2x}{2} = \frac{12}{2} \qquad \boxed{x = 6}$$

Given $\triangle STW \cong \triangle BFN$, find each missing measure.
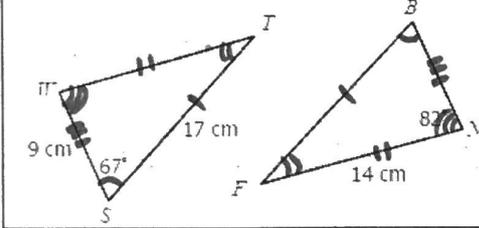
a) $BN =$ __9__

b) $TW =$ __14__

c) $BF =$ __17__

d) $m\angle W =$ __82°__

e) $m\angle B =$ __67°__

f) $m\angle F =$ __31°__

Given $\triangle UVW \cong \triangle TSR$, find the values of x, y, and z.
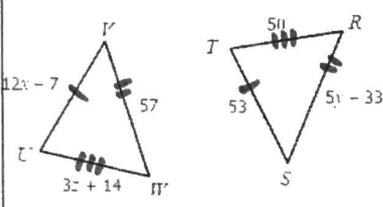
$$12x - 7 = 53$$
$$+7 \quad +7$$
$$\frac{12x}{12} = \frac{60}{12}$$
$$\boxed{x = 5}$$

$$5y - 33 = 57$$
$$+33 \quad +33$$
$$\frac{5y}{5} = \frac{90}{5}$$
$$\boxed{y = 18}$$

$$3z + 14 = 50$$
$$-14 \quad -14$$
$$\frac{3z}{3} = \frac{36}{3}$$
$$\boxed{z = 12}$$

Congruent Triangles	(length) (measure) Triangles with the same __Sides__ and __angles__. This means all **corresponding parts** (__Sides__ and __angles__) are congruent. (≅)
Congruency Statements	When triangles are congruent, we can write a (congruency statement). $\triangle ABC \cong \triangle DEF$ A _valid congruency statement_ must match all corresponding angles and sides.
CPCTC What is that??	__Corresponding__ __parts__ of __congruent__ __triangles__ are __congruent__. _If we know two triangles are congruent, then we know that every pair of corresponding parts is also congruent._
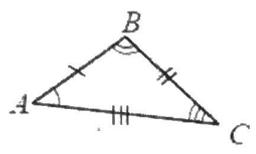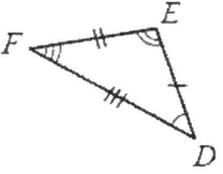
Directions: List all congruent angles and sides given the congruency statements.

❶ $\triangle JKL \cong \triangle PQR$

Angles	Sides
$\angle J \cong \angle P$	$\overline{JK} \cong \overline{PQ}$
$\angle K \cong \angle Q$	$\overline{KL} \cong \overline{QR}$
$\angle L \cong \angle R$	$\overline{JL} \cong \overline{PR}$

Write another valid congruency statement:

$\triangle KLJ \cong \triangle QRP$

❷ $\triangle WXY \cong \triangle EFG$

Angles	Sides
$\angle W \cong \angle E$	$\overline{WX} \cong \overline{EF}$
$\angle X \cong \angle F$	$\overline{XY} \cong \overline{FG}$
$\angle Y \cong \angle G$	$\overline{WY} \cong \overline{EG}$

Write another valid congruency statement:

$\triangle YWX \cong \triangle GEF$

❸ Given $\triangle KPM \cong \triangle AYC$, complete each of the following statements.

a) $\overline{KM} \cong \overline{AC}$

b) $\overline{CY} \cong \overline{PM}$

c) $\overline{PK} \cong \overline{AY}$

d) $\angle Y \cong \angle P$

e) $\angle K \cong \angle A$

f) $\angle ACY \cong \angle KMP$ ✱

g) $\triangle MPK \cong \triangle CYA$

h) $\triangle YAC \cong \triangle PKM$

order matters

✱