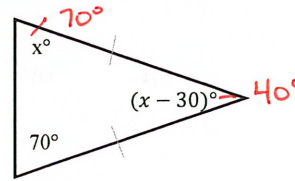
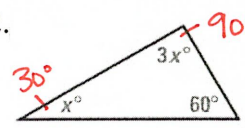
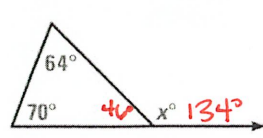
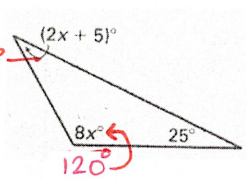


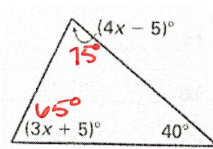
Find the value of  $x$ . Then classify the triangle by its angles and sides.

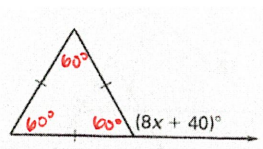
1.   
 $x = 70^\circ$   
 Isosceles Acute

2.   
 $x + 3x + 60 = 180$   
 $\frac{4x}{4} = \frac{120}{4}$   
 $x = 30^\circ$   
 Scalene Right

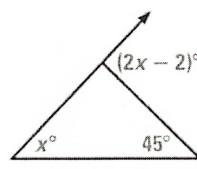
3.   
 $x = 64 + 70$   
 $x = 134$   
 Scalene Acute

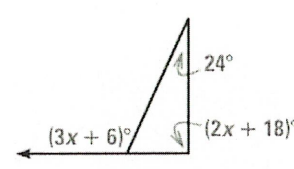
4.   
 $2x + 5 + 8x + 25 = 180$   
 $10x + 30 = 180$   
 $\frac{10x}{10} = \frac{150}{10}$   
 $x = 15$   
 Scalene Obtuse

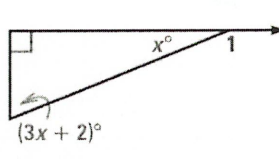
5.   
 $4x - 5 + 3x + 5 + 40 = 180$   
 $7x + 40 = 180$   
 $\frac{7x}{7} = \frac{140}{7}$   
 $x = 20$   
 Scalene Acute

6.   
 $8x + 40 = 120$   
 $\frac{8x}{8} = \frac{80}{8}$   
 $x = 10$   
 Equilateral Equiangular

Find the measure of the exterior angle shown.

7.   
 $2x - 2 = x + 45$   
 $x = 47^\circ$   
 Exterior Angle =  $2(47) - 2 = 92^\circ$

8.   
 $3x + 6 = 24 + 2x + 18$   
 $x + 6 = 42$   
 $x = 36$   
 Exterior Angle =  $3(36) + 6 = 114^\circ$

9.   
 $x + 3x + 2 = 90$   
 $4x = 88$   
 $x = 22$   
 Exterior Angle =  $158^\circ$

Find the measure of the numbered angle.

10.  $\angle 1 = 50^\circ$

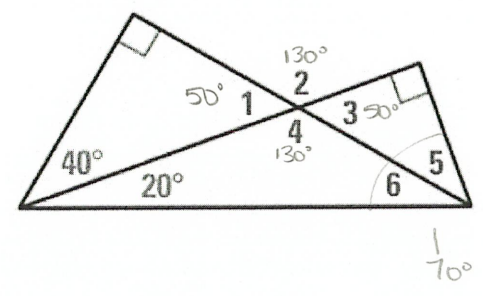
11.  $\angle 2 = 130^\circ$

12.  $\angle 3 = 50^\circ$

13.  $\angle 4 = 130^\circ$

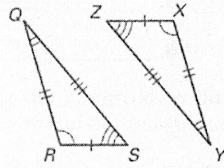
14.  $\angle 5 = 40^\circ$

15.  $\angle 6 = 30^\circ$

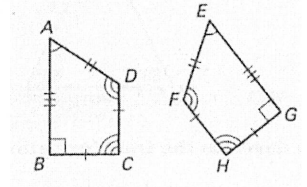


Complete the congruence statement.

16.  $\triangle QRS \cong \underline{\triangle YXZ}$



17.  $CBAD \cong \underline{HGEF}$



State the third congruence that must be given to prove that  $\triangle ABC \cong \triangle DEF$ .

18. **Given:**  $\triangle ABC$  and  $\triangle DEF$  are right triangles,  $\overline{BC} \cong \overline{EF}$ ,  $\underline{\overline{AC}} \cong \underline{\overline{DF}}$

**Use the HL Congruence Postulate**

19. **Given:**  $\overline{AB} \cong \overline{DE}$ ,  $\overline{AC} \cong \overline{DF}$ ,  $\underline{\overline{BC}} \cong \underline{\overline{EF}}$

**Use the SSS Congruence Postulate**

20. **Given:**  $\overline{AB} \cong \overline{DE}$ ,  $\angle B \cong \angle E$ ,  $\underline{\angle A} \cong \underline{\angle D}$

**Use the ASA Congruence Postulate**

21. **Given:**  $\overline{BC} \cong \overline{EF}$ ,  $\angle B \cong \angle E$ ,  $\underline{\overline{AB}} \cong \underline{\overline{DE}}$

**Use the SAS Congruence Postulate**

22. **Given:**  $\angle A \cong \angle D$ ,  $\angle B \cong \angle E$ ,  $\underline{\overline{BC}} \cong \underline{\overline{EF}}$  OR  $\underline{\overline{AC}} \cong \underline{\overline{DF}}$

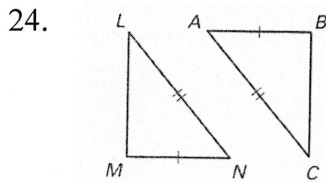
**Use the AAS Congruence Postulate**

23. **Given:**  $\angle A \cong \angle D$ ,  $\angle C \cong \angle F$ ,  $\underline{\overline{AC}} \cong \underline{\overline{DF}}$

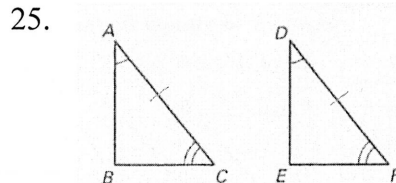
**Use the ASA Congruence Postulate**

ASA

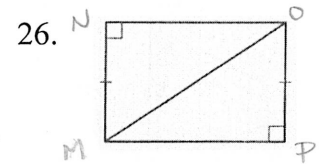
Decide whether enough information is given to prove that the triangles are congruent. If there is enough information, state a congruence statement AND the congruence postulate or theorem you would use.



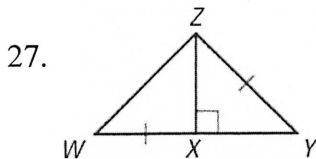
No; not enough info



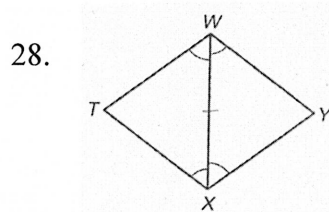
$\triangle ABC \cong \triangle DEF$ ; ASA



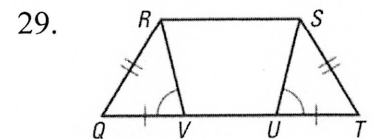
$\triangle MND \cong \triangle OPM$ ; HL



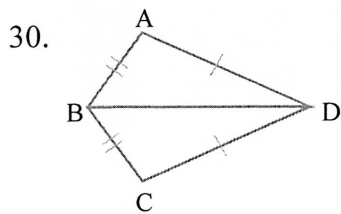
No;  $\overline{WX}$  and  $\overline{ZY}$  are not corresponding sides



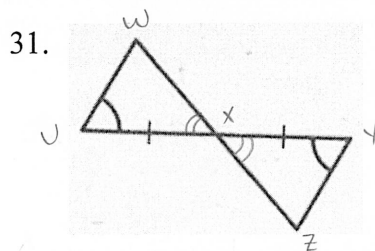
$\triangle WTX \cong \triangle XYW$ ; ASA



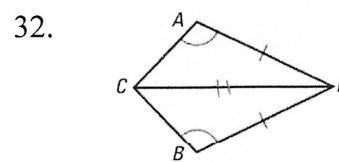
No; SSA is not a valid method



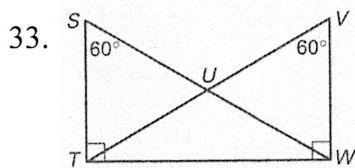
$\triangle BAD \cong \triangle BCD$ ; SSS



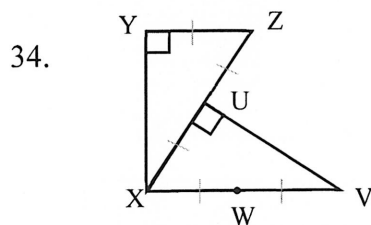
$\triangle UWZ \cong \triangle YZX$ ; ASA



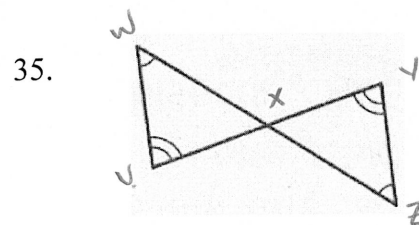
No; SSA is not a valid method



$\triangle STW \cong \triangle VWT$ ; AAS

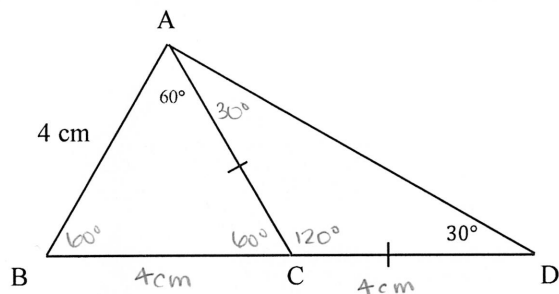


$\triangle YZX \cong \triangle VXZ$ ; HL



No; AAA is not a valid method

Determine the following measures (Label your answers)



36.  $m\angle ABC = \underline{60^\circ}$

37.  $m\angle ACB = \underline{60^\circ}$

38.  $m\angle ACD = \underline{120^\circ}$

39.  $m\angle DAC = \underline{30^\circ}$

40.  $BC = \underline{4\text{ cm}}$

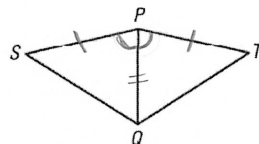
41.  $AC = \underline{4\text{ cm}}$

42.  $CD = \underline{4\text{ cm}}$

43. Prove.

**Given:**  $\overline{PQ}$  bisects  $\angle SPT$ ,  $\overline{SP} \cong \overline{TP}$

**Prove:**  $\angle S \cong \angle T$



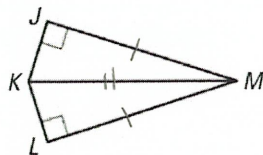
Statement	Reason
1. $\overline{PQ}$ bisects $\angle SPT$	1. Given
2. $\angle SPQ \cong \angle TPQ$	2. Def <sup>n</sup> of an Angle Bisector
3. $\overline{SP} \cong \overline{TP}$	3. Given
4. $\overline{PQ} \cong \overline{PQ}$	4. Reflexive Property
5. $\triangle SPQ \cong \triangle TPQ$	5. SAS
6. $\angle S \cong \angle T$	6. CPCTC

44.

40. Prove.

**Given:**  $\overline{JM} \cong \overline{LM}$ ,  $\angle J$  and  $\angle L$  are right angles

**Prove:**  $\overline{JK} \cong \overline{LK}$



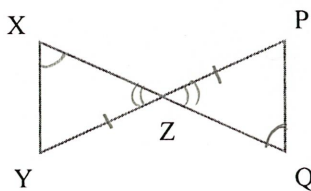
Statement	Reason
1. $\overline{JM} \cong \overline{LM}$	1. Given
2. $\angle J$ and $\angle L$ are right angles	2. Given
3. $\triangle JMK$ and $\triangle LMK$ are right $\triangle$ 's	3. Def <sup>n</sup> of right triangles
4. $\overline{KM} \cong \overline{KM}$	4. Reflexive Property
5. $\triangle JMK \cong \triangle LMK$	5. HL
6. $\overline{JK} \cong \overline{LK}$	6. CPCTC

45.

41. Prove.

**Given:** Z is the midpoint of  $\overline{PQ}$ ,  $\angle X \cong \angle P$

**Prove:**  $\angle Y \cong \angle Q$



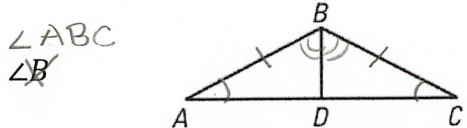
Statement	Reason
1. Z is the midpoint of $\overline{PQ}$	1. Given
2. $\overline{PZ} \cong \overline{ZQ}$	2. Def <sup>n</sup> of a midpoint
3. $\angle X \cong \angle P$	3. Given
4. $\angle XZY \cong \angle PZQ$	4. Vertical Angles
5. $\triangle XYZ \cong \triangle PZQ$	5. AAS
6. $\angle Y \cong \angle Q$	6. CPCTC

46.

42. Prove.

**Given:**  $\triangle ABC$  is an isosceles triangle,  $\overline{BD}$  bisects  $\angle B$

**Prove:**  $\overline{AD} \cong \overline{CD}$



Statement	Reason
1. $\triangle ABC$ is an isosceles $\triangle$	1. Given
2. $\overline{AB} \cong \overline{BC}$	2. Def <sup>n</sup> of an isosceles triangle
3. $\angle A \cong \angle C$	3. Def <sup>n</sup> of an isosceles triangle
4. $\overline{BD}$ bisects $\angle ABC$	4. Given
5. $\angle ABD \cong \angle CBD$	5. Def <sup>n</sup> of an angle bisector
6. $\triangle ABD \cong \triangle CBD$	6. ASA
7. $\overline{AD} \cong \overline{CD}$	7. CPCTC.

(Alternate proofs for  $\triangle ABD \cong \triangle CBD$ )

46.	<u>Statement</u>	<u>Reason</u>
	1. $\Delta ABC$ is an isosceles $\Delta$ with $\overline{AC}$ as the base	1. Given
	2. $\overline{AB} \cong \overline{BC}$	2. Def <sup>n</sup> of an isosceles triangle
	3. $\overline{BD}$ bisects $\angle ABC$	3. Given
	4. $\angle ABD \cong \angle CBD$	4. Def <sup>n</sup> of an angle bisector
	5. $\overline{BD} \cong \overline{BD}$	5. Reflexive Property
	6. $\Delta ABD \cong \Delta CBD$	6. SAS
	7. $\overline{AD} \cong \overline{CD}$	7. CPCTC

---

46.	<u>Statement</u>	<u>Reason</u>
	1. $\Delta ABC$ is an isosceles $\Delta$ with $\overline{AC}$ as the base	1. Given
	2. $\angle A \cong \angle C$	2. Def <sup>n</sup> of an isosceles triangle
	3. $\overline{BD}$ bisects $\angle ABC$	3. Given
	4. $\angle ABD \cong \angle CBD$	4. Def <sup>n</sup> of an angle bisector
	5. $\overline{BD} \cong \overline{BD}$	5. Reflexive Property
	6. $\Delta ABD \cong \Delta CBD$	6. AAS
	7. $\overline{AD} \cong \overline{CD}$	7. CPCTC