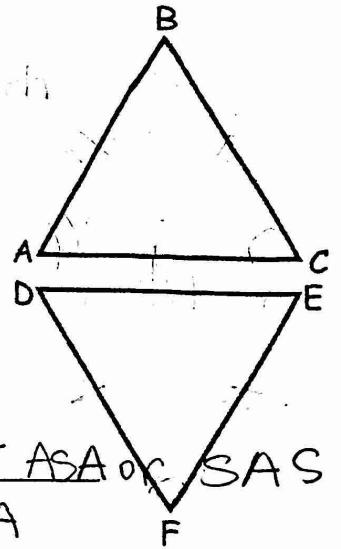


Which postulate or theorem (if any) would you use to tell whether  $\triangle ABC \cong \triangle DEF$  with the given information?

1.  $\overline{AB} \cong \overline{DE}$ ,  $\angle B \cong \angle E$ , and  $\angle A \cong \angle D$ . ASA
2.  $\overline{CA} \cong \overline{FD}$ ,  $\angle C \cong \angle F$ , and  $\angle A \cong \angle D$ . ASA
3.  $\overline{BC} \cong \overline{EF}$ ,  $\overline{AB} \cong \overline{DE}$ , and  $\angle A \cong \angle D$ . NOT  $\cong$  ~~ASS~~
4.  $\angle C \cong \angle F$ ,  $\overline{AC} \cong \overline{DF}$ , and  $\overline{BC} \cong \overline{EF}$ . SAS
5.  $\overline{AB} \cong \overline{DE}$ ,  $\angle C \cong \angle F$ , and  $\angle B \cong \angle E$ . AAS
6.  $\overline{BC} \cong \overline{EF}$ ,  $\angle B \cong \angle E$ , and  $\overline{AB} \cong \overline{DE}$ . SAS
7.  $\angle A \cong \angle D$ ,  $\overline{AC} \cong \overline{DF}$ ,  $\overline{BC} \cong \overline{EF}$ ,  $\angle B \cong \angle E$ , and  $\overline{AB} \cong \overline{DE}$ . SSS or ASA or SAS
8.  $\angle A \cong \angle D$ ,  $\angle B \cong \angle E$ , and  $\angle C \cong \angle F$ . NOT  $\cong$ ; NO AAA
9.  $\overline{AB} \cong \overline{DE}$ ,  $\overline{BC} \cong \overline{EF}$ , and  $\overline{AC} \cong \overline{DF}$ . SSS
10.  $\overline{AC} \cong \overline{DF}$ ,  $\angle C \cong \angle F$ ,  $\overline{BC} \cong \overline{EF}$ , and  $\angle A \cong \angle D$ . ASA or SAS



We want to know if  $\triangle RST \cong \triangle FPV$

11. We know  $\angle S \cong \angle P$  and  $\angle R \cong \angle F$ .

What else must we know to use ASA?  $\overline{SR} \cong \overline{PF}$

12. We know  $\angle R \cong \angle F$ .

What else must we know to use SAS?  $\overline{SR} \cong \overline{PF}$   
and  $\overline{RT} \cong \overline{FV}$

13. We know  $\overline{ST} \cong \overline{PV}$  and  $\overline{RT} \cong \overline{FV}$ .

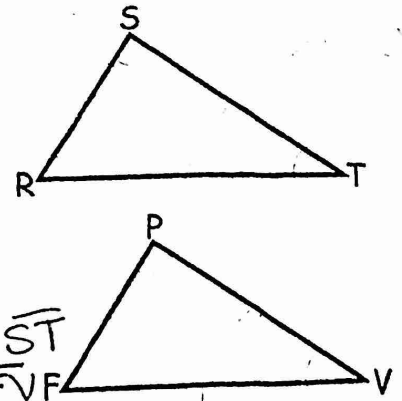
What else must we know to use SSS?  $\overline{SR} \cong \overline{PF}$

14. We know  $\angle T \cong \angle V$ .

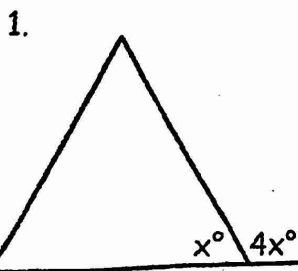
What else must we know to use ASA?  $\angle P \cong \angle S$  &  $\overline{PV} \cong \overline{ST}$   
or  $\angle F \cong \angle R$  &  $\overline{RT} \cong \overline{FV}$

15. We know  $\angle S \cong \angle P$ .

What else must we know to use SAS?  $\overline{RS} \cong \overline{PF}$  and  $\overline{ST} \cong \overline{PV}$



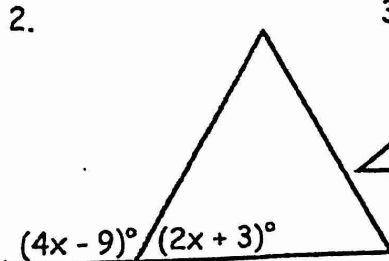
For each of the following figures, find the value of  $x$ .



$$x + 4x = 180$$

$$5x = 180$$

$$x = 36^\circ$$

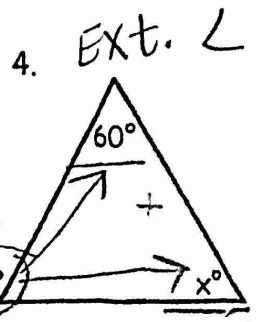
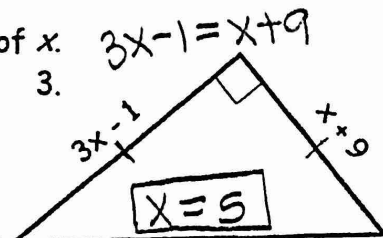


$$4x - 9 + 2x + 3 = 180$$

$$6x - 6 = 180$$

$$6x = 186$$

$$x = 31$$



$$110 = 60 + x$$

$$x = 50^\circ$$

Use the figure to the right to answer each of the following.

$85^\circ$

5. Find  $m\angle 1$  if  $m\angle 2 = 30$  and  $m\angle 3 = 65$ .  $180 - 95 =$

$90^\circ$

6. Find  $m\angle 2$  if  $m\angle 1 = 60$  and  $m\angle 4 = 150$ .  $180 - 90 = 90$   
 $\angle 3 = 30$

$20^\circ$

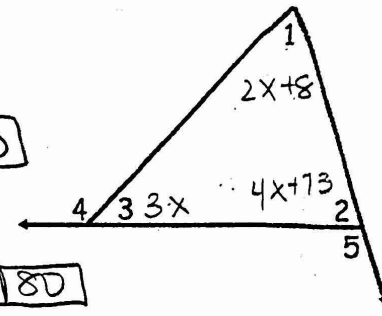
7. Find  $m\angle 3$  if  $m\angle 1 = 45$  and  $m\angle 5 = 65$ .  $180 - 45 - 115 =$   
 $m\angle 2 = 115$

$80^\circ$

8. Find  $m\angle 4$  if  $m\angle 1 = 25$  and  $m\angle 2 = 55$ .  $m\angle 4 = 180 - 100 = 80$   
 $m\angle 3 = 180 - 80 = 100$

$103^\circ$

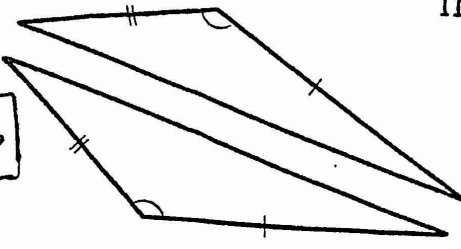
9. Find  $m\angle 5$  if  $m\angle 3 = 3x$ ,  $m\angle 1 = 2x + 8$ , and  $m\angle 2 = 4x + 73$ .  
 $2x + 8 + 3x + 4x + 73 = 180 \rightarrow x = 11 \rightarrow m\angle 2 = 4(11) + 73 = 117 \rightarrow m\angle 5 = 180 - 117 = 63$   
 $9x + 81 = 180$



State the postulate or theorem used to prove the following pairs of triangles are congruent

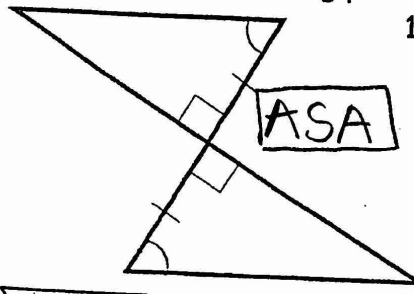
10.

SAS



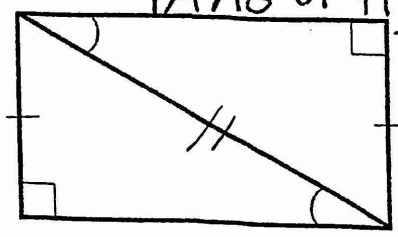
11.

ASA



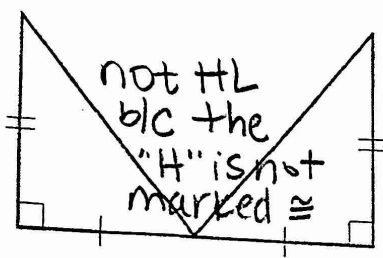
12.

AAS or HL



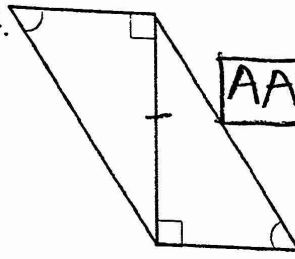
13.

SAS



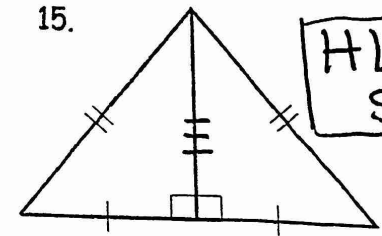
14.

AAS



15.

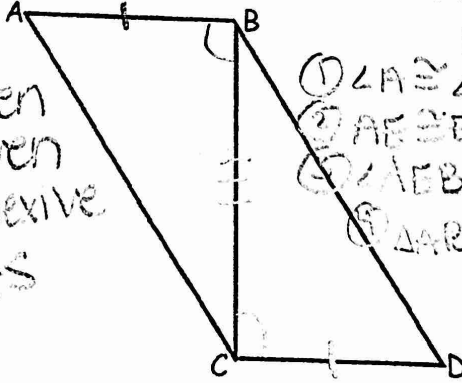
HL or SSS



PROOFS Explain why each pair of triangles is congruent. Create proofs

16.  $\angle ABC \cong \angle BCD$  and  $\overline{AB} \cong \overline{CD}$

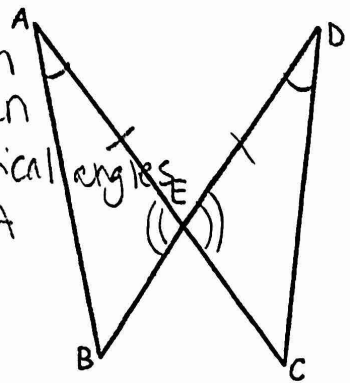
( $\triangle ABC \cong \triangle DCB$ )



- 1)  $\angle ABC \cong \angle DCB$  ① given
- 2)  $\overline{AB} \cong \overline{CD}$  ② given
- 3)  $\overline{BC} \cong \overline{BC}$  ③ reflexive
- 4)  $\triangle ABC \cong \triangle DCB$  ④ SAS

17.  $\angle A \cong \angle D$  and  $\overline{AE} \cong \overline{ED}$

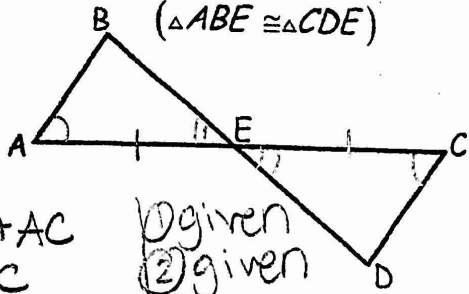
( $\triangle ABE \cong \triangle DCE$ )



- 1)  $\angle A \cong \angle D$  given
- 2)  $\overline{AE} \cong \overline{ED}$  given
- 3)  $\angle AEB \cong \angle DEC$  vertical angles
- 4)  $\triangle ABE \cong \triangle DCE$  ASA

18. E is the midpoint of  $\overline{AC}$ ,  $\angle A \cong \angle C$

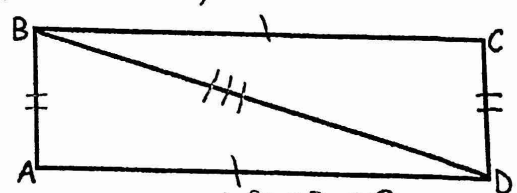
( $\triangle ABE \cong \triangle CDE$ )



- 1) E is mdpt AC ① given
- 2)  $\angle A \cong \angle C$  ② given
- 3)  $\overline{AE} \cong \overline{CE}$  ③ defn. of midpt
- 4)  $\angle AEB \cong \angle CED$  ④ vertical angles
- 5)  $\triangle ABE \cong \triangle CDE$  ⑤ ASA

19.  $\overline{BC} \cong \overline{AD}$  and  $\overline{AB} \cong \overline{CD}$

( $\triangle ABD \cong \triangle CDB$ )



- 1)  $\overline{BC} \cong \overline{AD}$  ① given
- 2)  $\overline{AB} \cong \overline{CD}$  ② given
- 3)  $\overline{BD} \cong \overline{BD}$  ③ reflexive
- 4)  $\triangle ABD \cong \triangle CDB$  ④ SSS