

# TRIANGLES AND TRIANGLE CONGRUENCE STUDY GUIDE

Determine, if possible, the theorem or postulate that proves each pair of triangles congruent. If the triangles are not congruent, write not congruent.

<p>1. <math>\triangle ABC \cong \triangle EFD</math></p>	<p>2. <math>\triangle ABC \cong \triangle CDA</math></p>	<p>3. <math>\triangle ABC \cong \triangle EFD</math></p>
<p>4. <math>\triangle ADC \cong \triangle BDC</math></p>	<p>5. <math>\triangle MAD \cong \triangle MBC</math></p>	<p>6. <math>\triangle ABE \cong \triangle CDE</math></p>
<p>7. <math>\triangle MNP \cong \triangle MQP</math></p>	<p>8. <math>\triangle ACB \cong \triangle ADB</math></p>	<p>9. <math>\triangle AEB \cong \triangle DEC</math></p>
<p>10. <math>\triangle CDE \cong \triangle ABF</math></p>	<p>11. <math>\triangle DEA \cong \triangle BEC</math></p>	<p>12. <math>\triangle AGE \cong \triangle CDF</math></p>
<p>13.</p>	<p>14.</p>	<p>15.</p>

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<p><math>\triangle RTS \cong \triangle CBA</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">AAS</p>	<p><math>\triangle BAP \cong \triangle BCP</math> Given: <math>\overrightarrow{BD}</math> bisects <math>\angle ABC</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">SAS</p>	<p><math>\triangle ABC \cong \triangle ADC</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">AAS</p>
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Determine, if possible, the theorem or postulate that proves each pair of triangles congruent. If the triangles are not congruent, write not congruent. If the triangles are congruent, complete each congruence statement.

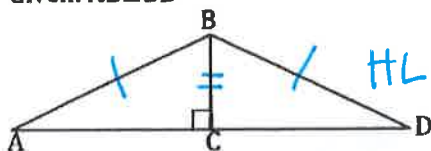
<p>16. <math>\triangle RAS \cong \triangle TAS</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">HL</p>	<p>17. <math>\triangle DCE \cong \triangle BAE</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">ASA</p>	<p>18. <math>\triangle LOE \cong \triangle VOE</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">SSS</p>
<p>19. <math>\triangle WAT \cong</math></p> <p>Given: T is the midpoint of <math>\overline{WR}</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">Not <math>\cong</math></p>	<p>20. <math>\triangle WIH \cong \triangle SIH</math></p> <p>Given: <math>\overrightarrow{IH}</math> Bisects <math>\angle WIS</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">ASA</p>	<p>21. <math>\triangle LGE \cong \triangle ULE</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">ASA</p>
<p>22. <math>\triangle HAT \cong</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">Not <math>\cong</math></p>	<p>23. <math>\triangle MIS \cong \triangle LIS</math></p> <p>Given: I is the midpoint of <math>\overline{ME}</math> and <math>\overline{SL}</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">SAS</p>	<p>24. <math>\triangle WVX \cong \triangle YVW</math></p> <p style="color: blue; font-size: 1.5em; text-align: center;">HL</p>

Write a two-column proof to prove that each pair of triangles is congruent.

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25.

Given:  $\overline{AB} \cong \overline{BD}$

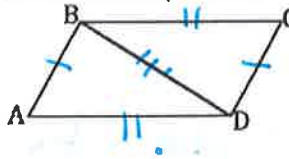


Prove:  $\triangle ABC \cong \triangle BCD$

Statements	Reasons
1) $\overline{AB} \cong \overline{BD}$	Given
2) $\angle ACB \cong \angle DCB$	def. of right $\angle$
3) $\overline{BC} \cong \overline{BC}$	Reflexive
4) $\triangle ABC \cong \triangle BCD$	HL

26.

Given:  $\overline{AB} \cong \overline{CD}$ ,  $\overline{AD} \cong \overline{CB}$

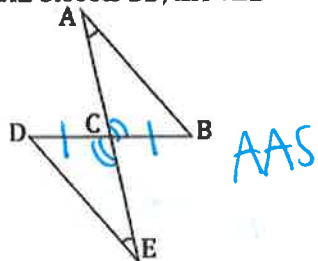


Prove:  $\triangle ABD \cong \triangle BCD$

Statements	Reasons
1) $\overline{AB} \cong \overline{CD}$	1) Given
2) $\overline{BC} \cong \overline{AD}$	2) Given
3) $\overline{BD} \cong \overline{BD}$	3) <del>SSS</del> reflexive
4) $\triangle ABD \cong \triangle BCD$	4) SSS

27.

Given:  $\overline{AE}$  bisects  $\overline{BD}$ ,  $\angle A \cong \angle E$

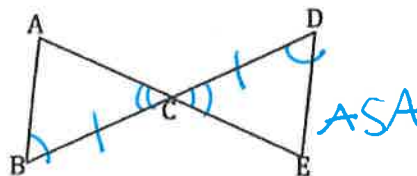


Prove:  $\triangle ABC \cong \triangle EDC$

Statements	Reasons
1) $\overline{AE}$ bisects $\overline{BD}$	Given
2) $\overline{DC} \cong \overline{BC}$	def. of bisector
3) $\angle A \cong \angle E$	Given
4) $\angle ACB \cong \angle ECD$	vertical $\angle$ 's $\cong$
5) $\triangle ABC \cong \triangle EDC$	5) AAS

28.

Given:  $\overline{AE}$  Bisects  $\overline{BD}$ ,  $\angle B \cong \angle D$



Prove:  $\triangle ABC \cong \triangle EDC$

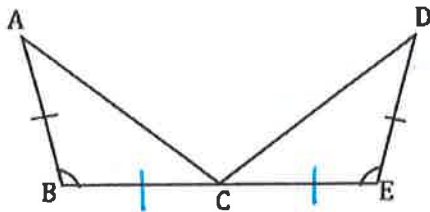
Statements	Reasons
1) $\overline{AE}$ bisects $\overline{BD}$	1) Given
2) $\overline{BC} \cong \overline{CD}$	2) def. of bisect.
3) $\angle B \cong \angle D$	3) Given
4) $\angle ACB \cong \angle ECD$	4) vertical $\angle$ 's
5) $\triangle ABC \cong \triangle EDC$	5) ASA

29.

30.

# TRIANGLES AND TRIANGLE CONGRUENCE STUDY GUIDE

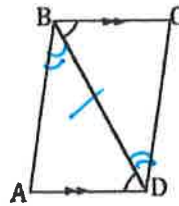
Given: C is the midpoint of  $\overline{BE}$ ,  $\angle B \cong \angle E$ , and  $\overline{AB} \cong \overline{DE}$



~~ASA~~ SAS

Prove:  $\triangle ABC \cong \triangle DEC$

Given:  $\overline{BA} \parallel \overline{CD}$   $\angle ADB \cong \angle CBD$



ASA

Prove:  $\triangle ABD \cong \triangle CDB$

Statements	Reasons
1) C is the midpoint of $\overline{BE}$	1) Given
2) $\overline{BC} \cong \overline{CE}$	2) def. of midpoint
3) $\angle B \cong \angle E$	3) Given
4) $\overline{AB} \cong \overline{DE}$	4) Given
5) $\triangle ABC \cong \triangle DEC$	5) SAS

Statements	Reasons
1) $\overline{BA} \parallel \overline{CD}$	1) Given
2) $\angle ABD \cong \angle CBD$	2) Alt. Int $\angle$ 's
3) $\angle ADB \cong \angle CBD$	3) Given
4) $\overline{BD} \cong \overline{BD}$	4) Reflexive
5) $\triangle ABD \cong \triangle CDB$	5) ASA

Find the measure of each angle indicated.

31.

55°

32.

90°

33.

110°

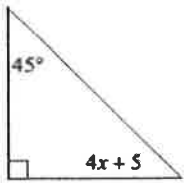
34.

158°

Find the value of x.

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35.

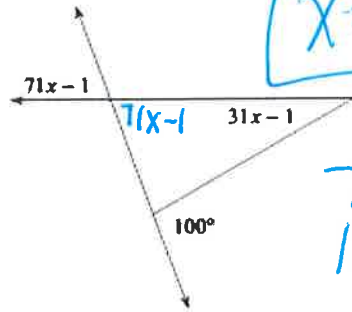


$$4x + 5 = 45$$

$$4x = 40$$

$$x = 10$$

36.



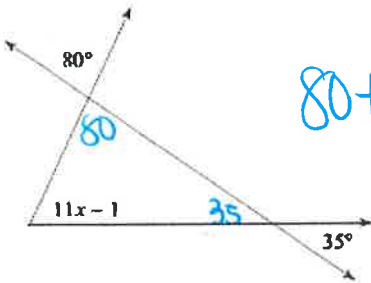
$$x = 1$$

$$71x - 1 + 31x - 1 = 100$$

$$102x - 2 = 100$$

$$102x = 102$$

37.



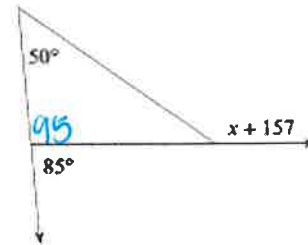
$$80 + 35 + 11x - 1 = 180$$

$$11x + 14 = 180$$

$$11x = 166$$

$$x = 15$$

38.



$$95 + 50 = x + 157$$

$$145 = x + 157$$

$$x = -12$$

