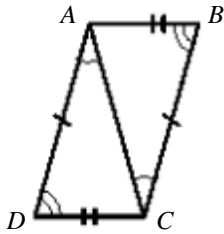


UNIT 4 – Congruent Triangles TEST

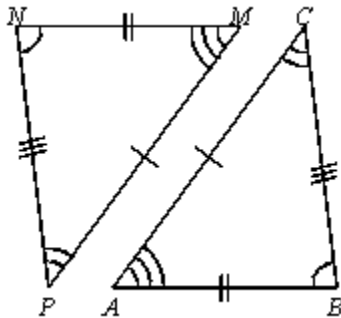
Multiple Choice

Identify the choice that best completes the statement or answers the question.

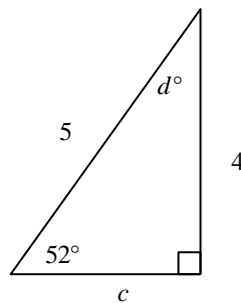
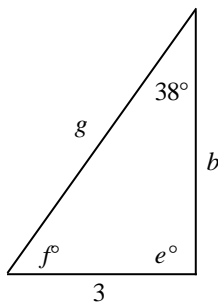
- ____ 1. If $BCDE$ is congruent to $OPQR$, then \overline{DE} is congruent to ____.
- a. \overline{PQ} b. \overline{OR} c. \overline{OP} d. \overline{QR}
- ____ 2. Use the information given in the diagram. Tell why $\overline{AC} \cong \overline{AC}$ and $\angle BCA \cong \angle DAC$.



- a. Reflexive Property, Given
b. Transitive Property, Reflexive Property
c. Given, Reflexive Property
d. Reflexive Property, Transitive Property
- ____ 3. $\angle ABC \cong$ ____



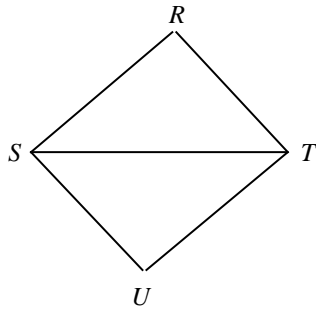
- a. $\angle PMN$ b. $\angle NPM$ c. $\angle NMP$ d. $\angle MNP$
- ____ 4. The two triangles are congruent as suggested by their appearance. Find the value of c . The diagrams are not to scale.



- a. 4 b. 5 c. 3 d. 38

UNIT 4 – Congruent Triangles TEST

5. Given $\triangle ABC \cong \triangle PQR$, $m\angle B = 3v + 4$, and $m\angle Q = 8v - 6$, find $m\angle B$ and $m\angle Q$.
 a. 22 b. 11 c. 10 d. 25
6. Justify the last two steps of the proof.
 Given: $\overline{RS} \cong \overline{UT}$ and $\overline{RT} \cong \overline{US}$
 Prove: $\triangle RST \cong \triangle UTS$

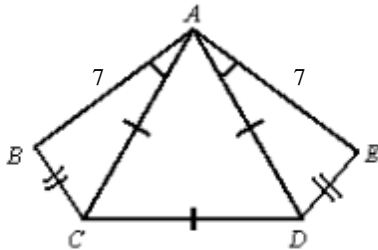


Proof:

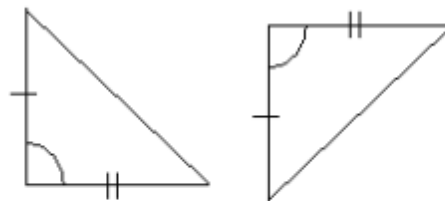
- | | |
|----------------------------------------|----------|
| 1. $\overline{RS} \cong \overline{UT}$ | 1. Given |
| 2. $\overline{RT} \cong \overline{US}$ | 2. Given |
| 3. $\overline{ST} \cong \overline{TS}$ | 3. ? |
| 4. $\triangle RST \cong \triangle UTS$ | 4. ? |

- | | |
|----------------------------------------|----------------------------------------|
| a. Symmetric Property of \cong ; SSS | c. Reflexive Property of \cong ; SSS |
| b. Reflexive Property of \cong ; SAS | d. Symmetric Property of \cong ; SAS |

7. State whether $\triangle ABC$ and $\triangle AED$ are congruent. Justify your answer.

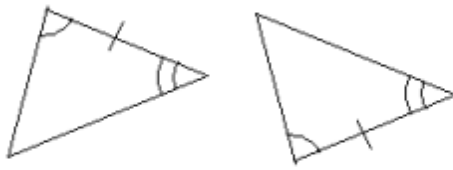


- | | |
|--------------------------------------------------------------------------------------|--|
| a. yes, by either SSS or SAS | |
| b. yes, by SSS only | |
| c. yes, by SAS only | |
| d. No; there is not enough information to conclude that the triangles are congruent. | |
8. In each pair of triangles, parts are congruent as marked. Which pair of triangles is congruent by ASA?

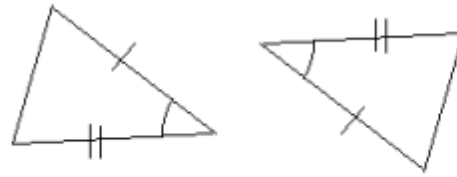


UNIT 4 – Congruent Triangles TEST

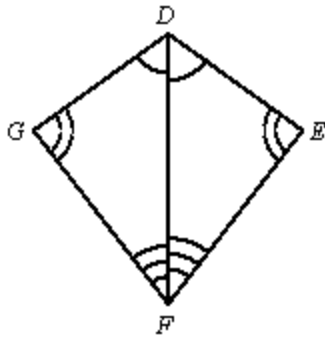
b.



d.



9. From the information in the diagram, can you prove $\triangle FDG \cong \triangle FDE$? Explain.



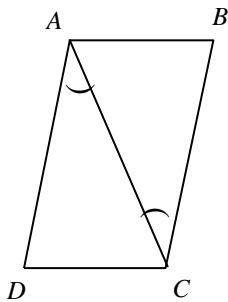
a. yes, by ASA

c. yes, by SAS

b. yes, by AAA

d. no

10. What else must you know to prove the triangles congruent by ASA? By SAS?



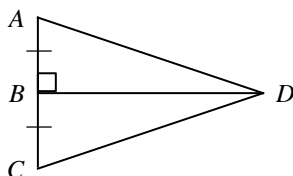
a. $\angle ACD \cong \angle CAB$; $\overline{AB} \cong \overline{CD}$

c. $\angle ADC \cong \angle CAB$; $\overline{AD} \cong \overline{BC}$

b. $\angle ACD \cong \angle CAB$; $\overline{AD} \cong \overline{BC}$

d. $\angle ACD \cong \angle CAB$; $\overline{AD} \cong \overline{AC}$

11. Name the theorem or postulate that lets you immediately conclude $\triangle ABD \cong \triangle CBD$.



a. SAS

b. ASA

c. AAS

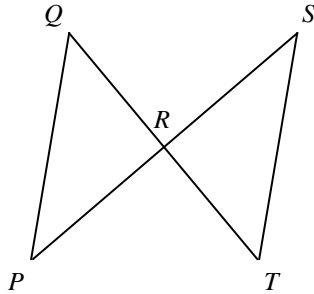
d. none of these

UNIT 4 – Congruent Triangles TEST

12. Supply the missing reasons to complete the proof.

Given: $\angle Q \cong \angle T$ and $\overline{QR} \cong \overline{TR}$

Prove: $\overline{PR} \cong \overline{SR}$



Statement	Reasons
1. $\angle Q \cong \angle T$ and $\overline{QR} \cong \overline{TR}$	1. Given
2. $\angle PRQ \cong \angle SRT$	2. Vertical angles are congruent.
3. $\triangle PRQ \cong \triangle SRT$	3. ?
4. $\overline{PR} \cong \overline{SR}$	4. ?

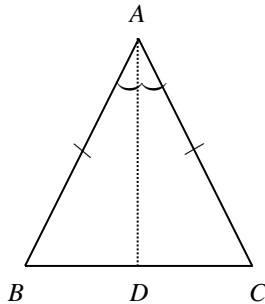
- a. ASA; Substitution
b. SAS; CPCTC

- c. AAS; CPCTC
d. ASA; CPCTC

13. Supply the reasons missing from the proof shown below.

Given: $\overline{AB} \cong \overline{AC}$, $\angle BAD \cong \angle CAD$

Prove: \overline{AD} bisects \overline{BC}

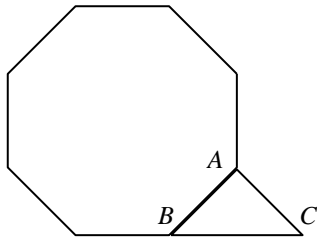


UNIT 4 – Congruent Triangles TEST

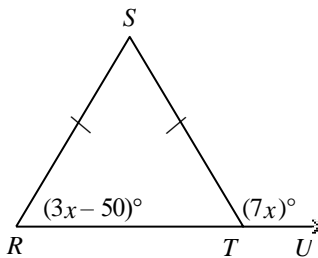
Statements	Reasons
1. $\overline{AB} \cong \overline{AC}$	1. Given
2. $\angle BAD \cong \angle CAD$	2. Given
3. $\overline{AD} \cong \overline{AD}$	3. Reflexive Property
4. $\triangle BAD \cong \triangle CAD$	4. _____ ? _____
5. $\overline{BD} \cong \overline{CD}$	5. _____ ? _____
6. \overline{AD} bisects \overline{BC}	6. Def. of segment bisector

- a. ASA; CPCTC
b. SAS; Reflexive Property
c. SSS; Reflexive Property
d. SAS; CPCTC

____ 14. The octagon in the figure is equiangular and $\overline{AB} \cong \overline{AC}$. Find $m\angle ACB$.



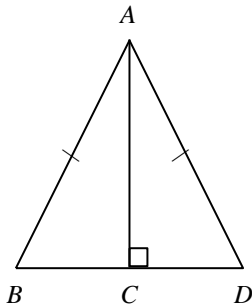
- a. 135
b. 45
c. 30
d. 90
- ____ 15. In an A-frame house, the two congruent sides extend from the ground to form a 34° angle at the peak. What angle does each side form with the ground?
- a. 156
b. 146
c. 73
d. 78
- ____ 16. What is the measure of the vertex angle of an isosceles triangle if one of its base angles measures 42° ?
- a. 69°
b. 84°
c. 138°
d. 96°
- ____ 17. Find the value of x . The diagram is not to scale.



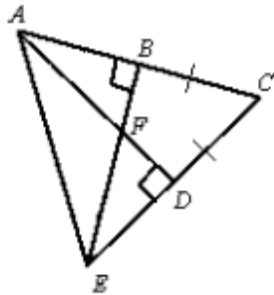
- a. $x = 23$
b. $x = 40$
c. $x = 13$
d. none of these
- ____ 18. Two sides of an equilateral triangle have lengths $2x - 2$ and $3x - 6$. Which of $10 - x$ or $6x + 5$ could be the length of the third side?
- a. neither $10 - x$ nor $6x + 5$
b. $10 - x$ only
c. both $10 - x$ and $6x + 5$
d. $6x + 5$ only

UNIT 4 – Congruent Triangles TEST

- ____ 19. Is there enough information to conclude that the two triangles are congruent? If so, what is a correct congruence statement?



- a. Yes; $\triangle CAB \cong \triangle DAC$.
 b. Yes; $\triangle ACB \cong \triangle ADC$.
 c. Yes; $\triangle ABC \cong \triangle ACD$.
 d. No, the triangles cannot be proven congruent.
- ____ 20. \overline{CB} is perpendicular to \overline{AD} at \overline{B} between A and D . $\angle DAC \cong \angle ADC$. By which of the five congruence statements, HL, AAS, ASA, SAS, and SSS, can you conclude that $\triangle ABC \cong \triangle DBC$?
- a. HL, AAS, ASA, and SAS
 b. HL, AAS, and ASA
 c. HL and ASA
 d. HL, AAS, ASA, SAS, and SSS
- ____ 21. Which overlapping triangles are congruent by AAS?



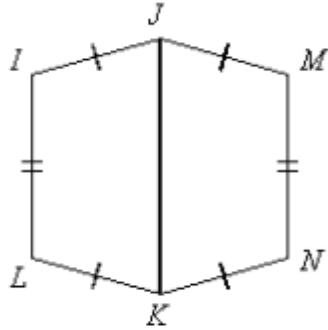
- a. $\triangle ADC \cong \triangle EBC$
 b. $\triangle ABE \cong \triangle CDA$
 c. $\triangle ABE \cong \triangle DEA$
 d. $\triangle ADC \cong \triangle EDA$
- ____ 22. The sides of an isosceles triangle have lengths $2x + 4$, $x + 8$. The base has length $5x - 2$. What is the length of the base?
- a. 18
 b. 4
 c. 12
 d. cannot be determined

Short Answer

23. For the two quadrilaterals below, $\angle I \cong \angle M$, $\angle IJK \cong \angle MJK$, $\angle LKJ \cong \angle NKJ$, and $\angle L \cong \angle N$. Complete this congruence statement for the two quadrilaterals.

$LKJI \cong \underline{\hspace{1cm}} ? \underline{\hspace{1cm}}$

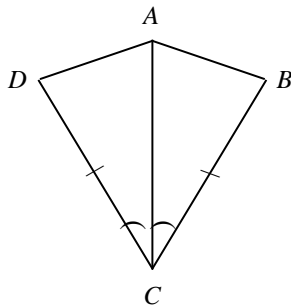
UNIT 4 – Congruent Triangles TEST



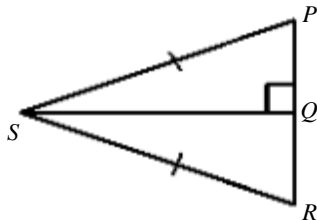
24. Based on the given information, can you conclude that $\triangle QRS \cong \triangle TUV$? Explain.

Given: $\overline{QR} \cong \overline{TU}$, $\overline{QS} \cong \overline{TV}$, and $\angle R \cong \angle U$

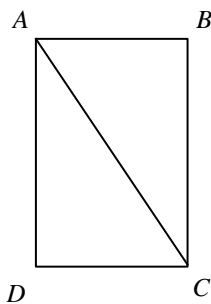
25. Explain how you can use SSS, SAS, ASA, or AAS with CPCTC to prove that $\angle D \cong \angle B$.



26. Is $\triangle PQS \cong \triangle RQS$ by HL? If so, name the legs that allow the use of HL.



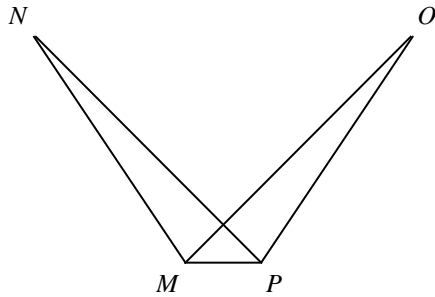
27. Separate and redraw $\triangle ABC$ and $\triangle CDA$. Identify any common angles or sides.



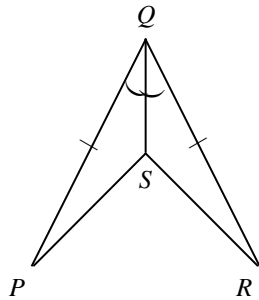
28. Name a pair of triangles in the figure and state whether they are congruent by SSS, SAS, ASA, AAS, or HL.

UNIT 4 – Congruent Triangles TEST

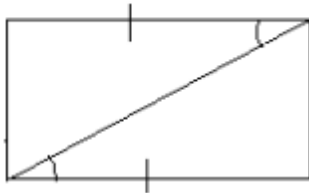
Given: $\overline{NP} \cong \overline{OM}$, $\overline{MN} \cong \overline{PO}$



29. Is there enough information to prove the two triangles congruent? If yes, write the congruence statement and name the postulate you would use. If no, write *not possible* and tell what other information you would need.



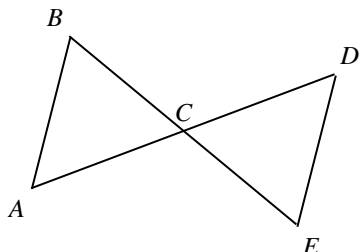
30. Can you conclude the triangles are congruent? Justify your answer.



Essay

31. Write a paragraph proof to show that $\triangle ABC \cong \triangle DEC$.

Given: $\overline{AC} \cong \overline{DC}$ and $\overline{BC} \cong \overline{CE}$



UNIT 4 – Congruent Triangles TEST**Answer Section****MULTIPLE CHOICE**

1.	ANS: D
2.	ANS: A
3.	ANS: D
4.	ANS: C
5.	ANS: C
6.	ANS: C
7.	ANS: A
8.	ANS: B
9.	ANS: A
10.	ANS: B
11.	ANS: A
12.	ANS: D
13.	ANS: D
14.	ANS: B
15.	ANS: C
16.	ANS: D
18.	ANS: B
19.	ANS: B
20.	ANS: A
21.	ANS: A
22.	ANS: A

SHORT ANSWER

23. ANS:

 \overline{NKJM}

24. ANS:

Answers may vary. Sample: Two pairs of sides are congruent, but the angle is not included. There is no SSA Congruence Theorem, so you cannot conclude $\triangle QRS \cong \triangle TUV$ with the information given.

25. ANS:

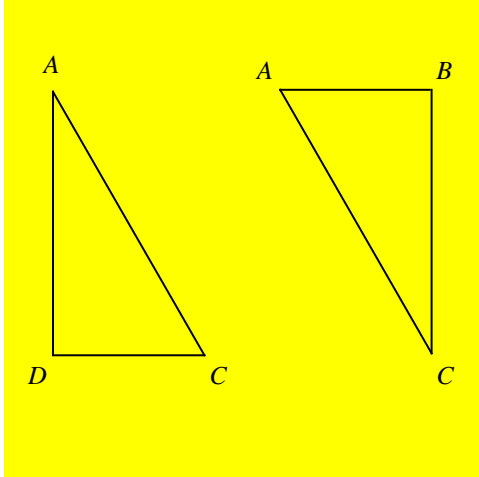
Answers may vary. Sample: Because the two triangles share the side \overline{AC} , they are congruent by SAS. Then $\angle D \cong \angle B$ by CPCTC.

26. ANS:

Yes, \overline{QS} (in each triangle)

27. ANS:

UNIT 4 – Congruent Triangles TEST



\overline{AC} is the only common side.

28. ANS:

$\triangle MNP \cong \triangle POM$ by SSS

29. ANS:

Yes; $\triangle PQS \cong \triangle RQS$ by SAS.

30. ANS:

Yes, the diagonal segment is congruent to itself, so the triangles are congruent by SAS.

ESSAY

31. ANS:

[4] Answers may vary. Sample: You are given that $\overline{AC} \cong \overline{DC}$ and $\overline{BC} \cong \overline{CE}$. Vertical angles BCA and ECD are congruent, so $\triangle ABC \cong \triangle DEC$ by SAS.

[3] correct idea, some details inaccurate

[2] correct idea, not well organized

[1] correct idea, one or more significant steps omitted