

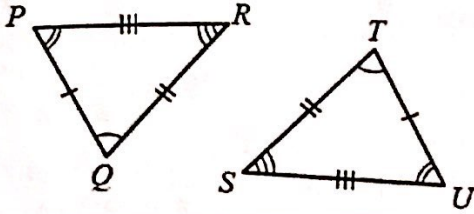
Unit 4 Test Study Guide (Congruent Triangles)

Name: _____

Date: _____ Period: _____

Topic 1: Congruent Figures

1. Write three different, valid congruency statements for the given triangles.

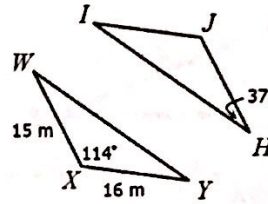


- a) $\triangle PQR \cong \triangle STU$
 b) $\triangle QPR \cong \triangle TUS$
 c) $\triangle RQP \cong \triangle TSU$

2. If $\triangle KPL \cong \triangle ACM$, complete each part.

- a) $\overline{KL} \cong \overline{AM}$ d) $\angle P \cong \angle C$
 b) $\overline{AC} \cong \overline{KP}$ e) $\angle K \cong \angle A$
 c) $\overline{PL} \cong \overline{CM}$ f) $\angle M \cong \angle L$

3. If $\triangle WXY \cong \triangle HJI$, complete each part.



- a) $JI = 16 \text{ m}$
 b) $JH = 15 \text{ m}$
 c) $m\angle W = 37^\circ$
 d) $m\angle J = 114^\circ$
 e) $m\angle I = 29^\circ$

$$114 + 37 = 151$$

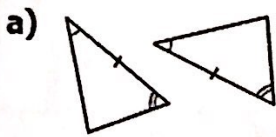
$$180 - 151 = 29$$

Topic 2: Triangle Congruence and Proofs

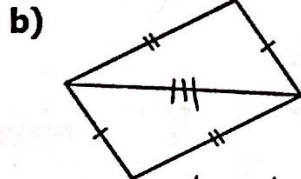
4. What are the different methods (shortcuts) used to prove that triangles are congruent?

SSS, SAS, ASA, AAS, HL \rightarrow CPCTC

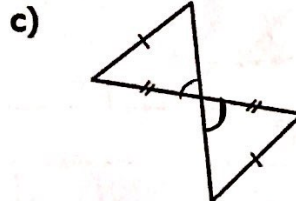
5. Determine if the triangles below are congruent. If yes, state by which method (shortcut). Explain what marks you can add to the diagram and why.



ASA

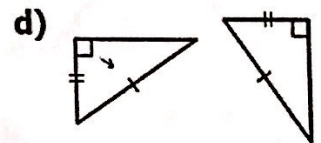


• shared side
SSS



• vertical angle

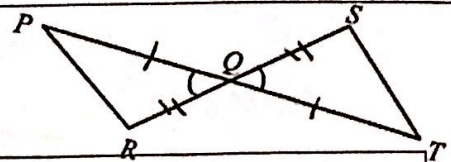
not \cong



HL

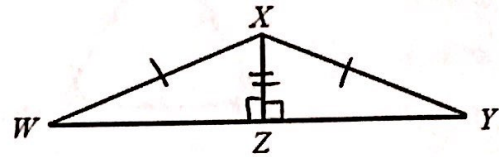
Complete the following proofs. Some may require CPCTC.

6. Given: Q is the midpoint of \overline{PT} and \overline{RS}
 Prove: $\triangle PQR \cong \triangle TQS$



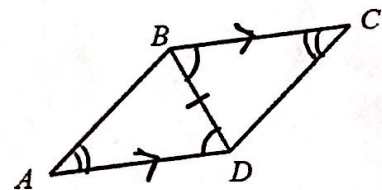
Statements	Reasons
1. Q is the midpoint of \overline{PT} and \overline{RS}	1. given
2. $\overline{PQ} \cong \overline{TQ}$	2. def. of midpoint
3. $\overline{RQ} \cong \overline{SQ}$	3. def. of midpoint
4. $\angle RQP \cong \angle SQT$	4. vertical angles
5. $\triangle PQR \cong \triangle TQS$	5. SAS

7. Given: $\overline{XZ} \perp \overline{WY}$, $\overline{WX} \cong \overline{YX}$
 Prove: $\triangle WXZ \cong \triangle YXZ$



Statements	Reasons
1. $\overline{XZ} \perp \overline{WY}$	1. given
2. $\angle XZW$ and $\angle XZY$ are right angles	2. def. of perpendicular
3. $\angle XZW \cong \angle XZY$	3. all right angles
4. $\overline{WX} \cong \overline{YX}$	4. given
5. $\overline{XZ} \cong \overline{XZ}$	5. reflexive
6. $\triangle WXZ \cong \triangle YXZ$	6. HL

8. Given: $\overline{BC} \parallel \overline{AD}$, $\angle BAD \cong \angle DCB$
 Prove: $\overline{AB} \cong \overline{CD}$



Statements	Reasons
1. $\overline{BC} \parallel \overline{AD}$	1. given
2. $\angle CBD \cong \angle ADB$	2. alt. int. angles
3. $\angle BAD \cong \angle DCB$	3. given
4. $\overline{BD} \cong \overline{DB}$	4. reflexive
5. $\triangle BDA \cong \triangle DBC$	5. AAS
6. $\overline{AB} \cong \overline{CD}$	6. CPCTC

Topic 3: Isosceles & Equilateral Triangles

For questions 9-12, find each missing measure.

9.

$74 + 74 = 148$
 $180 - 148 = 32$
 $m\angle Q \cong \underline{32^\circ}$
 $m\angle R \cong \underline{74^\circ}$

10.

$180 - 106 = 74$
 $74 / 2 = 37$
 $m\angle E \cong \underline{37^\circ}$
 $m\angle G \cong \underline{37^\circ}$

11.

$48 + 48 = 96$
 $180 - 96 = 84$
 $m\angle A \cong \underline{84^\circ}$
 $AC \cong \underline{9 \text{ ft}}$

12.

$m\angle M \cong \underline{60^\circ}$
 $m\angle N \cong \underline{60^\circ}$
 $m\angle P \cong \underline{60^\circ}$

For questions 13 and 14, find the value of x.

13.

$2(8x - 23) + 34 = 180$
 $16x - 46 + 34 = 180$
 $16x - 12 = 180$
 $16x = 192$
 $x = 12$

14.

$9x - 3 = 60$
 $9x = 63$
 $x = 7$

15. $\triangle CDE$ is an isosceles triangle with $\angle D \cong \angle E$. If $CD = 4x + 9$, $DE = 7x - 5$, and $CE = 16x - 27$, find x and the measure of each side.

$4x + 9 = 16x - 27$
 $36 = 12x$
 $3 = x$

$x = \underline{3}$
 $CD = \underline{21}$
 $DE = \underline{16}$
 $CE = \underline{21}$

16.

$42 + 42 = 84$
 $180 - 84 = 96$
 $96 / 2 = 48$
 $x = \underline{48}$

17.

$70 + 70 = 140$
 $180 - 140 = 40$
 $55 + 55 = 110$
 $180 - 110 = 70$
 $x = \underline{40}$