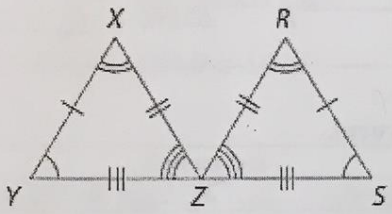
Name KEY Date _____ Period _____ Geometry w/ Trig

Unit 4 Triangle Congruence Review

1) If two triangles are congruent, then all their corresponding sides and angles are congruent.

2. **Show that the triangles are congruent by identifying all congruent corresponding parts. Then write a congruence statement.**



$\overline{XY} \cong \overline{RS}$ $\quad \angle Y \cong \angle S$

$\overline{YZ} \cong \overline{SZ}$ $\quad \angle R \cong \angle X$

$\overline{XZ} \cong \overline{RZ}$ $\quad \angle Z \cong \angle Z$

Congruence Statement for the Δ's: $\Delta YXZ \cong \Delta SRZ$

3. **In the diagram to the right, $\Delta LMN \cong \Delta PQR$. Mark the corresponding angles and sides congruent.**

a. $m\angle P =$ 105 °

b. $m\angle M =$ 45 °

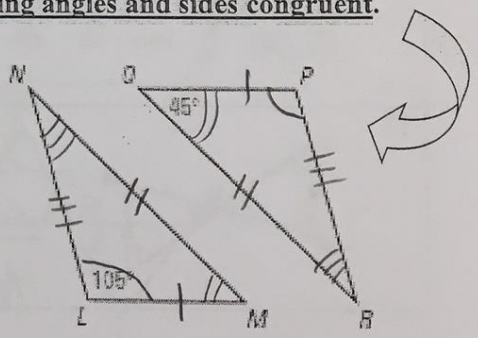
c. $\angle R \cong$ $\angle N$

d. $m\angle N =$ 30 °

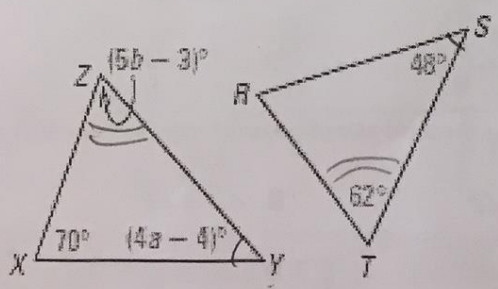
e. $\Delta MNL \cong$ ΔQRP

f. $\overline{QR} \cong$ $\overline{MN}$

g. $\overline{LN} \cong$ $\overline{PR}$



4. **Given $\Delta XYZ \cong \Delta RST$, find *a* and *b*.**



$4a - 4 = 48$

$4a = 52$

$a = 13$

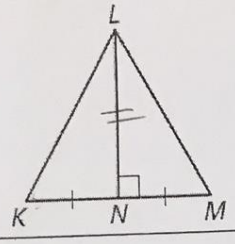
$5b - 3 = 62$

$5b = 65$

$b = 13$

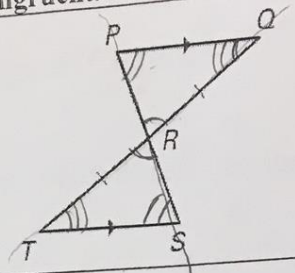
$a =$ 13 $\quad b =$ 13

For #5-8, state the postulate that proves the triangles congruent. Complete the congruence statement.

5. 

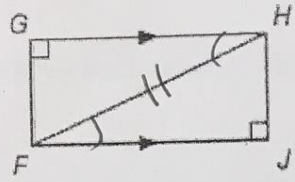
Postulate: SAS

$\Delta KLN \cong$ ΔMLN

6. 

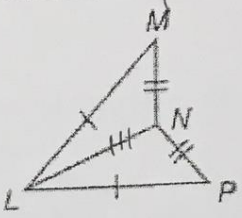
Postulate: AAS or ASA

$\Delta PQR \cong$ ΔSTR

7. 

Postulate: AAS

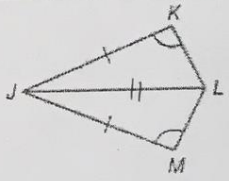
$\Delta GHF \cong$ ΔJFH

8. 

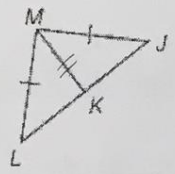
Postulate: SSS

$\Delta MNL \cong$ ΔPNL

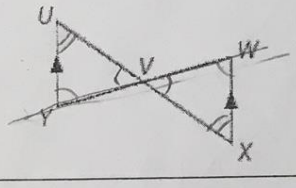
For #9-11, explain why the two triangles CANNOT be proven congruent.

9. 

The only postulate/theorem with 2 $\cong$ sides and 1 $\cong$ $\angle$ pair is SAS. But in this Δ, the $\angle$ is not the included $\angle$. (SSA is not a theorem)

10. 

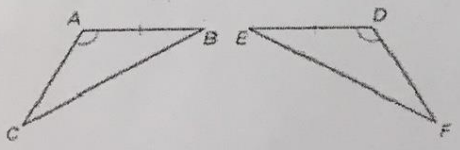
There are only 2 pairs of $\cong$ corr sides so that is not enough info to show $\cong$ Δs

11. 

You can see 3 pairs of $\cong$ corr $\angle$s but this is not enough info to prove $\cong$ Δs

MULTIPLE-CHOICE: For #12-13, choose the correct answer.

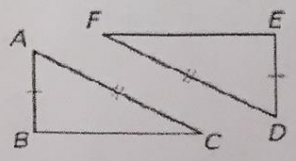
12. In order to use the **AAS** Postulate to prove $\Delta ABC \cong \Delta DEF$, what is the third pair of parts that needs to be congruent?



A. $\angle B \cong \angle E$ B. $\angle C \cong \angle F$

C. $\angle B \cong \angle F$ D. $\angle C \cong \angle E$

13. In order to use the **SAS** Postulate to prove $\Delta ABC \cong \Delta DEF$, what is the third pair of parts that needs to be congruent?



A. $\angle A \cong \angle F$ B. $\angle B \cong \angle E$

C. $\angle A \cong \angle D$ D. $\angle C \cong \angle D$

PROVING TRIANGLES CONGRUENT (Section 4.4-4.5)

14) Circle the 5 postulates/theorems below that prove two triangles congruent. Cross off the 2 others.

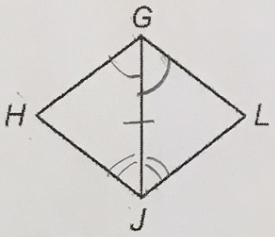
SAS HL ASA ~~SSA~~ AAS SSS ~~AAA~~

For #15-16, complete each two-column proof. Mark the diagram!

15. **Given:** $\angle HGJ \cong \angle LGJ$
$\overline{GJ}$ bisects $\angle HJL$

Prove: $\Delta GHJ \cong \Delta GLJ$

ASA

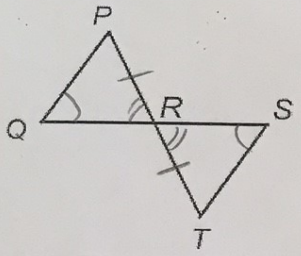


	Statements	Reasons
A	1. $\angle HGJ \cong \angle LGJ$	1. Given
	2. $\overline{GJ}$ bisects $\angle HJL$	2. Given
S	3. $\angle HJG \cong \angle LJG$	3. If a segment bisects an angle, then it creates 2 $\cong$ $\angle$s.
A	4. $\overline{GJ} \cong \overline{GJ}$	4. Reflexive POC
	5. $\Delta GHJ \cong \Delta GLJ$	5. Corr ASA of 2 Δs $\cong$ → 2 $\cong$ Δs

16. **Given:** $\angle Q \cong \angle S$
R is the midpoint of $\overline{PT}$.

AAS

* add extra line * **Prove:** $\Delta PRQ \cong \Delta TRS$



	Statements	Reasons
A	1. $\angle Q \cong \angle S$	1. Given
A	2. 3. $\angle PQR \cong \angle TRS$	2. If two angles are vertical $\angle$s, 3. then they are $\cong$.
	3. 4. R is the midpoint of $\overline{PT}$.	3. 4. Given
S	4. 5. $\overline{PR} \cong \overline{TR}$	4. 5. If a point is the midpoint of a segment, then it divides the segment into 2 $\cong$ segments.
	6. $\Delta PRQ \cong \Delta TRS$	6. Corr AAS of 2 Δs $\cong$ → 2 $\cong$ Δs

2. $\angle PRQ$ & $\angle TRS$ are vertical $\angle$s 2. Given by diagram