Unit 3 Study Guide- Math 2 Honors

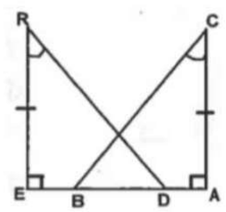
Name: ______________________

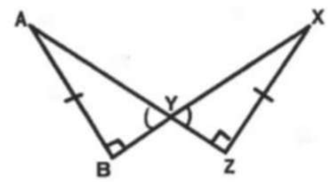
1. The triangle congruence postulates are: SSS, SAS, AAS, ASA, HL

2. The false postulates are: SSA, AAA,

- Don't forget that triangles can overlap and share angles or sides. (Reflexive Property!)
- Vertical angles are congruent

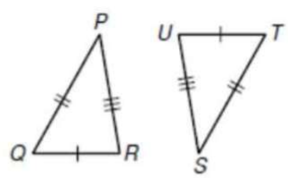
3. For each of the following, give the reason for triangle congruence. Then, write a congruence statement.

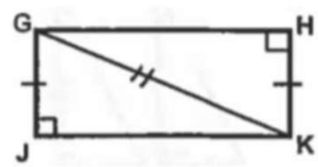




a. $\Delta ABC \cong$ ΔEDR by ASA

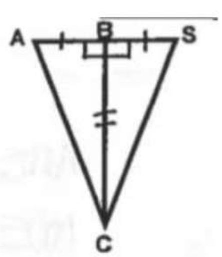
b. $\Delta BAY \cong$ ΔZXY by AAS

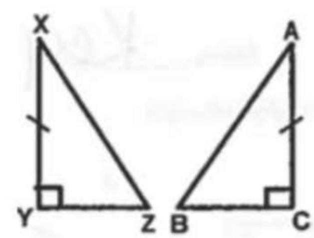




c. $\Delta RPQ \cong$ ΔUST by SSS

d. $\Delta KGJ \cong$ ΔGKH by HL

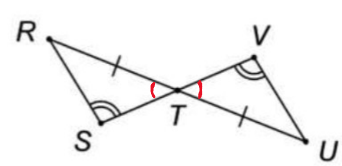




e. $\Delta ABC \cong$ ΔSBC by SAS

f. $\Delta XZY \cong$ ________ by ________ not congruent

Use this image for #'s 4-5.



4. By what congruence postulate are the triangles congruent?

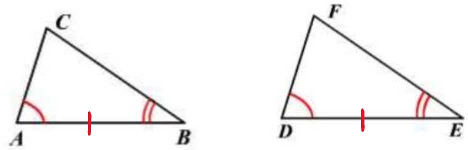
a. SSS b. AAS c. SAS d. ASA

5. Complete the congruence statement for the triangles #4: $\triangle RST \cong \triangle$______.

a. UVT b. UTV c. VUT d. VTU

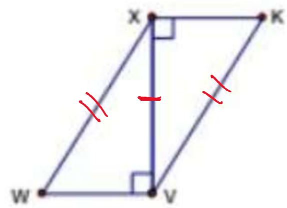
6. If you wanted to prove $\triangle ABC \cong \triangle DEF$ by ASA, what **additional information** would you need given to you?

a. $\angle C \cong \angle F$
b. $\overline{AC} \cong \overline{DF}$
c. $\overline{AB} \cong \overline{DE}$
d. $\overline{CB} \cong \overline{FE}$



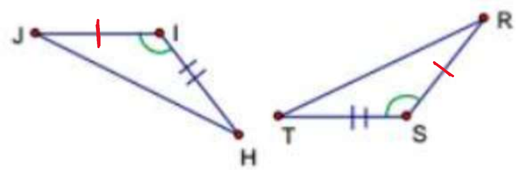
7. If you wanted to prove $\triangle WXV \cong \triangle KVX$ by HL, what **additional information** would you need given to you?

a. $\angle W \cong \angle K$
b. $\overline{WV} \cong \overline{KX}$
c. $\overline{WX} \cong \overline{KV}$
d. $\angle KVX \cong \angle WXV$



8. If you wanted to prove $\triangle JIH \cong \triangle RST$ by SAS, what **additional information** would you need given to you?

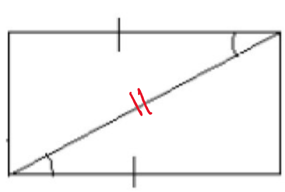
a. $\angle J \cong \angle R$
b. $\overline{JI} \cong \overline{RS}$
c. $\overline{JH} \cong \overline{RT}$
d. $\angle H \cong \angle T$



9. Given that $\triangle EFG \cong \triangle STU$, mark the congruent angles and sides on the triangle then fill in the following congruence statements below:

a. $\overline{EF} \cong$ $\overline{ST}$
b. $\overline{TU} \cong$ $\overline{FG}$
c. $\angle GEF \cong$ $\angle UST$
d. $\angle TUS \cong$ $\angle FGE$
e. $\overline{US} \cong$ $\overline{GE}$
f. $\angle TSU \cong$ $\angle FEG$

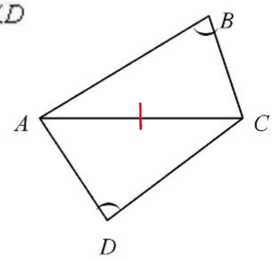
10. Can you conclude the triangles are congruent? Justify your answer.



yes, use reflexive property and then can prove using SAS.

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

Given: $\angle B \cong \angle D$

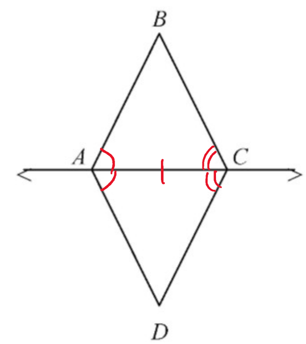


not possible, would need to know another pair of congruent angles.

12. What congruence criteria is needed to prove the triangles congruent?

Given: $\overrightarrow{AC}$ bisects $\angle DAB$ and $\overrightarrow{CA}$ bisects $\angle DCB$

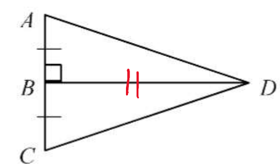
Prove: $\Delta DAC \cong \Delta ABC$



ASA

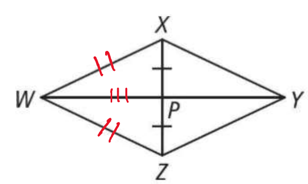
13. Name the theorem or postulate that lets you immediately conclude $\Delta ABD \cong \Delta CBD$.

SAS



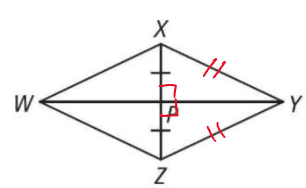
. If $\overline{WX} \cong \overline{WZ}$, what theorem can be used to show that $\Delta PXW \cong \Delta PZW$? Mark your picture to prove it.

Circle one: SSS or SAS?



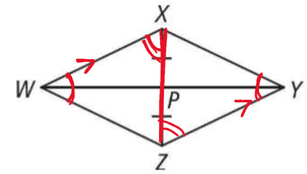
15. If $\overline{XZ} \perp \overline{WY}$ and $\overline{XY} \cong \overline{ZY}$, what theorem can be used to show that $\Delta XYP \cong \Delta ZYP$? Mark your picture to it.

Circle one: SAS or HL?



. If $\overline{XW} \parallel \overline{YZ}$ and $\angle XWZ \cong \angle ZYX$, what theorem can be used to show that $\Delta XWZ \cong \Delta ZYX$? Mark you picture to prove it.

Circle one: AAS or SAS?

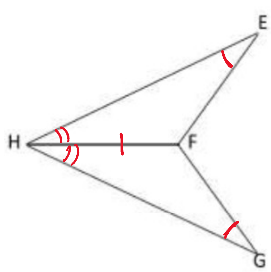


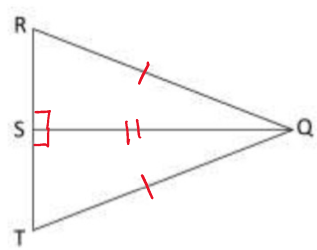
17. **Be sure to study the proofs you have written throughout the unit. Complete the following proofs making sure you have a justification for each statement.**

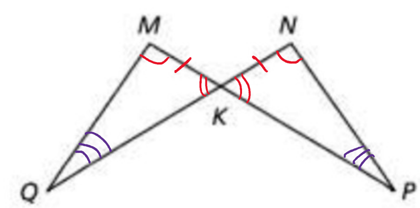
a. **Given:** $\angle E \cong \angle G$, $\angle EHF \cong \angle GHF$,
Prove: $\overline{HE} \cong \overline{HG}$

b. **Given:** $\overline{RQ} \cong \overline{TQ}$, $\overline{SQ} \perp \overline{RT}$
Prove: $\Delta RSQ \cong \Delta TSQ$

c. **Given:** $\angle KMQ \cong \angle KNP$, $\overline{MK} \cong \overline{NK}$
Prove: $\angle Q \cong \angle P$







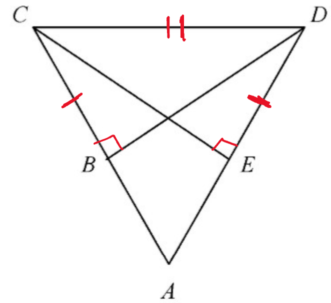
Statement	Reason
1. $\angle E \cong \angle G$	1. Given
2. $\angle EHF \cong \angle GHF$	2. Given
3. $\overline{HF} \cong \overline{HF}$	3. Reflexive
4. $\Delta EHF \cong \Delta GHF$	4. AAS
5. $\overline{HE} \cong \overline{HG}$	5. CPCTC

Statement	Reasons
1. $\overline{RQ} \cong \overline{TQ}$	1. Given
2. $\overline{SQ} \perp \overline{RT}$	2. Given
3. $\overline{SQ} \cong \overline{SQ}$	3. Reflexive
4. $\Delta RSQ \cong \Delta TSQ$	4. HL

Statement	Reason
1. $\angle KMQ \cong \angle KNP$	1. Given
2. $\overline{MK} \cong \overline{NK}$	2. Given
3. $\angle MKQ \cong \angle NKP$	3. Vertical ∠'s
4. $\Delta MKQ \cong \Delta NKP$	4. ASA
5. $\angle Q \cong \angle P$	5. CPCTC

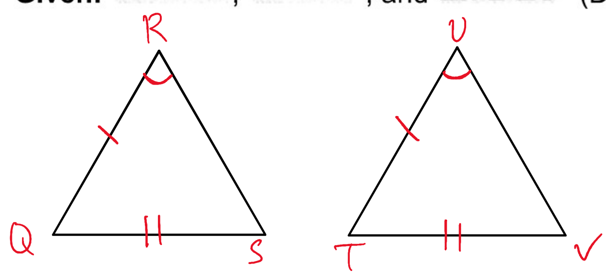
18. Complete the proof by providing the missing reasons.

Given: $\overline{CB} \perp \overline{BD}$, $\overline{DE} \perp \overline{EC}$, $\overline{CB} \cong \overline{DE}$
Prove: $\Delta DBC \cong \Delta CED$



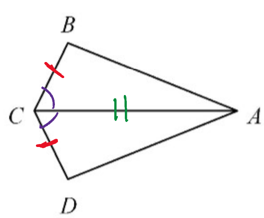
Statement	Reason
1. $\overline{CB} \cong \overline{DE}$, $\overline{CB} \perp \overline{BD}$, and $\overline{DE} \perp \overline{EC}$,	1. Given
2. $\angle CBD$ and $\angle DEC$ are right angles	2. Definition of perpendicular segments
3. $\overline{CD} \cong \overline{CD}$	3. Reflexive property
4. $\Delta DBC \cong \Delta CED$	4. HL

19. Based on the given information, can you conclude that $\Delta QRS \cong \Delta TUV$? Explain.
Given: $\overline{QR} \cong \overline{TU}$, $\overline{QS} \cong \overline{TV}$, and $\angle R \cong \angle U$ (Draw a picture to help you visualize!



no, gives SSA which is not a congruency postulate.

20. Write a two-column proof. (5 steps!)
Given: $\overline{CB} \cong \overline{CD}$, $\angle BCA \cong \angle DCA$
Prove: $\overline{BA} \cong \overline{DA}$



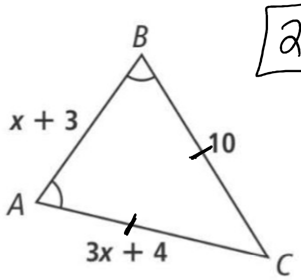
1. $\overline{CB} \cong \overline{CD}$	Given
2. $\angle BCA \cong \angle DCA$	Given
3. $\overline{CA} \cong \overline{CA}$	Reflexive property
4. $\Delta BCA \cong \Delta DCA$	SAS
5. $\overline{BA} \cong \overline{DA}$	CPCTC

For #22-24, solve for x.

21.

$10 = 3x + 4$

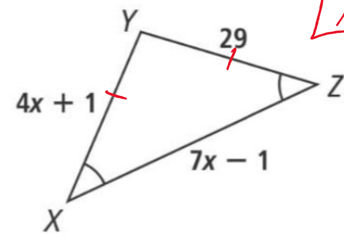
$\boxed{2 = x}$



22.

$4x + 1 = 29$

$\boxed{x = 7}$

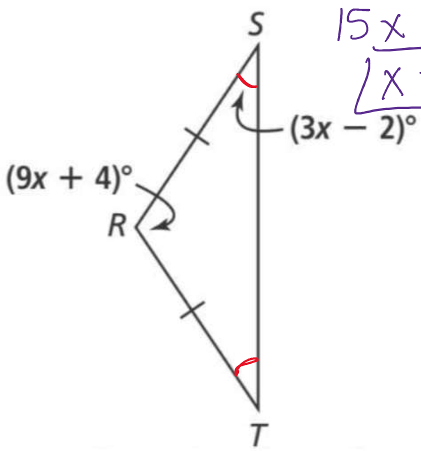


23.

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

$15x = 180$

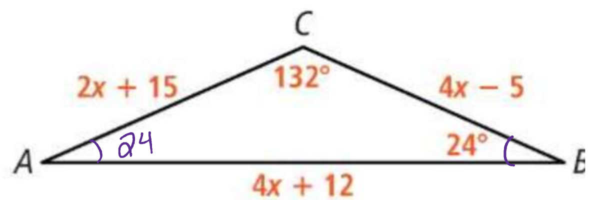
$\boxed{x = 12}$



24. Find the perimeter of $\triangle ABC$

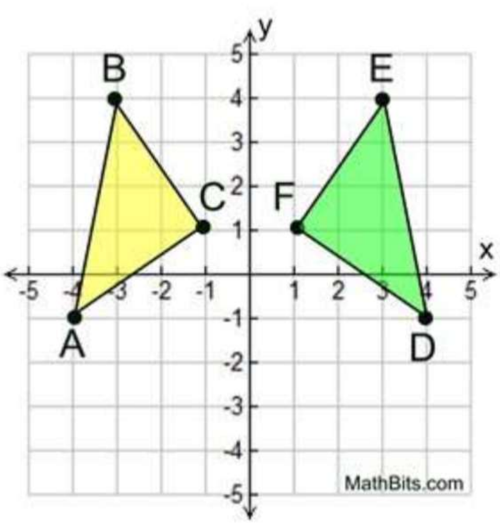
$2x + 15 = 4x - 5$

$x = 10$



$\boxed{P = 122}$

25. Prove the △ABC ≅ △DEF using transformations. (Be Specific!)



Reflection over y-axis

26. Determine if the following triangles are congruent. Make sure that you mark the Reflexive Side and Vertical Angles.

III. State whether each pair of triangles is congruent by SSS, SAS, ASA, AAS, HL, or none.