

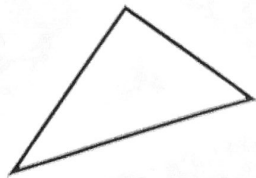
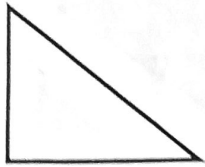
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Math 2 Unit 2: Triangle Congruence Review

Part I: Definition of Congruent Triangles

1. Given $\triangle APV \cong \triangle GSL$, write congruence statements for all the corresponding parts that are congruent.

$$\overline{AP} \cong \overline{GS}$$

$$\angle A \cong \angle G$$

$$\overline{PV} \cong \overline{SL}$$

$$\angle P \cong \angle S$$

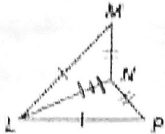
$$\overline{AV} \cong \overline{GL}$$

$$\angle V \cong \angle L$$

Part II: Triangle Congruence: SSS, SAS, ASA, AAS, HL

List the method that justifies the triangles being congruent and write a congruence statement.

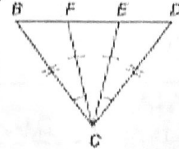
2.



$$\triangle NLM \cong \triangle NLP$$

by SSS

3.



$$\triangle BGF \cong \triangle DGE$$

by SAS

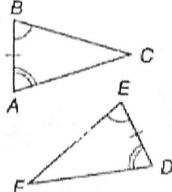
4.



AAA, however does not prove \cong only similarity.

If $\overline{RQ} \cong \overline{TS}$ then AAS

5.

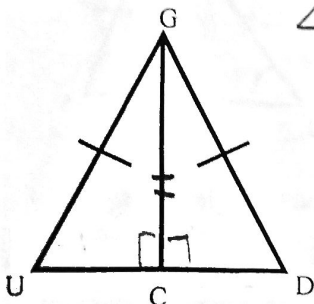


$$\triangle CBA \cong \triangle FED$$

by ASA

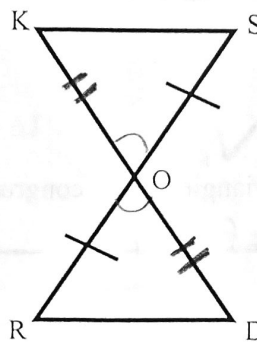
What other information is needed to prove the triangles congruent by the given method. Explain your answer.

6. HL



$\angle UCG$ & $\angle DCG$
are right angles.

7. SAS

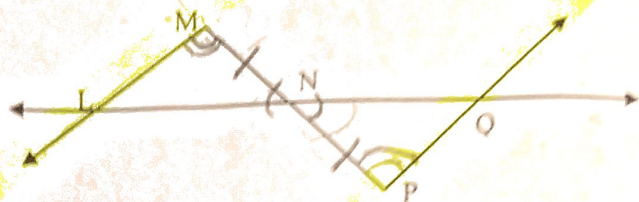


$$\overline{KO} \cong \overline{DO}$$

Part III: Proofs

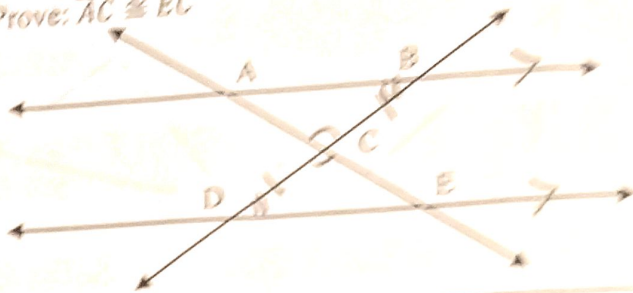
Fill in the missing statements for the 2 column proofs below.

8. Given: $LM \parallel QP$
 LQ bisects MP
 Prove: $\triangle LMN \cong \triangle QPN$



Statements	Reasons
1. $LM \parallel QP$	1. Given
2. LQ bisects MP	2. Given
3. $MN \cong PN$	3. Definition of bisect segment
4. $\angle MNL \cong \angle PNO$	4. Vertical \angle s \cong
5. $\angle M \cong \angle P$	5. AIA \cong Alternate Interior \angle s
6. $\triangle LMN \cong \triangle QPN$	6. ASA

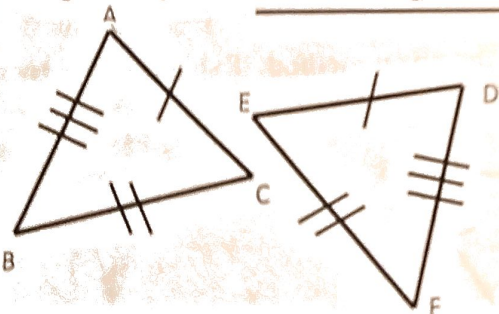
9. Given: AE bisects BD
 $AB \parallel DE$
 Prove: $AC \cong EC$



Statements	Reasons
1. AE bisects BD	1. Given
2. $AB \parallel DE$	2. Given
3. $DC \cong BC$	3. Def. of seg. bisector
4. $\angle ABC \cong \angle EDC$	4. AIA \cong Alternate Interior \angle s
5. $\angle ACB \cong \angle ECD$	5. Def. of Vertical angles are \cong
6. $\triangle ACB \cong \triangle ECD$	6. ASA ASA or AAS
7. $AC \cong EC$	7. CPCTC

Part IV: Rigid Motions and Triangle Congruence

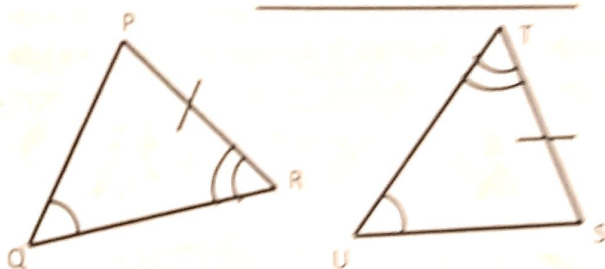
10. What postulate/theorem justifies the following triangles congruent? SSS



What rigid motions justify the triangles being congruent?
translate & reflect

Congruence Statement: $\triangle ACB \cong \triangle DEF$

11. What postulate/theorem justifies the following triangles congruent? AAS



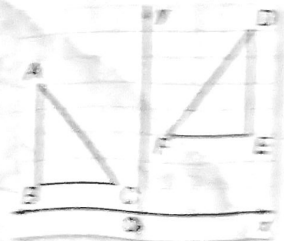
What rigid motions justify the triangles being congruent?
rotate, translate, & reflect

Congruence Statement: $\triangle QRP \cong \triangle UTS$

Part V: Rigid Motions and Triangle Congruence in the Coordinate Plane

12. $\triangle WYZ$ and $\triangle WYX$ are shown in the coordinate plane.

Explain using transformations how $\triangle ABC \cong \triangle DEF$.

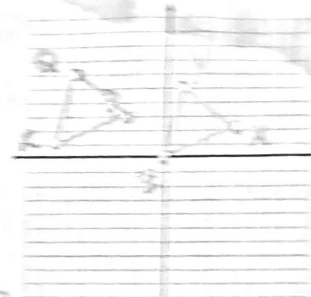


Explain how you can use the transformation you said above to prove $\triangle ABC \cong \triangle DEF$.

~~_____~~
~~_____~~
~~_____~~

13. Given $X(5, 2)$, $Y(1, 5)$, $Z(0, 0)$, $P(-3, 3)$, $Q(-7, 6)$ and $R(-8, 1)$, explain how $\triangle XYZ \cong \triangle PQR$ using triangle congruence criteria.

omit

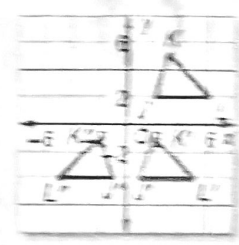


~~What postulate/theorem justifies the triangles being congruent?~~

14. Are $\triangle JKL$ and $\triangle J''K''L''$ congruent? yes

Explain the rigid motions that were used to create $\triangle J''K''L''$.

Translate $(x-1, y-6)$
 Reflect over y-axis $(-x, y)$
 Together $(-(x-1), y-6)$



15. $\triangle THX$ has vertices $T(1, 1)$, $H(3, 4)$ and $X(4, 0)$.

Translate $\triangle THX$ using the rule $(x, y) \rightarrow (x-3, y+2)$ to create $\triangle T'H'X'$.

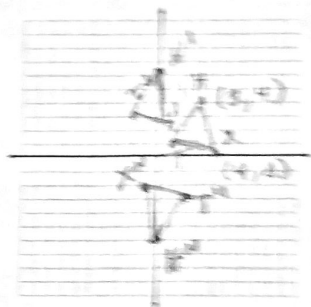
$T'(-2, 3)$ $H'(0, 6)$ $X'(1, 2)$

Rotate $\triangle T'H'X'$ 180° to create $\triangle T''H''X''$.

$T''(2, -3)$ $H''(0, -6)$ $X''(-1, -2)$

Write a motion rule to describe the rotation above:

$(x, y) \rightarrow (-x, -y)$



Write one rule that would change $\triangle THX$ to $\triangle T''H''X''$ in one step.

$(x, y) \rightarrow (-(x-3), -(y+2))$

Part VI Example Multiple Choice Questions

16. Select all the reasons why the triangles could be congruent.

A SAS

B SSS

C ASA

D AAS



18. Select all that would need to be true to show the triangles are congruent by SAS.

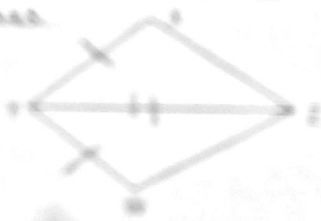
A $\overline{AT} = \overline{BT}$

B $\angle ATB = \angle BTB$

C $\angle A = \angle B$

D $\overline{AT} = \overline{BT}$

E $\angle ATB = \angle BTB$



20. Given $\triangle PQR \cong \triangle XYZ$ which of the following must be true?

A Any transformation will map $\triangle PQR$ onto $\triangle XYZ$.

B Only a reflection will map $\triangle PQR$ onto $\triangle XYZ$.

C $\angle P$ will be congruent to $\angle X$.

D \overline{PQ} will be congruent to \overline{XY} .

17. Given: \overline{PQ} bisects $\angle RPQ$ and $\angle RPS$



Part 1: What additional information could be used to show that the triangles are congruent?

A $\angle R = \angle S$ Definition of bisect

B $\overline{PQ} = \overline{PQ}$ Definition of bisect

C $\overline{PQ} = \overline{PQ}$ The symmetric property of equality

D $\overline{PQ} = \overline{PQ}$ The reflexive property of equality

Part 2: Which congruence postulate is used to show that the triangles are congruent.

A SAS

B SSS

C ASA

D There is not enough information

19. Which of the following would not be needed to prove that the triangles are congruent.

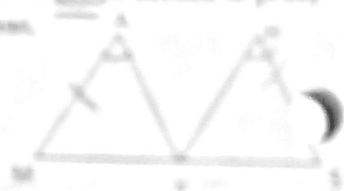
Given: $\overline{MT} = \overline{NT}$, $\angle M = \angle N$

A $\angle M = \angle N$

B T is the midpoint of \overline{MN}

C $\angle MTN = \angle NTM$

D $\overline{MT} = \overline{NT}$



21. $\triangle ABC$ is reflected over the x-axis and the reflected over the y-axis to create $\triangle A''B''C''$. Select all that apply:

A $\triangle A''B''C''$ is a 90° counterclockwise rotation of $\triangle ABC$

B $\triangle A''B''C''$ is a 180° rotation of $\triangle ABC$

C $\triangle A''B''C''$ is not congruent to $\triangle ABC$

D $\triangle A''B''C''$ is congruent to $\triangle ABC$

Reflect over x-axis (x, y)

Reflect over y-axis $(-x, y)$

Rotate 180° $(-x, -y)$