Welcome back!!

EQ: G.CO.7 How do I use rigid motions to prove congruence

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 10, Lesson 1
1. Warm Up
2. Notes
3. Left-Side Practice
4. TI-Nspire Activity
5. Closure

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Rigid Motions and Congruency

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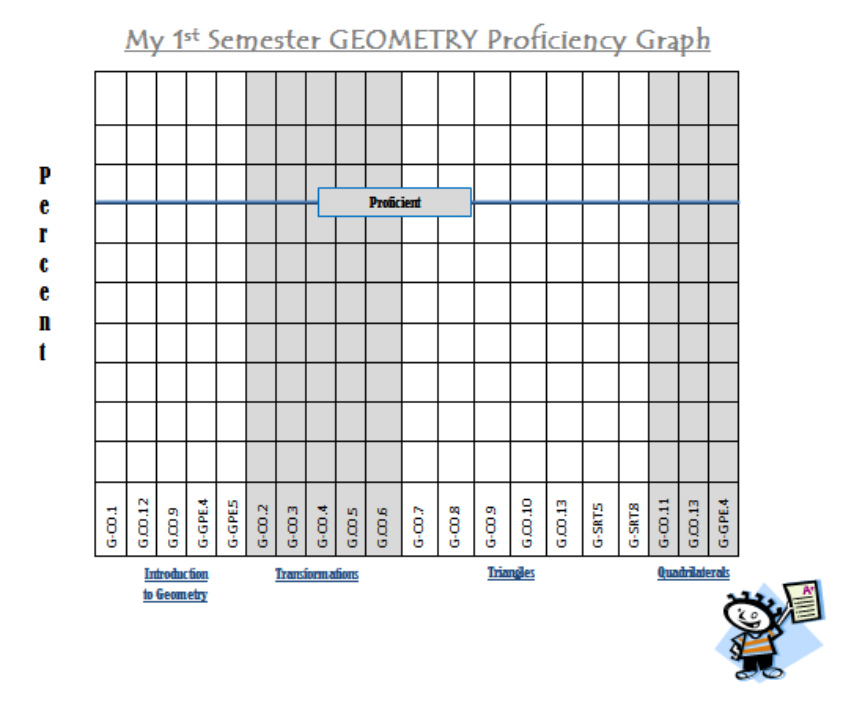
Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

Warm Up:

1. Looking back in your notes, list 5 facts about rigid motions.
2. Looking back in your notes, define "congruent" and give an example, in either a picture or in words.
3. Draw a picture to explain vertical angles.
4. Draw a picture to explain what a "midpoint" is.



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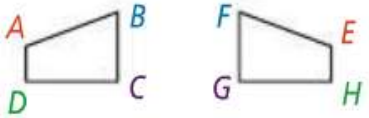
rigid motion	- a transformation that preserves distance and angle measure; it doesn't change the size or shape of the object - 3 types: translations, reflections, rotations
congruent	- have the same size and shape - symbol:
naming congruent figures	- corresponding vertices must be listed in the same order

Example



$ABCD \cong EFGH$

$\overline{AB} \cong \overline{EF}$ $\overline{BC} \cong \overline{FG}$
$\overline{CD} \cong \overline{GH}$ $\overline{DA} \cong \overline{HE}$

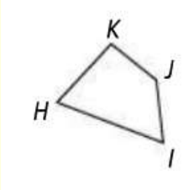
$\angle A \cong \angle E$ $\angle B \cong \angle F$
$\angle C \cong \angle G$ $\angle D \cong \angle H$

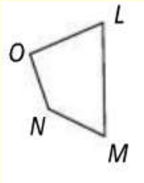
Summary:

Left-Side Practice!

Practice #1

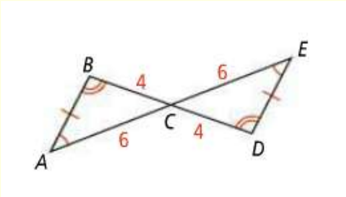
If $HIJK \cong LMNO$, what are the congruent corresponding parts?





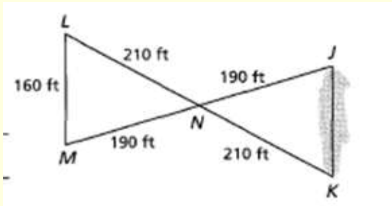
Practice #2

Are the two triangles congruent? Justify your answer.



Practice #3

Are the two triangles below congruent? Explain.

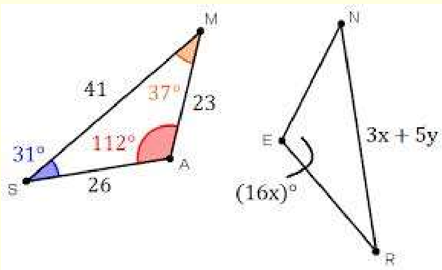


Find the length of JK.

Practice #4

The two triangles shown are congruent.

Find the value of x and the value of y.

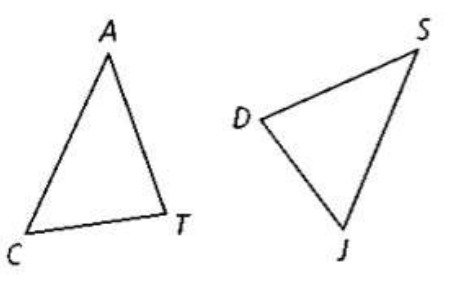


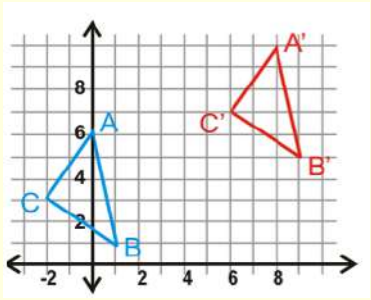
TI-NSpire Activity

Welcome to TI-NSpires!

To move through the tabs, you can use your mouse, or press [ctrl] and then left/right.

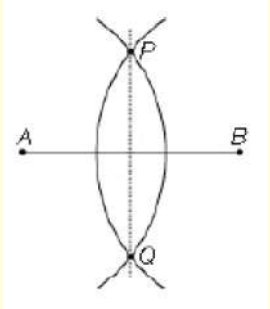
Please choose the correct answers for each question. If you need help, ask your team!

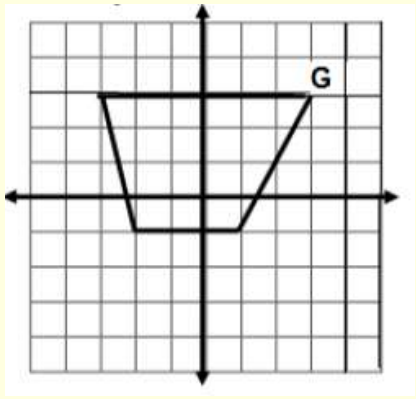




Triangle ABC is congruent to triangle FGH. If angle B = 3y and angle G = y + 50, what is the value of y?

Triangle XYZ is congruent to triangle QRS. If the length of XY is 2x + 3 and the length of QR is 3x + 2, what is the value of x?





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Right Side...

Write a summary that answers the essential question.

Left Side...

When do you think you might need to know that things are congruent in your everyday life?

EQ: G.CO.8 How do I prove that two triangles are congruent?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 10, Lesson 2
1. Warm Up
2. G.CO.7 Quiz
3. Activity
4. Notes
5. Practice
6. Closure

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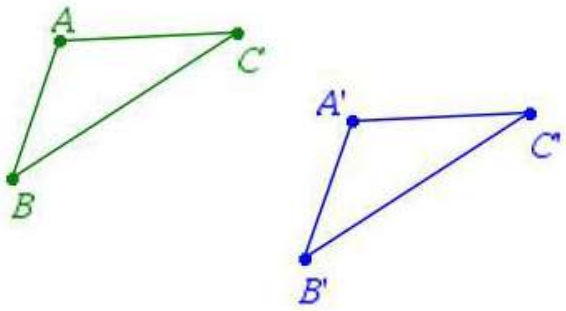
Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

Warm Up:

1. The triangles shown at the right are translations of each other. Are the triangles congruent? Explain why or why not.

2. If the measure of angle A is 4x and the measure of angle A' is 6x - 42, find the value of x and the measure of each angle.

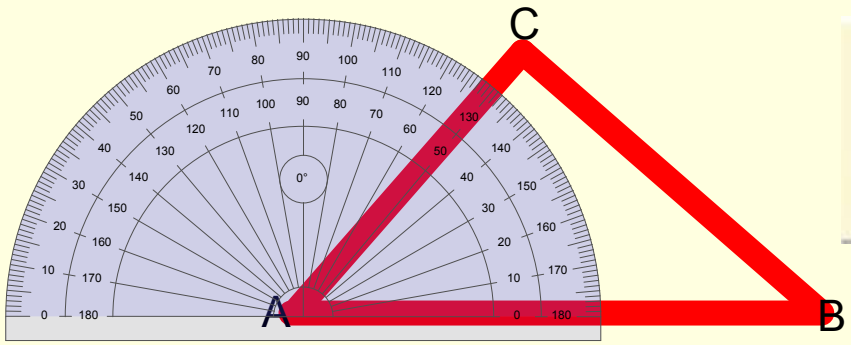


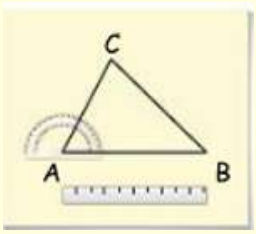
G.CO.7 Quiz

Introductory Activity

Step 1: Use a straightedge to draw and label any triangle ABC on your paper.

Step 2: Use a ruler. Carefully measure sides AB and AC. Use a protractor to measure the angle between them, angle A.





Step 3: Write the measurements on a piece of paper and swap cards with a table member. Draw a triangle using only your classmate's measurements.

Step 4: Compare your new triangle to your classmate's original triangle. Try to make your classmate's triangle fit exactly on top of your new triangle.

Step 5: Answer the following question in your IAN (left-side): Is your new triangle congruent to your classmate's original triangle? Explain why or why not.

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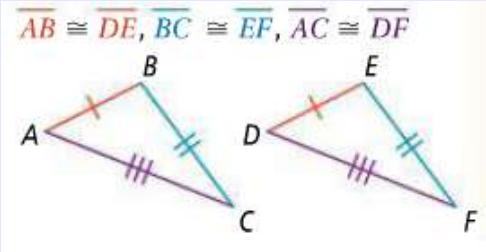
Proving triangles congruent

Side-Side-Side (SSS) Postulate

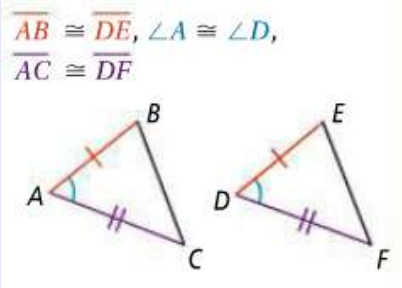
*Postulate: an assumed truth

If 3 sides of 1 triangle are congruent to 3 sides of another, then the 2 triangles are congruent



Side-Angle-Side (SAS) Postulate

If 2 sides and the included angle of 1 triangle are congruent to 2 sides and the included angle of another triangle, then the 2 triangles are congruent.

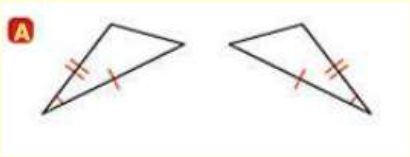


Summary:

Left-Side Practice!

Would you use SSS or SAS to prove the triangles congruent? **OR**, is there not enough information?

A



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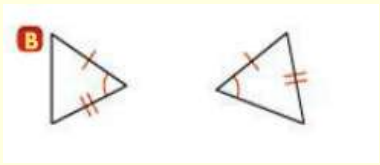

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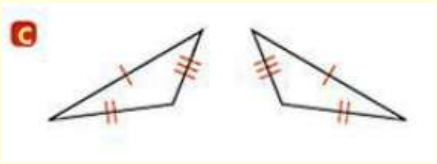

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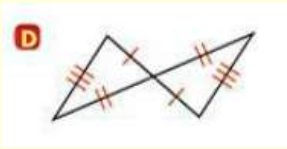
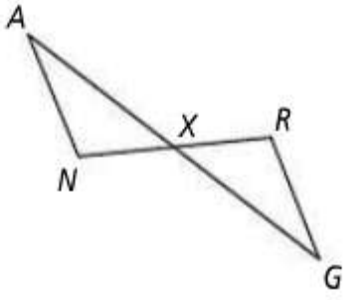


Given: X is the midpoint of $\overline{AG}$ and $\overline{NR}$.

Prove: $\triangle ANX \cong \triangle GRX$



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Right Side...

Write a summary that answers the essential question.

Left Side...

Compare and Contrast How are the SSS Postulate and the SAS Postulate alike? How are they different?

EQ: G.CO.8 How do I prove two triangles are congruent?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 10, Lesson 3

1. Warm Up
2. Notes
3. Practice
4. Closure

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Congruent Triangles

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Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

Warm Up:

1.

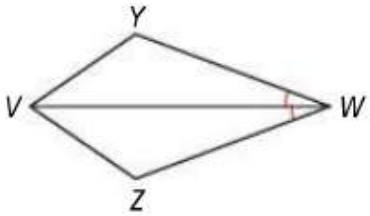
What additional information do you need to prove that $\triangle VWY \cong \triangle VWZ$ by SAS?

(A) $\overline{YW} \cong \overline{ZW}$

(B) $\angle WVY \cong \angle WVZ$

(C) $\angle Y \cong \angle Z$

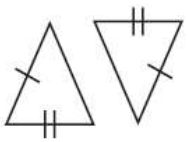
(D) $\overline{VZ} \cong \overline{VY}$



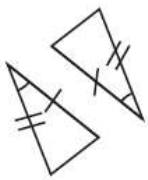
2.

Which pair of triangles can be proved congruent by SSS?

(A)

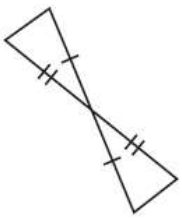


(B)



(C)

(D)



3. Draw a picture to explain what a "bisector" is.

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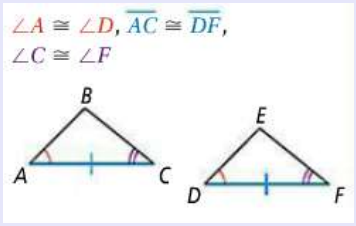
Proving triangles congruent

Angle-Side-Angle (ASA) Postulate

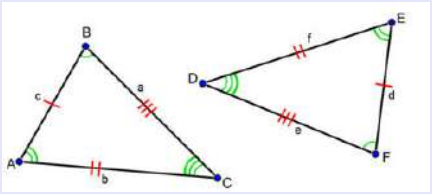
If 2 angles and the included side of 1 triangle are congruent to 2 angles and the included side of another triangle, then the triangles are congruent.



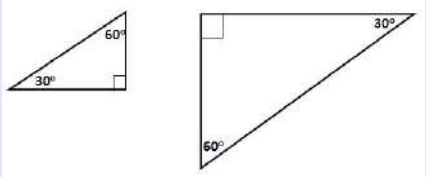
CPCTC

Corresponding Parts of Congruent Triangles are Congruent

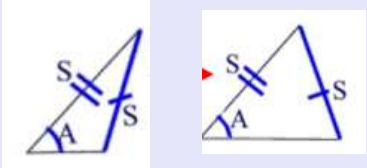
If you know that 2 triangles are congruent, then you know that every pair of corresponding parts is congruent.



There is no AAA for triangle congruence.



There is no SSA for triangle congruence.



Summary:

Left-Side Practice

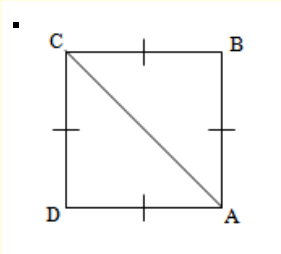
(a) Identify IF the given triangles are congruent.

(b) If they <u>are</u>, state by which postulate(s).

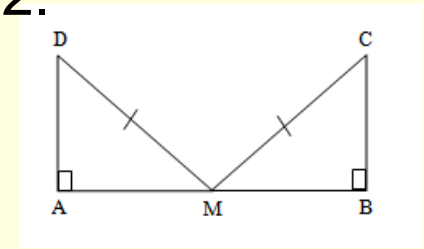
OR, if they <u>aren't</u>, state what piece of information is missing.

(c) For each congruent pair, write the congruence statement.

1.



2.



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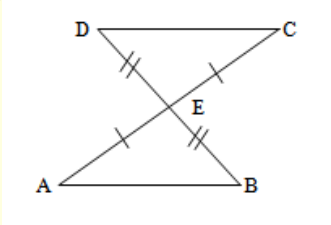

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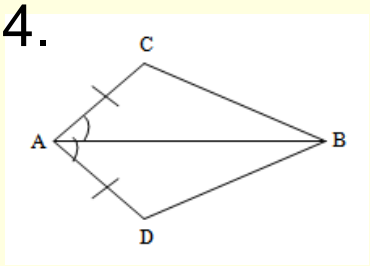

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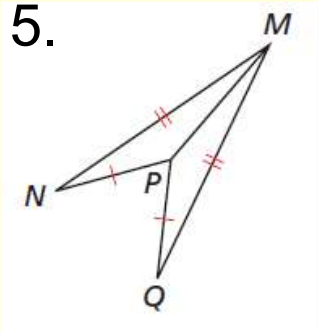

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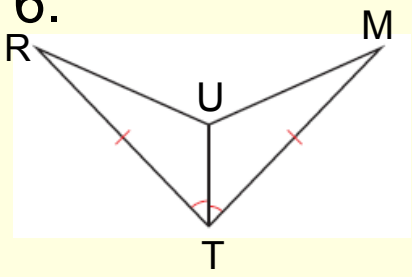
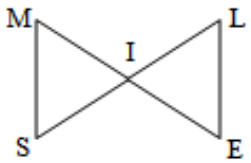


7. Given: I is the midpoint of $\overline{ME}$ and $\overline{SL}$



G.CO.8 Practice #1

(tape on page 58)

Right Side...

Write a summary that answers the essential question.

Left Side...

Quick! What do each of the following stand for?

- SSS
- SAS
- ASA
- CPCTC

EQ: G.CO.8 How do I prove two triangles are congruent?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 10, Lesson 4

1. Warm Up
2. Notes
3. Left-Side Practice
4. Practice
5. Closure

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Congruent Triangles

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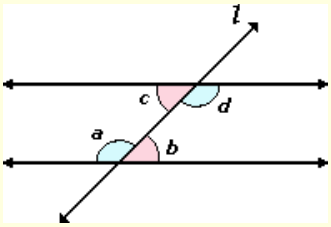
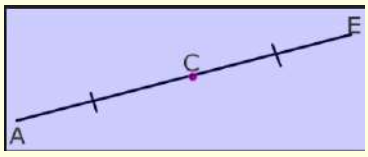
Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

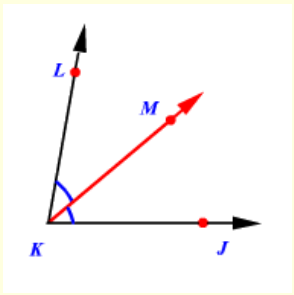
Warm Up:

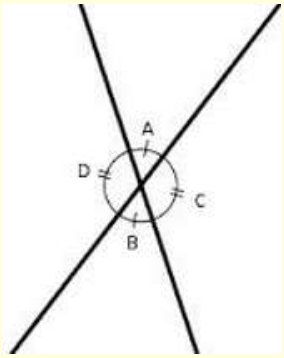
Given the pictures below, match and draw the appropriate diagram for eachterm.
THEN, write a short definition for each term.

1. midpoint
2. bisector
3. alternate interior angles
4. vertical angles





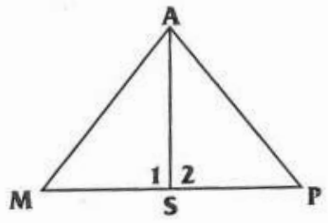




G.CO.8 Practice #1

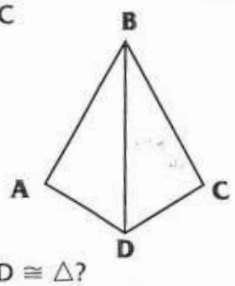
(From Day 3 - page 58)

5. Given: $\overline{AS}$ bisects $\overline{MP}$; $\angle 1 \cong \angle 2$



$\triangle MAS \cong \triangle ?$

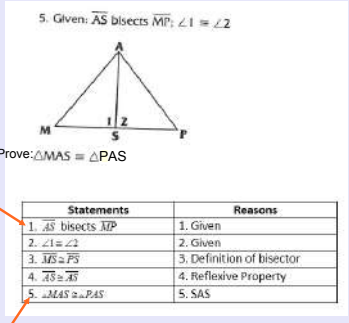
6. Given: $\overline{BD}$ bisects $\angle ABC$; $\overline{BD}$ bisects $\angle ADC$



$\triangle ABD \cong \triangle ?$

Proof

- A step-by-step way of explaining the thought process to get to an answer



First statement(s) - always the "Given"

Statements	Reasons
1. $\overline{AS}$ bisects $\overline{MP}$	1. Given
2. $\angle 1 \cong \angle 2$	2. Given
3. $\overline{MS} \cong \overline{PS}$	3. Definition of bisector
4. $\overline{AS} \cong \overline{AS}$	4. Reflexive Property
5. $\triangle MAS \cong \triangle PAS$	5. SAS

Last Statement is always the "Prove."

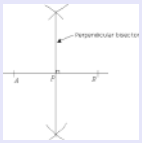
Most often-used reasons

Definition of...

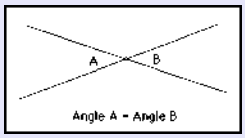
- Midpoint

- Bisector

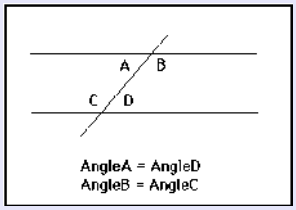
-Perpendicular bisector



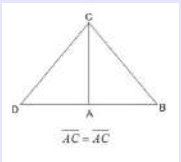
- Vertical Angles



- Alternate Interior Angles



- Reflexive Property



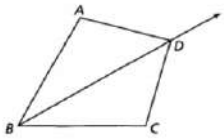
Summary:

Left-Side Practice

Complete the proof.

Given: $\overrightarrow{BD}$ bisects $\angle ABC$ and $\overline{AB} \cong \overline{BC}$.

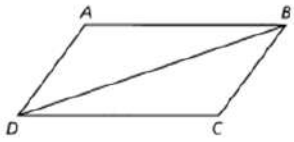
Prove: $\triangle ABD \cong \triangle CBD$



Statements	Reasons
1. $\overline{AB} \cong \overline{BC}$	1.
2. $\overrightarrow{BD}$ bisects $\angle ABC$.	2.
3. $\angle ABD \cong \angle CBD$	3.
4. $\overline{BD} \cong \overline{BD}$	4.
5. $\triangle ABD \cong \triangle CBD$	5.

Given: $\overline{AB} \cong \overline{CD}$, $\overline{AD} \cong \overline{CB}$

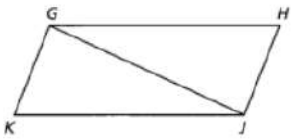
Prove: $\triangle ABD \cong \triangle CBD$



Statements	Reasons
1. $\overline{AB} \cong \overline{CD}$	1.
2. $\overline{AD} \cong \overline{CB}$	2.
3.	3.
4. $\triangle ABD \cong \triangle CBD$	4.

Given: $\overline{GH} \parallel \overline{JK}$, $\overline{GH} \cong \overline{JK}$

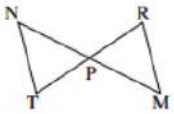
Prove: $\triangle HGJ \cong \triangle KJG$



Statements	Reasons
1. $\overline{GH} \parallel \overline{JK}$	1.
2. $\angle HGJ \cong \angle KJG$	2.
3.	3. Given
4. $\overline{GJ} \cong \overline{GJ}$	4.
5.	5.

Given: $\overline{TR}$ and $\overline{MN}$ bisect each other.

Prove: $\Delta NTP \cong \Delta MRP$



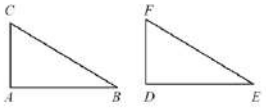
Statements	Reasons
1. $\overline{TR}$ and $\overline{MN}$ bisect each other	1.
2. $\overline{NP} \cong \overline{MP}$	2.
3. $\overline{TP} \cong \overline{RP}$	3.
4. $\angle NPT \cong \angle MPR$	4.
5. $\triangle NTP \cong \triangle MRP$	5.

G.CO.8 PROOF BLOCKS - Part 1

Name _____ pd _____ IAN.page 60

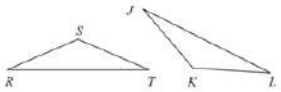
Prove the following triangles congruent.

1. Given: $\overline{AC} \cong \overline{DF}$
   $\overline{AB} \cong \overline{DE}$
   $\angle A \cong \angle D$
   Prove: $\Delta ABC \cong \Delta DEF$



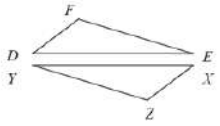
Statements	Reasons

2. Given: $\overline{RS} \cong \overline{KL}$
   $\overline{ST} \cong \overline{JK}$
   $\overline{RT} \cong \overline{JL}$
   Prove: $\Delta RST \cong \Delta LKJ$



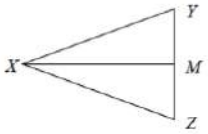
Statements	Reasons

3. Given: $\angle D \cong \angle X$
   $\angle F \cong \angle Z$
   $\overline{DF} \cong \overline{XZ}$
   Prove: $\Delta DEF \cong \Delta XYZ$



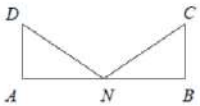
Statements	Reasons

4. Given: $\overline{XM}$ bisects $\angle YXZ$
   $\overline{XY} \cong \overline{XZ}$
   Prove: $\Delta XYM \cong \Delta XZM$



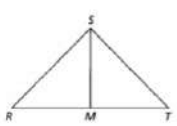
Statements	Reasons
1. $\overline{XM}$ bisects $\angle YXZ$	1.
2. $\overline{XY} \cong \overline{XZ}$	2.
3. $\overline{YM} \cong \overline{ZM}$	3.
4. $\overline{XM} \cong \overline{XM}$	4.
5. $\triangle XYM \cong \triangle XZM$	5.

5. Given: N is the midpoint of $\overline{AB}$
   $\angle DAN \cong \angle CBN$
   $\angle DNA \cong \angle CNB$
   Prove: $\Delta DAN \cong \Delta CBN$



Statements	Reasons
1. N is the midpoint of $\overline{AB}$	1.
2. $\angle DAN \cong \angle CBN$	2.
3. $\angle DNA \cong \angle CNB$	3.
4. $\overline{AN} \cong \overline{BN}$	4.
5. $\triangle DAN \cong \triangle CBN$	5.

6. Given: $\overline{SM}$ is the perpendicular bisector of $\overline{RT}$
   Prove: $\triangle RSM \cong \triangle TSM$



Statements	Reasons
1. $\overline{SM}$ is the perpendicular bisector of $\overline{RT}$	1.
2. $\angle RMS \cong \angle TMS$	2.
3. $\overline{RM} \cong \overline{TM}$	3.
4. $\overline{SM} \cong \overline{SM}$	4.
5. $\triangle RSM \cong \triangle TSM$	5.

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Right Side...

Write a summary that answers the essential question.

Left Side...

EQ: G.CO.8 How do I prove that two triangles are congruent?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 10, Wednesday

1. Warm Up
2. Left-Side Practice

same pages as yesterday!

56 57

Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

Warm Up:

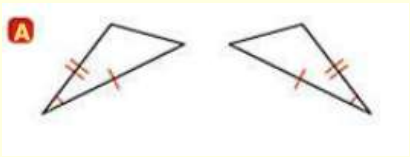
Underneath your warm-up from yesterday, please answer the following:

In your own words, describe the SSS postulate and the SAS postulate.

Left-Side Practice!

Would you use SSS or SAS to prove the triangles congruent? **OR**, is there not enough information?

A



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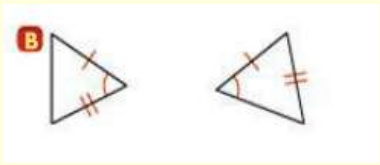

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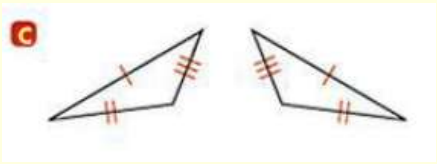
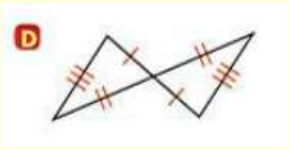


D



Given: X is the midpoint of $\overline{AG}$ and $\overline{NR}$.

Prove: $\triangle ANX \cong \triangle GRX$