Geometry CC – Unit 5
Lesson 4: Triangle Congruence Proofs (Day 1)
M1 L22-27

Do Now

After reflecting on quarter 1, write 3 goals for second quarter.

Nov 3-10:48 AM

Triangle Congruence Proofs
Recognizing SAS, ASA, AAS, SSS, and HL

Side-Angle-Side (SAS) Postulate
If two sides and the included angle of one triangle are congruent to the corresponding sides and the included angle of the other triangle, then the two triangles are congruent.
Ex: ≅

Angle-Side-Angle (ASA) Postulate
If two angles and the included side of one triangle are congruent to the corresponding angles and included side of the other triangle, then the two triangles are congruent.
Ex: ≅

Side-Side-Side (SSS) Postulate
If the three sides of one triangle are congruent to the corresponding three sides of the other triangle, then the two triangles are congruent.
Ex: ≅

Angle-Angle-Side (AAS) Postulate
If two angles and the *non-included* side of one triangle are congruent to the corresponding two angles and the *non-included* side of the other triangle, then the two triangles are congruent.
Ex: ≅

Hypotenuse-Leg (HL) Postulate (Rt Δ's only)
If the hypotenuse and the leg of one right triangle are congruent to the hypotenuse and corresponding leg of the other triangle, then the two triangles are congruent. (You can use either leg on one triangle, as long as you use the corresponding leg on the other!)
Ex: ≅

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Determine the method you could use to prove the two triangles are congruent, based on how the diagrams are marked. Choose from SAS, ASA, SSS, AAS, HL.

1. Method: SAS — △BAC ≅ △FED
2. Method: ASA — △CAE ≅ △DBE
3. Method: SSS — △CAM ≅ △CBM
4. Method: HL — △GHJ ≅ △IHJ

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5. Method: SAS — △ABD ≅ △CBD
6. Method: ASA — △ACD ≅ △BCD
7. Method: HL — △HIJ ≅ △LKJ
8. Method: AAS — △CBA ≅ △CDA
9. Method: SSS — △CDA ≅ △ABC
10. Method: ASA — △ADE ≅ △CBE

Freebie
Reflexive property
Vertical ∠'s

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*Erase

Proving Triangles Congruent

1) Given: $\overline{AB} \cong \overline{AD}$, $\overline{CB} \cong \overline{CD}$
Prove: $\triangle ABC \cong \triangle ADC$

Statements	Reasons
1) $\overline{AB} \cong \overline{AD}$	1) Given
2) $\overline{CB} \cong \overline{CD}$	2) Given
3) $\overline{AC} \cong \overline{AC}$	3) Reflexive Property
4) $\triangle ABC \cong \triangle ADC$	4) SSS ≅ SSS

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2) Given: $\overline{EF} \cong \overline{FG}$, $\overline{DF} \cong \overline{FH}$
Prove: $\triangle DFE \cong \triangle HFG$

Statements	Reasons
1) $\overline{EF} \cong \overline{FG}$	1) Given
2) $\overline{DF} \cong \overline{FH}$	2) Given
3) $\angle DFE \cong \angle HFG$	3) Vertical angles are congruent
4) $\triangle DFE \cong \triangle HFG$	4) SAS ≅ SAS

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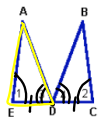
3) Given: $\angle 1 \cong \angle 2$, D is the midpoint of $\overline{EC}$, $\angle 3 \cong \angle 4$.

Prove: $\Delta AED \cong \Delta BCD$



Statements	Reasons
1) $\angle 1 \cong \angle 2$	1) Given
2) D is the midpoint of $\overline{EC}$	2) Given
3) $\angle 3 \cong \angle 4$	3) Given
4) $\overline{ED} \cong \overline{CD}$	4) A midpt. ∴'s a seg. into 2 ≅ seg.
5) $\Delta AED \cong \Delta BCD$	5) ASA ≅ ASA

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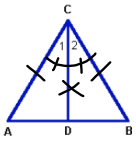
4) Given: ΔABC with $\overline{AC} \cong \overline{BC}$, $\overline{CD}$ bisects $\angle ACB$.

Prove: $\Delta ACD \cong \Delta BCD$



Statements	Reasons
1) ΔABC with $\overline{AC} \cong \overline{BC}$	1) Given
2) $\overline{CD}$ bisects $\angle ACB$	2) Given
3) $\angle 1 \cong \angle 2$	3) An ∡ bisector ∴'s an ∢ into 2 ≅ ∢'s.
4) $\overline{CD} \cong \overline{CD}$	4) Reflexive Property.
5) $\Delta ACD \cong \Delta BCD$	5) SAS ≅ SAS

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Castle Learning Assignment Due Thurs 11/14

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