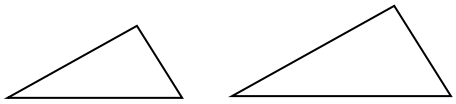
Geometry
Similar Triangles (Theorems)

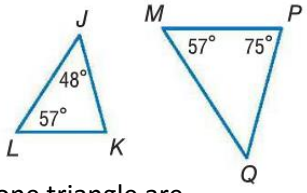
Name _____
Date _____ Period _____

There are 3 ways you can prove triangles similar WITHOUT having to use all sides and angles.

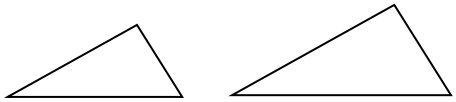
Angle- Angle Similarity (AA~) – If two angles of one triangle are _____ to two corresponding angles of another triangle, then the triangles are similar.



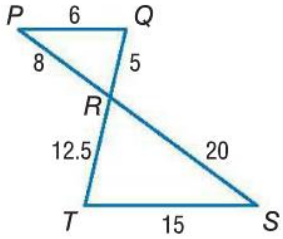
Determine if the triangles are similar by AA.



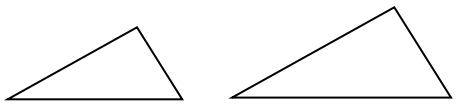
Side- Side- Side Similarity (SSS~) – If the three sides of one triangle are _____ to the three corresponding sides of another triangle, then the triangles are similar.



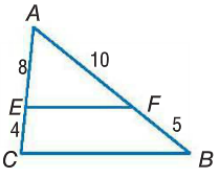
Determine if the triangles are similar by SSS.



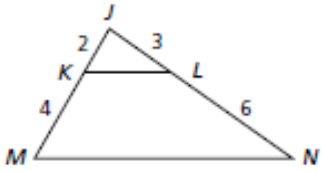
Side-Angle- Side Similarity (SAS~) – If two sides of one triangle are _____ to two corresponding sides of another triangle and their included angles are _____, then the triangles are similar.



Determine if the triangles are similar by SAS.

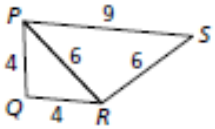


EXAMPLES: Determine if the triangles are similar. If so, tell why and write the similarity statement and similarity ratio.



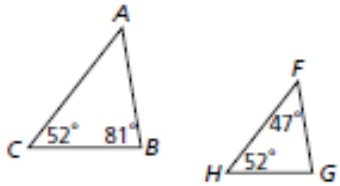
Similar : Y or N Why:_____

Similarity Statement :_____~_____



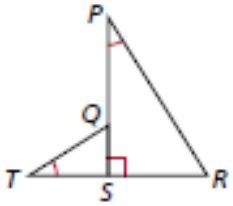
Similar : Y or N Why:_____

Similarity Statement :_____~_____



Similar : Y or N Why:_____

Similarity Statement :_____~_____

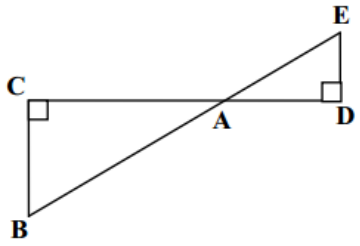


Similar : Y or N Why:_____

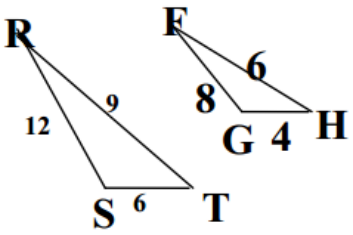
Similarity Statement :_____~_____

In problems 1-8, determine whether the two triangles shown are similar.
If so, state why (AA~, SSS~, SAS~) and complete the similarity statement.

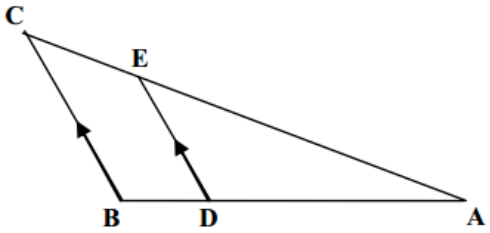
1. ΔABC~Δ_____ by _____



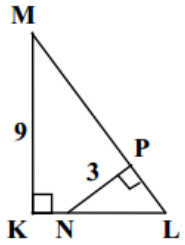
2. ΔRST~Δ_____ by _____



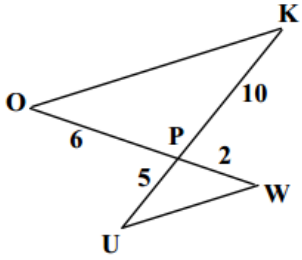
3. ΔABC~Δ_____ by _____



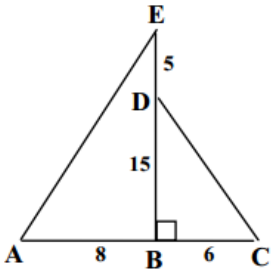
4. ΔKLM~Δ_____ by _____



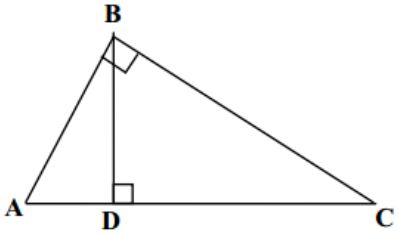
5. ΔOKP~Δ_____ by _____



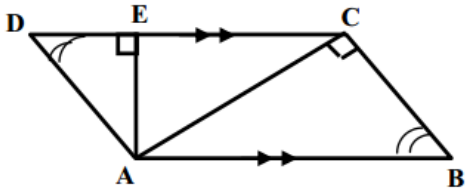
6. ΔABE~Δ_____ by _____



7. ΔABC~Δ_____ ~Δ_____by _____

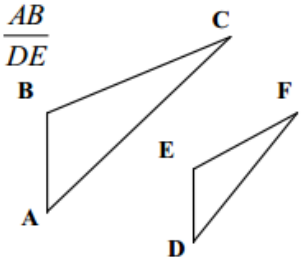


8. ΔABC~Δ_____ by _____

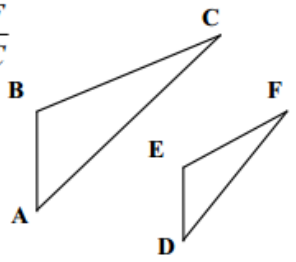


State whether you can conclude that ΔABC~ΔDEF from the given information.

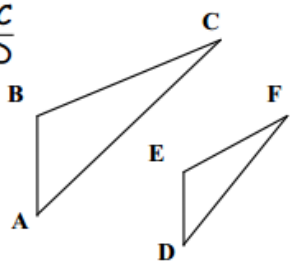
9. $\angle A \cong \angle D$, $\frac{AC}{DF} = \frac{AB}{DE}$



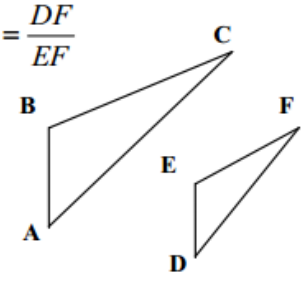
10. $\frac{DF}{AC} = \frac{DE}{AB} = \frac{EF}{BC}$



11. $\angle B \cong \angle E$, $\frac{EF}{BC} = \frac{AC}{FD}$



12. $\angle C \cong \angle F$, $\frac{AC}{BC} = \frac{DF}{EF}$



13. Given: ΔABC and ΔDEF, $\angle B \cong \angle E$, AB = 6. DE = 2. BC = 4. Find the length of EF for which ΔABC~ΔDEF.

14. Given: ΔRST and ΔUVW, RS = 6, UV = 8. ST = 9. RT = 12. Find lengths of VW and UW for which ΔRST~ΔUVW

15. Given: ΔABC and ΔDEF. If $\angle B \cong \angle E$, state the proportion that must be true if ΔABC~ΔDEF by SAS Similarity.

16. Given: ΔUAZ and ΔRBN. If $\angle U \cong \angle R$, state the proportion that must be true if ΔUAZ~ΔRBN by SAS Similarity.