Name: _____

Determining Connecting Parts

To identify connecting angles, look for the letter that the two sides share.

$\overline{AB}$ & $\overline{AC}$	$\overline{AB}$ & $\overline{BC}$	$\overline{DE}$ & $\overline{EF}$
are connected by $\angle A$, because *it's the letter that's in both of them.*	are connected by $\angle B$.	are connected by $\angle E$.

Identify the angle that connects each side pair.

1. $\overline{BC}$ & $\overline{AC}$	2. $\overline{CD}$ & $\overline{BD}$	3. $\overline{EF}$ & $\overline{FG}$	4. $\overline{HI}$ & $\overline{JI}$
5. $\overline{KL}$ & $\overline{LM}$	6. $\overline{NP}$ & $\overline{RP}$	7. $\overline{ST}$ & $\overline{SU}$	8. $\overline{VX}$ & $\overline{XY}$

Side fractions are connected by a matching angle pair.

$\frac{AB}{DE} = \frac{BC}{EF}$	$\frac{CD}{EF} = \frac{BC}{GE}$	$\frac{KL}{NP} = \frac{LM}{PR}$
are connected by $\angle B$ & $\angle E$, because the top shares B & the bottom, E.	are connected by $\angle C$ & $\angle E$.	are connected by $\angle L$ & $\angle P$.

Identify the angles that connect each side fraction pair.

9. $\frac{QR}{TV} = \frac{QS}{TW}$	10. $\frac{AB}{DE} = \frac{AC}{DF}$	11. $\frac{FG}{JK} = \frac{GH}{KL}$	12. $\frac{MN}{QR} = \frac{MP}{QS}$
13. $\frac{TV}{XY} = \frac{VW}{YZ}$	14. $\frac{AB}{EF} = \frac{BC}{FG}$	15. $\frac{HI}{KL} = \frac{IK}{KM}$	16. $\frac{NP}{RS} = \frac{PQ}{ST}$

To identify connecting sides, put the two angle letters together.

$\angle A$ & $\angle B$	$\angle B$ & $\angle C$	$\angle D$ & $\angle E$
are connected by $\overline{AB}$.	are connected by $\overline{BC}$.	are connected by $\overline{DE}$.

Identify the sides that connect each angle pair.

17. $\angle C$ & $\angle D$	18. $\angle E$ & $\angle F$	19. $\angle F$ & $\angle G$	20. $\angle G$ & $\angle H$
21. $\angle I$ & $\angle J$	22. $\angle K$ & $\angle L$	23. $\angle M$ & $\angle N$	24. $\angle P$ & $\angle Q$

Answers: 1. $\angle C$; 2. $\angle D$; 3. $\angle F$; 4. $\angle I$; 5. ∠L; 6.$\angle P$; 7. $\angle S$; 8. $\angle X$; 9. ∠Q & $\angle T$; 10. $\angle A$ & $\angle D$; 11. $\angle G$ & $\angle K$; 12. $\angle M$ & $\angle Q$; 13. $\angle V$ & $\angle Y$; 14. $\angle B$ & $\angle F$; 15. $\angle I$ & $\angle K$; 16. $\angle P$ & $\angle S$; 17. $\overline{CD}$; 18. $\overline{EF}$; 19. $\overline{FG}$; 20. $\overline{GH}$; 21. $\overline{IJ}$; 22. $\overline{KL}$; 23. $\overline{MN}$; 24. $\overline{PQ}$

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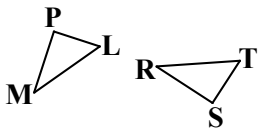
If you want to identify whether or not triangles are similar (or congruent), your first task is making sure the parts you're comparing match each other **in the correct order**. That is why identifying connecting parts is so important.

SAS only works if the angle connects the sides,
just like **ASA** only works if the side connects the angles.

Alternatively, **AAS** needs the side NOT to connect.

Similar Properties	Congruent Properties
Example of SSS: $\frac{AB}{DE} = \frac{BC}{EF}$ & $\frac{BC}{EF} = \frac{AC}{DF}$ $S\uparrow$ $\uparrow S \leftarrow same \rightarrow S\uparrow$ $\uparrow S$ **Example of SAS:** $\frac{AB}{DE} = \frac{BC}{EF}$ & $\angle B \cong \angle E$ $S\uparrow$ $\uparrow S$ $\uparrow$ *connecting A* **Example of AA**: $\angle P \cong \angle S$ & $\angle L \cong \angle T$ $A\uparrow$ $\uparrow A$	**Example of SSS:** $\overline{AB} \cong \overline{DE}$ $\overline{BC} \cong \overline{EF}$ & $\overline{AC} \cong \overline{DF}$ $\uparrow S$ $S\uparrow$ $S\uparrow$ **Example of SAS:** $\overline{AB} \cong \overline{DE}$ $\overline{BC} \cong \overline{EF}$ & $\angle B \cong \angle E$ $S\uparrow$ $S\uparrow$ $\uparrow$ *connecting A* **Example of ASA:** $\angle A \cong \angle D$ $\angle B \cong \angle E$ & $\overline{AB} \cong \overline{DE}$ $A\uparrow$ $A\uparrow$ $\uparrow$ *connecting S* **Example of AAS:** $\angle A \cong \angle D$ $\angle B \cong \angle E$ & $\overline{BC} \cong \overline{EF}$ $A\uparrow$ $A\uparrow$ $\uparrow$ ~~*connecting*~~ *S* **Example of HL:** $\overline{AB} \cong \overline{DE}$ $\overline{BC} \cong \overline{EF}$ $m\angle A = 90^\circ$ & $m\angle D = 90^\circ$



For #25–30, identify which property, <u>if any</u>, could prove that the triangles are SIMILAR**.**
(Remember: for similarity, sides use fractions, and the properties are SSS, SAS or AA)

25. Can you prove they're similar? If they're similar, by what property (SSS, SAS, AA)? $\frac{MP}{RS} = \frac{LP}{TS}$ & $\angle P \cong \angle S$	26. Can you prove they're similar? If they're similar, by what property (SSS, SAS, AA)? $\frac{MP}{RS} = \frac{LP}{TS}$ & $\frac{LP}{TS} = \frac{ML}{RT}$	27. Can you prove they're similar? If they're similar, by what property (SSS, SAS, AA)? $\frac{LP}{TS} = \frac{ML}{RT}$ & $\angle L \cong \angle T$
28. Can you prove they're similar? If they're similar, by what property (SSS, SAS, AA)? $\frac{MP}{RS} = \frac{ML}{RT}$ & $\angle P \cong \angle S$	29. Can you prove they're similar? If they're similar, by what property (SSS, SAS, AA)? $\angle P \cong \angle S$ & $\angle L \cong \angle T$	30. Can you prove they're similar? If they're similar, by what property (SSS, SAS, AA)? $\frac{MP}{RS} = \frac{LP}{TS}$

For #31–36, identify which property, <u>if any</u>, could prove that the triangles are CONGRUENT**.**
(Remember: for congruence, sides don't use fractions, and the properties are SSS, SAS, ASA, AAS or HL)

31. Can you prove they're congruent? If they're congruent, by what property (SSS, SAS, ASA, AAS, HL)? $\overline{MP} \cong \overline{RS}$ $\overline{LP} \cong \overline{TS}$ & $\angle M \cong \angle R$	32. Can you prove they're congruent? If they're congruent, by what property (SSS, SAS, ASA, AAS, HL)? $\overline{LP} \cong \overline{TS}$ $\angle P \cong \angle S$ & $\angle L \cong \angle T$	33. Can you prove they're congruent? If they're congruent, by what property (SSS, SAS, ASA, AAS, HL)? $\overline{MP} \cong \overline{RS}$ $\overline{LP} \cong \overline{TS}$ & $\angle P \cong \angle S$
34. Can you prove they're congruent? If they're congruent, by what property (SSS, SAS, ASA, AAS, HL)? $\overline{ML} \cong \overline{RT}$ $\angle P \cong \angle S$ & $\angle L \cong \angle T$	35. Can you prove they're congruent? If they're congruent, by what property (SSS, SAS, ASA, AAS, HL)? $\overline{MP} \cong \overline{RS}$ $\overline{LP} \cong \overline{TS}$ & $\overline{ML} \cong \overline{RT}$	36. Can you prove they're congruent? If they're congruent, by what property (SSS, SAS, ASA, AAS, HL)? $\overline{LP} \cong \overline{TS}$ $\overline{ML} \cong \overline{RT}$ $m\angle P = 90^\circ$ & $m\angle S = 90^\circ$