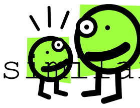
8.3 – Methods of proving triangles similar



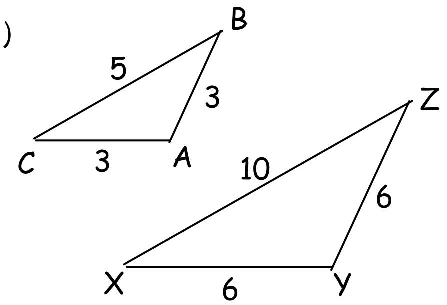
Ways to prove triangles congruent		Ways to prove triangles similar
SSS AAS SAS HL ASA	$\cong$ vs. $\sim$	SAS~ SSS~ AA~

Think about it: Always, Sometimes, Never

1. If two triangles are similar, then they are congruent. S
2. If two triangles are congruent, then they are similar. A
3. If two triangles are obtuse then they are similar S
4. If two triangles are equilateral, then they are similar. A
5. Rectangles are similar S

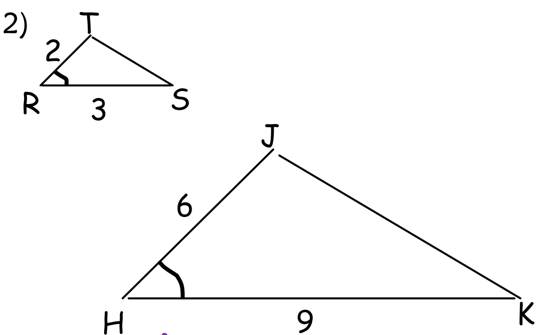
1-6) Decide if the information given in each diagram is enough to prove that the two triangles are similar. If there is enough information, state <u>why</u> the triangles are similar and state <u>which</u> two triangles are similar.

1)



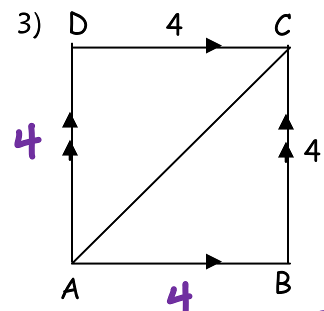
yes! SSS~

2)



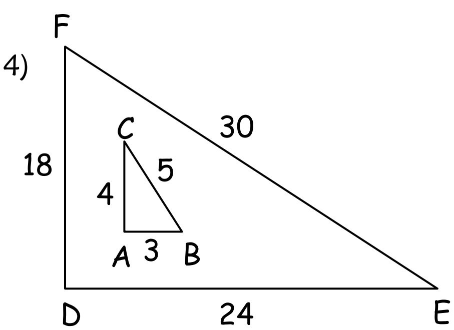
yes! SAS~

3)



yes! SSS~

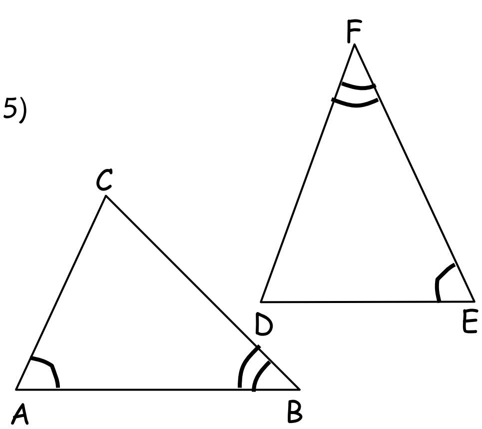
4)



$\frac{3}{18}=\frac{1}{6}$ $\frac{4}{24}=\frac{1}{6}$ $\frac{5}{30}=\frac{1}{6}$

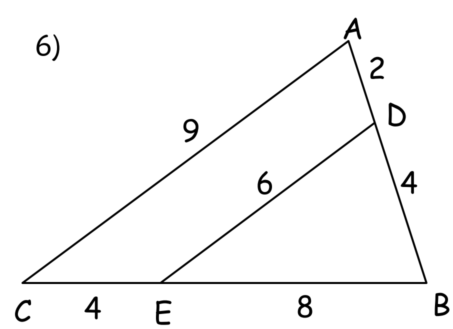
yes! SSS~

5)



yes! AA~

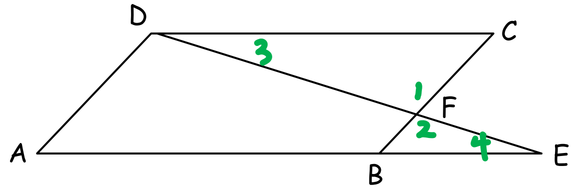
6)



$\frac{8}{12}=\frac{2}{3}$ $\frac{4}{6}=\frac{2}{3}$

yes! SAS~

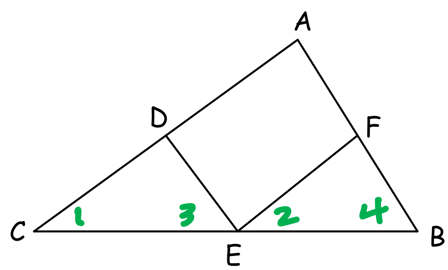
1. Given: ABCD is a parallelogram
Prove: $\triangle BFE \sim \triangle CFD$



Statements	Reasons
1. ABCD is a ▱	1. Given
2. $\measuredangle 1 \cong \measuredangle 2$	2. V.A. are $\cong$
3. $\overline{DC} \parallel \overline{AB}$	3. If ▱ → opp. sides $\parallel$
4. $\measuredangle 3 \cong \measuredangle 4$	4. If $\parallel$ lines → alt. int. $\measuredangle$'s $\cong$
5. $\triangle BFE \sim \triangle CFD$	5. AA~

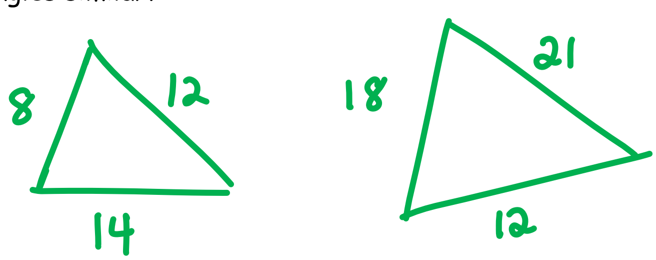
2. Given: $\overline{DE} \parallel \overline{AB}$
$\overline{EF} \parallel \overline{AC}$

Prove: $\triangle CDE \sim \triangle EFB$



Statements	Reasons
1. $\overline{DE} \parallel \overline{AB}$	1. Given
2. $\measuredangle 3 \cong \measuredangle 4$	2. If $\parallel$ lines → corr. $\measuredangle$s $\cong$
3. $\overline{EF} \parallel \overline{AC}$	3. Given
4. $\measuredangle 1 \cong \measuredangle 2$	4. Same as 2
5. $\triangle CDE \sim \triangle EFB$	5. AA~

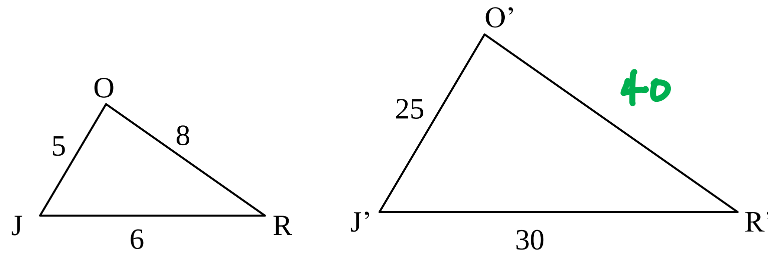
3. The sides of one triangle are 8, 14, and 12, and the sides of another triangle are 18, 21, and 12. Why are these triangles similar?



$\frac{8}{12} = \frac{2}{3}$ $\frac{12}{18} = \frac{2}{3}$ $\frac{14}{21} = \frac{2}{3}$

SSS~

4. Given: $\triangle J'O'R'$ is not a dilation of $\triangle JOR$
Prove: O'R' does not equal 40



E: $O'R' \neq 40$ OR $O'R' = 40$

A: $O'R' = 40$

T: $\frac{5}{25} = \frac{1}{5}$ $\frac{8}{40} = \frac{1}{5}$ $\frac{6}{30} = \frac{1}{5}$

and $\triangle J'O'R \sim \triangle JOR$ by SSS~ (a dilation by a scale of 5) which contradicts our given ∴ our assumption is false and $O'R \neq 40$