DO NOW:

a) Two triangles are similar and the ratio of each pair of corresponding sides is 2:1. Which statement regarding the two triangles is *not* true?

✓ 1) Their areas have a ratio of 4:1.
✓ 2) Their altitudes have a ratio of 2:1.
✓ 3) Their perimeters have a ratio of 2:1.
4) Their corresponding angles have a ratio of 2:1.

Ratio of Sides = Ratio of Perimeters

(Ratio of Sides)^2 = Ratio of areas

b) Given $\Delta ABC \sim \Delta DEF$ such that $\frac{AB}{DE} = \frac{3}{2}$. Which statement is *not* true?

✓ 1) $\frac{BC}{EF} = \frac{3}{2}$ 2) $\frac{m\angle A}{m\angle D} = \frac{3}{2}$

✓ 3) $\frac{\text{Area of } \Delta ABC}{\text{Area of } \Delta DEF} = \frac{9}{4}$ ✓ 4) $\frac{\text{Perimeter of } \Delta ABC}{\text{Perimeter of } \Delta DEF} = \frac{3}{2}$

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How can we prove that two triangles are SIMILAR?

1. AA 2. SSS 3. SAS

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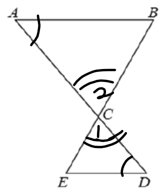
Let's use the AA similarity theorem:

1) Given: $\angle BAC \cong \angle EDC$

Prove: $\Delta ABC \sim \Delta DEC$



Statements	Reasons
1) ∡BAC ≅ ∡EDC	1) Given
2) ∡2 ≅ ∡1	2) Vertical ∡'s are ≅.
3) ΔABC ~ ΔDEC	3) AA ~

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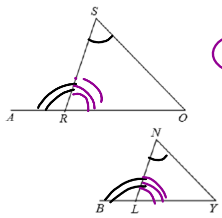
2) Given: $\angle RSO \cong \angle LNY$, $\angle ARS \cong \angle BLN$

Prove: $\Delta ROS \sim \Delta LYN$



Statements	Reasons
1) $\angle RSO \cong \angle LNY$, $\angle ARS \cong \angle BLN$	1) Given
2) ∡SRA & ∡SRO are suppl. ∡NLB & ∡NLY are suppl.	2) linear pairs are suppl.
3) ∡SRO ≅ ∡NLY	3) Suppl. of ≅ ∡'s are ≅
4) ΔROS ~ ΔLYN	4) AA ~

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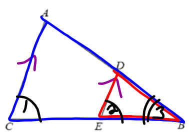
3) Given: $\overline{AC} \parallel \overline{DE}$

Prove: $\Delta ABC \sim \Delta DBE$



Statements	Reasons
1) AC ∥ DE	1) Given
2) ∡1 ≅ ∡2	2) If ∥ →
3) ∡3 ≅ ∡3	3) Reflexive Property
4) ΔABC ~ ΔDBE	4) AA ~

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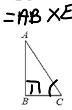
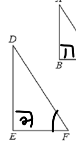
4) Given: $\angle BCA \cong \angle EFD$, $\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EF}$

Prove: $\frac{DE}{AB} = \frac{EF}{BC}$

*DE×BC = AB×EF





Statements	Reasons
1) $\angle BCA \cong \angle EFD$, $\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EF}$	1) Given
2) ∡1 & ∡2 are Rt ∡'s	2) ⊥ lines form Rt ∡'s
3) ∡1 ≅ ∡2	3) All rt ∡'s are ≅
4) ΔABC ~ ΔDEF	4) AA ~
5) $\frac{DE}{AB} = \frac{EF}{BC}$	5) Corresponding Sides of ~ Δ's are in proportion
6) DE×BC = AB×EF	6) In a proportion the product of the means = the product of the extremes

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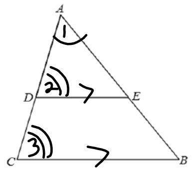
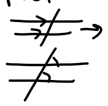
6) Given: $\overline{DE} \parallel \overline{CB}$

Prove: $\Delta CAB \sim \Delta DAE$



Statements	Reasons
① $\overline{DE} \parallel \overline{CB}$	① Given
② $\angle 1 \cong \angle 1$	② Reflexive prop.
③ $\angle 2 \cong \angle 3$	③ if  →
④ $\Delta CAB \sim \Delta DAE$	④ AA ~

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