Aim: How can we prove triangles are similar?

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.

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

(1) $\frac{BC}{EF} = \frac{3}{2}$

(3) $\frac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF} = \frac{9}{4}$

(2) $\frac{m\angle A}{m\angle D} = \frac{3}{2}$

(4) $\frac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle DEF} = \frac{3}{2}$

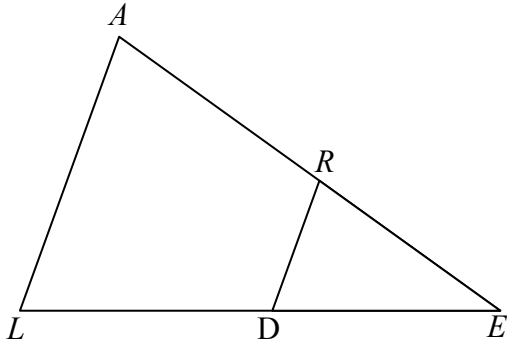**How can we prove triangles are similar?**

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

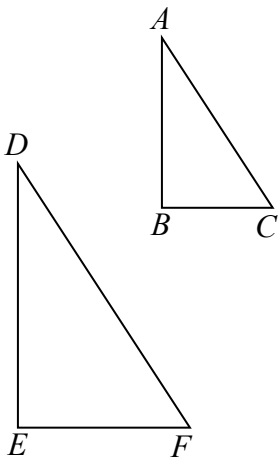Prove: $\triangle ABC \sim \triangle DEC$
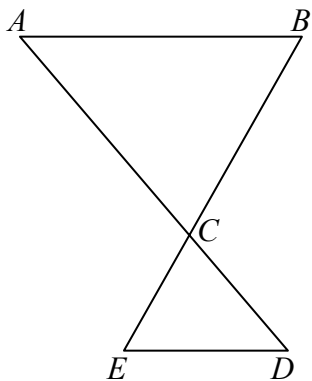
2) Given: $\overline{LA} \parallel \overline{DR}$

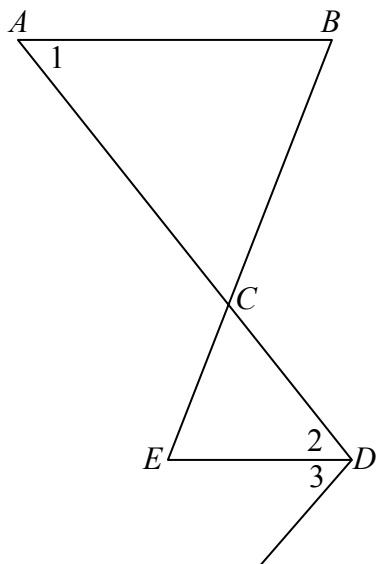Prove: $\triangle LEA \sim \triangle DER$

3) Given: $\angle BCA \cong \angle EFD$,

$\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EF}$
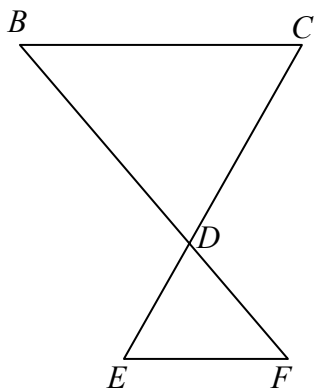
Prove: $\dfrac{DE}{AB} = \dfrac{EF}{BC}$

4) Given: $\angle 1 \cong \angle 3$, $\angle 2 \cong \angle 3$

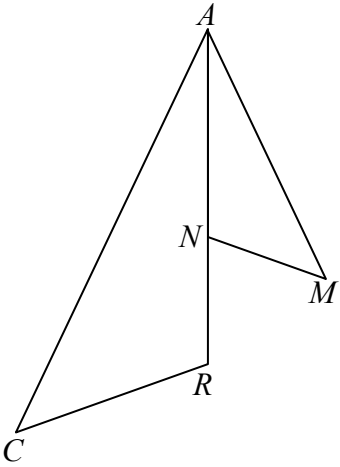Prove: $\dfrac{AC}{CD} = \dfrac{AB}{ED}$

5) Given: $\angle CBD \cong \angle EFD$

Prove: $\triangle BCD \sim \triangle FED$

6) Given: $\angle ACR \cong \angle AMN$,

$\overline{RA}$ bisects $\angle CAM$.

Prove: $\triangle CAR \sim \triangle MAN$

A

N

M

R

C

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

Prove: $\triangle CAB \sim \triangle DAE$

A

D   E

C   B