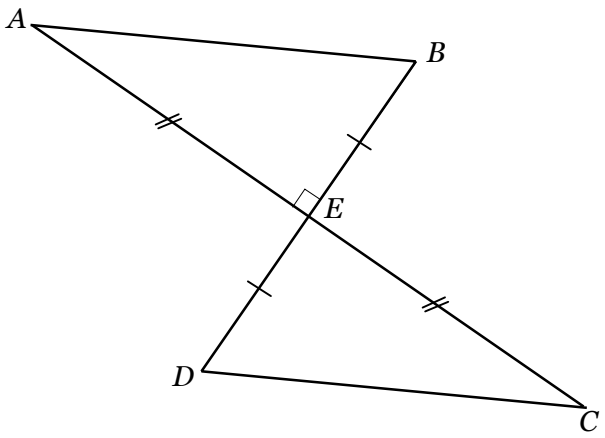
Geometry check-ups: Sample answers

http://topdrawer.aamt.edu.au/Geometric-reasoning/Misunderstandings/Similar-or-congruent/What-is-wrong-with-this-proof

1. In the diagram below, $AE = EC$ and $BE = DE$. $\angle AEB = 90°$.



(a) Prove that $\Delta ABE \equiv \Delta CDE$.
(b) Hence or otherwise prove that $AB \parallel DC$.

$\therefore \triangle ABE \equiv \triangle CDE$ (RHS)

b) $AB = DC$ (matching sides of congruent $\triangle$'s)

$\therefore AB \parallel DC$

a) In $\triangle ABE$ and $\triangle DEC$

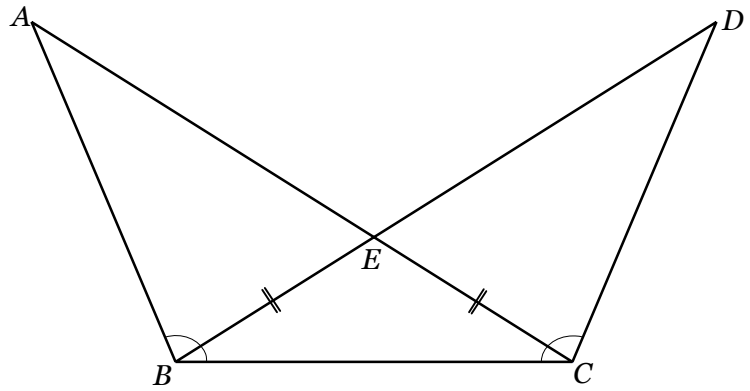
1 $AE = EC$ (given)

2. $BE = ED$ (given)

3 $\angle AEB = \angle DEC$ (vertically opposite)

$= 90°$ (given)

2. In the diagram below, $\angle ABC = \angle DCB$ and $BE = EC$.



(a) Prove that ΔABC is congruent to ΔDBC.
(b) Hence prove that AE = ED.

a) $\angle ABC = \angle DBC$ (given)

$BE = EC$ (given)

BC is common

$\therefore \triangle ABC \equiv \triangle DBC$ (SAS)

b) AE = DE (matching sides of congruents $\triangle$'s)