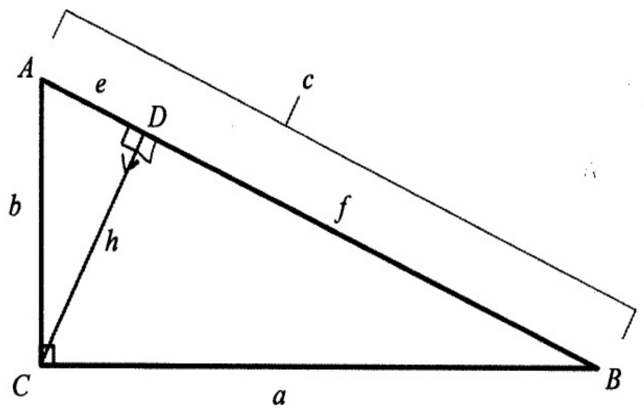

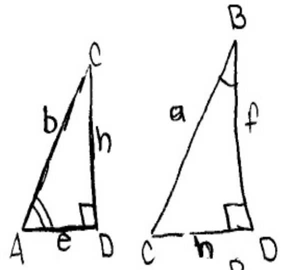

1. Explain why $\Delta ACD \sim \Delta CBD$.

ΔACD, ΔCBD, and ΔABC have a right angle ($\angle ADC \cong \angle CDB \cong \angle ACB$). ΔACD and ΔABC share the angle A. $\Delta ACD \sim \Delta ABC$ by the AA postulate of similarity. ΔCBD and ΔABC share angle B, therefore similar by the AA post. of simularity. Because both ΔACD and ΔCBD are similar to ΔABC, they are also similar to each other. $\Delta ACD \sim \Delta CBD$.

2. Prove that the length of the altitude of the hypotenuse of a right triangle is the geometric mean of the lenghts of the two segments of the hypotenuse ($h^2 = ef$).

$\frac{e}{h} = \frac{h}{f}$

$h^2 = ef$

$\left(\frac{e}{h} = \frac{h}{f}\right)$ if you solve for h, you can turn this proportion into $h^2=ef$ by cross multiplying.