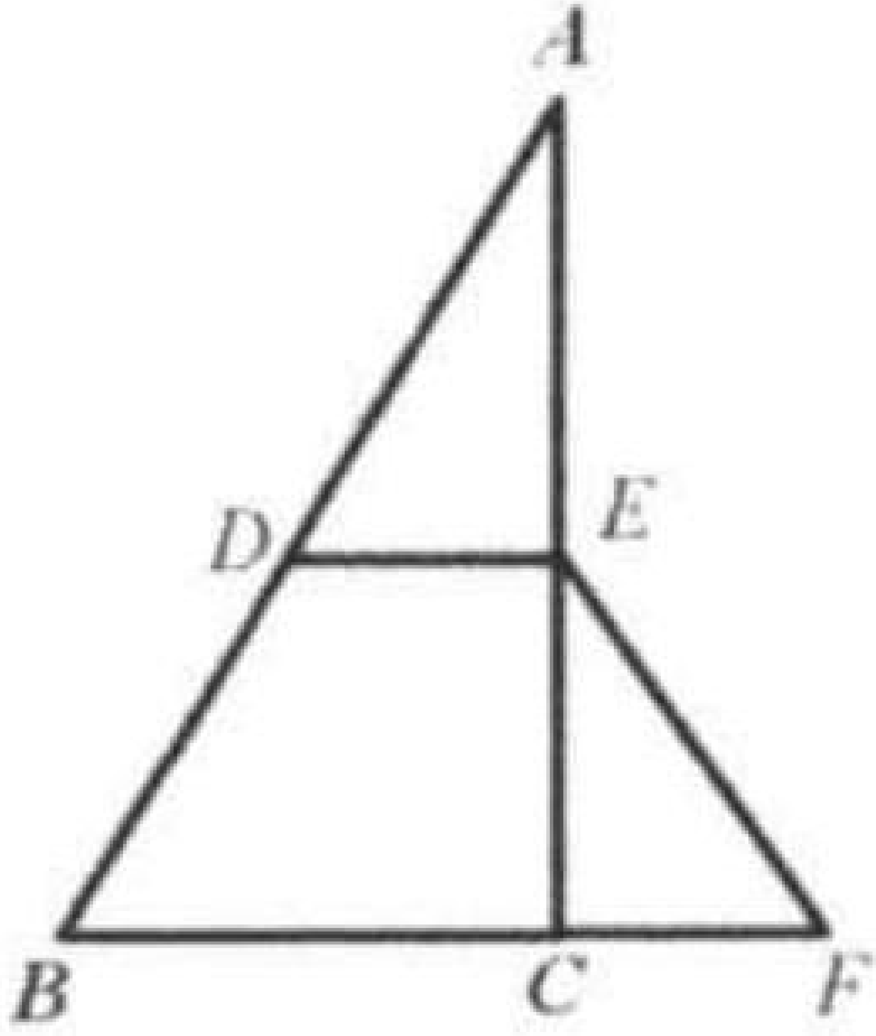
# Example 9

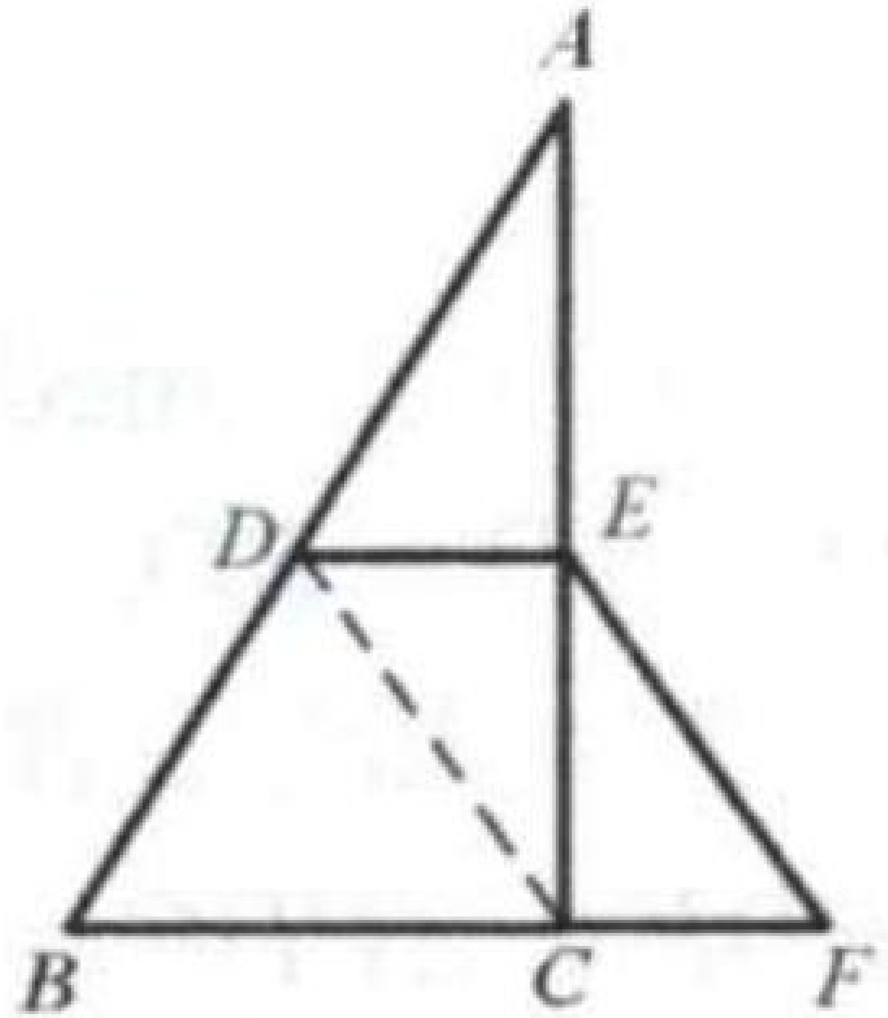
$\triangle ABC$ is a right triangle with $\angle ACB = 90°$. Points $D$ and $E$ are the midpoints on sides $AB$ and $AC$, respectively. Extend $BC$ to $F$ such that $CF = \frac{1}{2}BC$. Connect $CF$. Show that $\angle B = \angle F$.



Solution: Draw $DC$, the median of triangle $ABC$. Since $DC$ is the median, by Theorem 1.3, $DC = BD$.

Since $AD = \frac{1}{2}FC, AD = DN$. So that $\angle B = \angle DCB$.

Since points $D$ and $E$ are the midpoints on sides $AB$ and $AC$, $DE = \frac{1}{2}BC = CF$ and $DE//BC$. Thus $DEFC$ is a




parallelogram. So $DC//EF$ and $\angle DCB = \angle F$.

Since $\angle B = \angle DCB, \angle B = \angle F$.