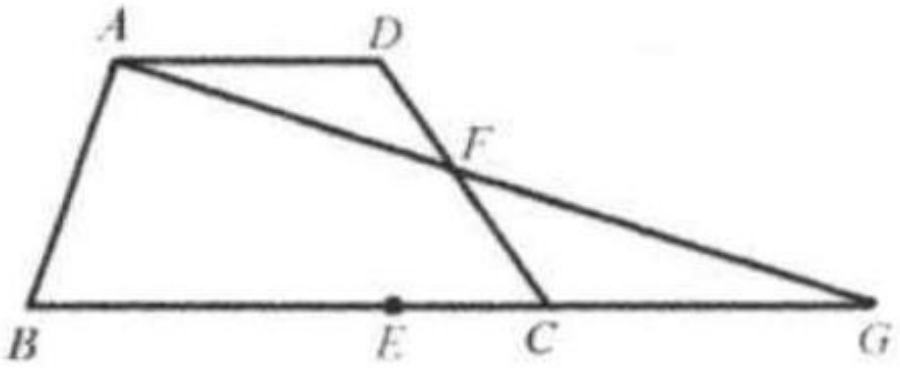
Problem

$ABCD$ is a quadrilateral with $AD//BC$. Draw $AG \perp AB$ to meet DC at F and the extension of BC at G. Points E is the midpoint of sides BG. Find the length AE if $AD = 2.7$, $AF = 4$, and $AB = 6$.



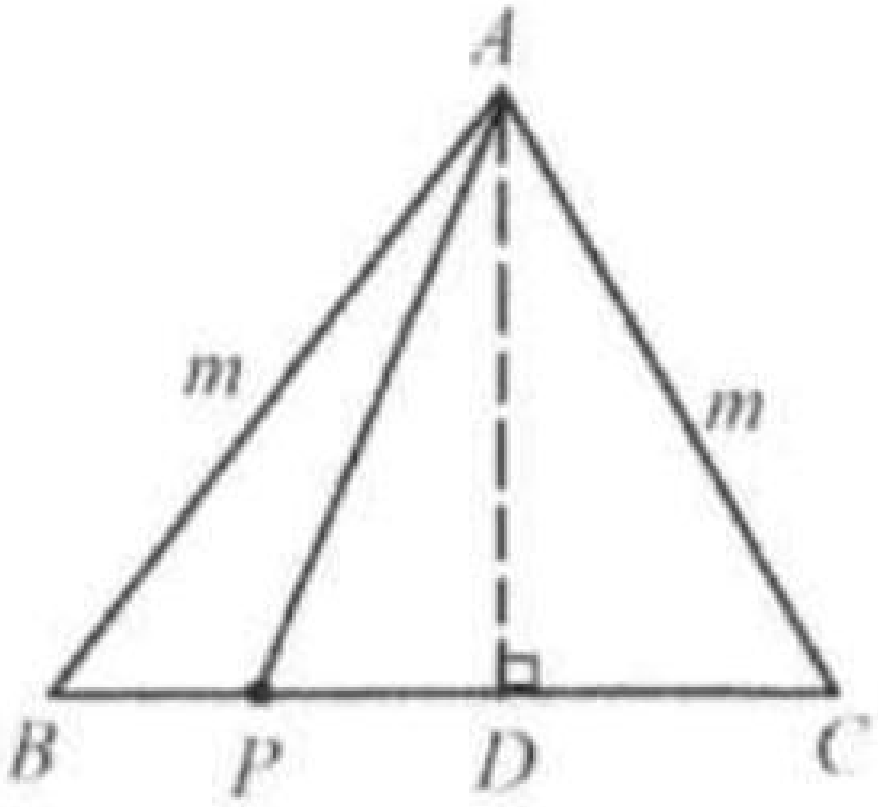
Solution

m^2.

Draw the perpendicular line AD and $AD \perp BC$ at D.

Since $AB = AC$, and $AD \perp BC, BD = CD$.

$$PA^2 + PB \times PC$$
$$= PA^2 + (BD - PD) \times (CD + PD)$$
$$= PA^2 + (CD - PD) \times (CD + PD)$$



$$= PA^2 + CD^2 - PD^2$$
$$= PA^2 - PD^2 + CD^2$$
$$= AD^2 + CD^2 = m^2.$$