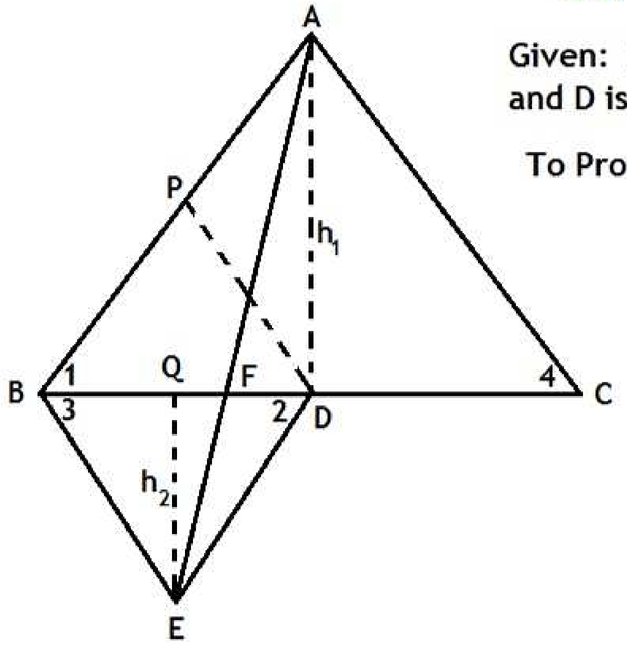

Solution by Dev Anoop (Bathinda)

Given: In figure Triangles ABC and BDE are equilateral and D is the midpoint of BC.

To Prove: ar(BDE) = 1/4 ar(ABC), ar(ABC) = 2ar(BEC),
ar(BDE) = 1/2ar(BAE), ar(BFE) = ar(AFD),
ar(BFE) = 2ar(FED), ar(FED) = 1/8 ar(AFC)

let $BE = ED = BD = x$ units

$BC = 2BD$

$= 2x$

$AB = AC = BC = 2x$

(1) $\dfrac{ar(\triangle BDE)}{ar(\triangle ABC)} = \dfrac{\cancel{\sqrt{3}/4}\, s_1^2}{\cancel{\sqrt{3}/4}\, s_2^2}$

$= \dfrac{x^2}{(2x)^2}$

$= \dfrac{x^2}{4x^2}$

$= \dfrac{1}{4}$

$\Rightarrow ar(\triangle BDE) = \dfrac{1}{4} ar(\triangle ABC)$

Solution by Dev Anoop (Bathinda)