(iv) $ar(\triangle BDE) = ar(\triangle ADE)$ [$\triangle$s on same base and between same ∥ lines]

$ar(\triangle BDE) - ar(\triangle DEF) = ar(\triangle ADE) - ar(\triangle DEF)$

$\Rightarrow ar(\triangle BFE) = ar(\triangle AFD)$

(v) $ar(\triangle BED) = \frac{1}{4} ar(\triangle ABC)$ (Proved)

$\cancel{\frac{1}{2}} \times BD \times h_2 = \frac{1}{4} \times \cancel{\frac{1}{2}} \times BC \times AD$

[In an equilateral $\triangle$ altitude is also median $\therefore AD \perp BC$]

$\cancel{x} \times h_2 = \frac{1}{\cancel{4}_{2}} \times \cancel{2}\cancel{x} \times h_1$

$h_2 = \frac{1}{2} h_1 \quad \ldots (1)$

$ar(\triangle BFE) = ar(\triangle AFD)$

$\cancel{\frac{1}{2}} \times BF \times h_2 = \cancel{\frac{1}{2}} \times FD \times h_1$

$BF \times \frac{1}{2} \cancel{h_1} = FD \times \cancel{h_1}$

$BF = 2FD$

$\frac{ar(\triangle BFE)}{ar(\triangle FED)} = \frac{\cancel{\frac{1}{2}} \times BF \times \cancel{h_2}}{\cancel{\frac{1}{2}} \times FD \times \cancel{h_2}}$ $= \frac{2\cancel{FD}}{\cancel{FD}}$ ($\because BF = 2FD$)

$ar(\triangle BFE) = 2\, ar\, FED)$