4) a) In Δ EAB we have:
E is located on the perpendicular bisector of [AB] given
So, E is equidistant from A & B
EA = EB.
So, Δ EAB is isosceles at E.
But, $\hat{A}B = 60°$ (side of equilateral Δ).
~~H~~ H & E are collinear.
So, $E\hat{A}B = 60°$.
Thus, Δ EAB is equilateral (isosceles + 60°)

b) Since EAB is an equilateral Δ (proved)
So, any height issued from any of the 3 vertices is also the median
~~Then~~, Since, ~~BEA~~ $H\hat{B}A = 90°$ (proved)
[HB] is the height issued from B to [EA].
Then, ~~E~~ [HB] is also the median of [EA].
So, H is the midpoint of [EA].

c) In semi-equilateral Δ EOA at O (90° - 60°).
[EO] side facing 60° = side facing 30° $\times \sqrt{3}$
$EO = AO \times \sqrt{3}$
$EO = 6\sqrt{3}$ cm

Then, $OE = HB = 6\sqrt{3}$