$$OH = \frac{a\sqrt{3}}{3} \text{ cm}$$

4) a- * In quad. BFEA we have:
(d) // (d₁) are parallel (given)
A & E belong to (d) } (given)
B & F belong to (d₁) }
then, [AE] and [BF] are parallel
O $\hat{A}E = 90^\circ$ (proved)
O belongs to [AB] (proved)
then, $B\hat{A}E = 90^\circ$
SO, BFEA is right trapezoid.

* In right trapezoid BFEA we have:
O is the midpt. of [BA] (proved)
M is the midpt. of [FC] (given)
then, (OM) // (AE) are parallel (midsegment theorem)

b- In Δ's HOM & HAE we have:
(OM) // (AE) (proved)
O & M belong to [HA] & [HE] respectively (given)
SO, apply Thales' property: Any st. line parallel to a side of a Δ, it divides the sides of the Δ proportionally.

Ratios: $\frac{HO}{HA}$ ① $= \frac{HM}{HE}$ ② $= \frac{OM}{AE}$ ③

From ratios ② & ③:
$\frac{HM}{HE} = \frac{OM}{AE}$

by permuting extremes we get:
$\frac{AE}{HE} = \frac{OM}{HM}$