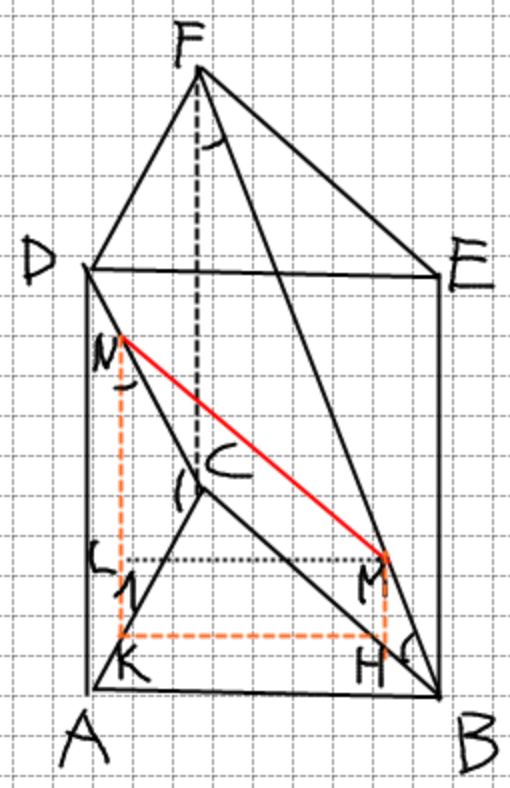
$BF = \frac{1}{4} BM$

$MN = ?$

$EF = BE = DF = DE = 1$




$BF^2 = EF^2 + EB^2$

$BF = \sqrt{1+1} = \sqrt{2}$

$BF = \frac{1}{4} BM \Rightarrow BM = \frac{\sqrt{2}}{4}$

$FM = \sqrt{2} - \frac{\sqrt{2}}{4} = \frac{3}{4}\sqrt{2}$

$\hat{BHM}$ retto e isoscele $\Rightarrow BH = HM$

$BH = \frac{BM}{\sqrt{2}} = \frac{\sqrt{2}}{4} \cdot \frac{1}{\sqrt{2}} = \frac{1}{4}$

$\overline{BH}^2 + \overline{HM}^2 = BM^2$

$2\overline{BH}^2 = BM^2 \quad BH = \frac{BM}{\sqrt{2}}$

$HM = \frac{1}{4} \Rightarrow LK = \frac{1}{4}$

$CH = CB - BH = 1 - \frac{1}{4} = \frac{3}{4}$

$CH = CK = HK = LM = \frac{3}{4}$

$KC = KN$ perché il triangolo $KCN$ è un triangolo isoscele

$NL = NK - LK = \frac{3}{4} - \frac{1}{4} = \frac{1}{2}$

$NM = \sqrt{NL^2 + LM^2} = \sqrt{\frac{1}{4} + \frac{9}{16}} = \sqrt{\frac{13}{16}} = \frac{\sqrt{13}}{4}$

b) $BM = x$

$BF = \sqrt{2}$

$FM = BF - BM = \sqrt{2} - x$

$0 \leq x$