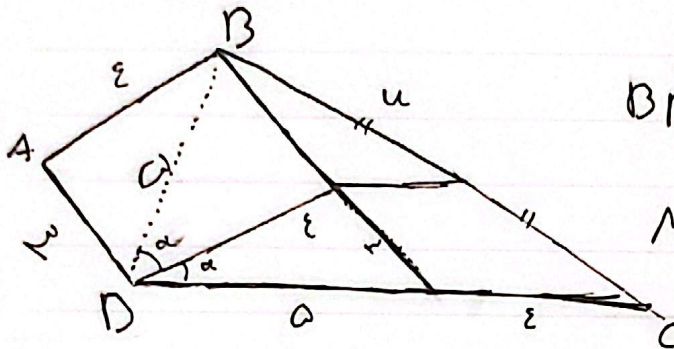


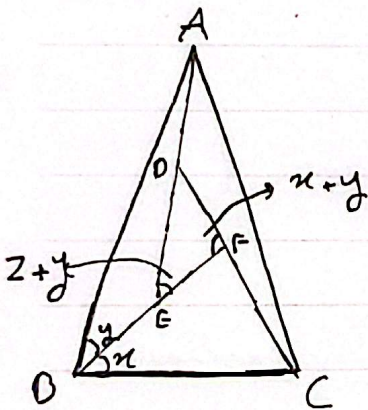
$$DE \parallel BC \Rightarrow \frac{AD}{AB} = \frac{DE}{BC} = \frac{5}{12}$$

$$\frac{\delta_{BCE}^{\Delta}}{\delta_{DOE}^{\Delta}} = \frac{\frac{h \times BC}{r}}{\frac{h \times DE}{r}} = \frac{12}{5}$$



$$\triangle BDM \cong \triangle DGM \Rightarrow MG = r$$

$$MN \parallel GC \Rightarrow \frac{BN}{BC} = \frac{MN}{GC} \Rightarrow MN = r$$

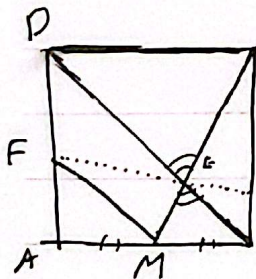


$$\triangle DEF \sim \triangle ABC$$

$$\frac{AC}{DE} = \frac{BC}{DF} = \frac{AB}{EF} \Rightarrow \frac{1}{r} = \frac{AB}{r} \Rightarrow$$

$$AB = 9, 4$$

$$\triangle AMF \sim \triangle BCM \quad \hat{B} = \hat{A}$$



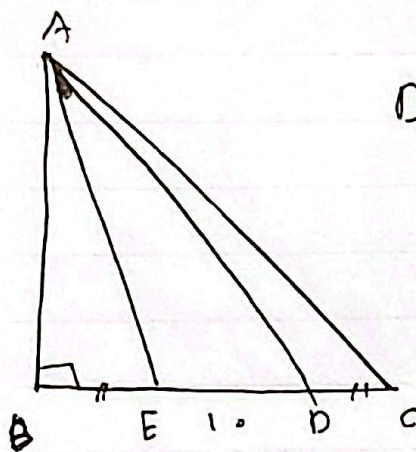
$$C \frac{y}{r} = \frac{r}{k} \Rightarrow AF = k = \frac{r}{y} \quad FM^2 = AF^2 + AM^2 \Rightarrow \sqrt{\frac{r^2}{y^2} + \frac{r^2}{y^2}} = \sqrt{2} \frac{r}{y}$$

$$\triangle DCE \sim \triangle BEM \Rightarrow \left[ME = \frac{1}{2} CE \right] \Rightarrow ME = \sqrt{2}$$

$$\delta_{FME}^{\Delta} = \frac{ME \times FM}{r} = \frac{\sqrt{2} \times \frac{r}{y} \sqrt{2}}{r} = \frac{1}{y} = \frac{r}{y}$$

who cares if one more light goes out

one more light

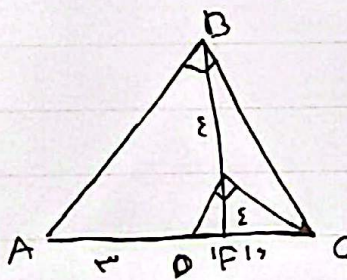
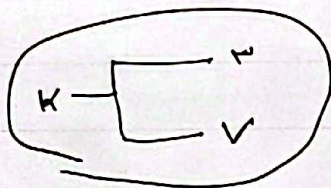


$$DC = BE = k$$

$$\left. \begin{matrix} \angle A = \angle A \\ \hat{E} = \hat{E} \end{matrix} \right\} \Rightarrow \triangle AED \sim \triangle AEC$$

$$\frac{AE}{k+1} = \frac{AD}{AC} = \frac{1}{1+k} \Rightarrow AE = 1 \cdot (1+k) \quad (1)$$

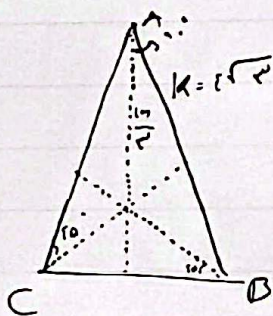
$$1 + k = AE \Rightarrow (1) \Rightarrow 1 + k = 1 \cdot (1+k) \Rightarrow$$



$$EF = DF \cdot FC \Rightarrow 1 = FC$$

$$BF = AF \cdot FC \Rightarrow \epsilon + 1 = BF \Rightarrow \boxed{BF = 1}$$

$$FB + FC = BC \Rightarrow \epsilon + 1 = BC \Rightarrow \sqrt{a}$$



$$CH + HB = AH \Rightarrow \sqrt{a} = AH \Rightarrow \boxed{AH = \sqrt{a}}$$

$$AB = AM + HB \Rightarrow AB = \sqrt{a} \Rightarrow k = \sqrt{a}$$

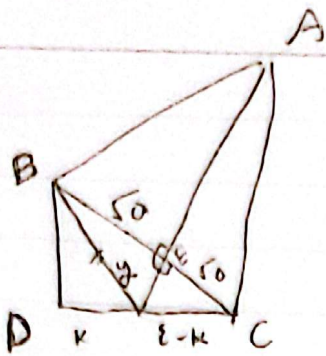
$$HB = AM \Rightarrow \hat{A} = \hat{B} \Rightarrow \hat{A} + \hat{B} + \hat{C} = 180^\circ$$

$$\sqrt{a} + \sqrt{a} = 180^\circ$$

$$CN + BM = \sqrt{a} \Rightarrow \left[\begin{matrix} CN = \sqrt{a} \\ BM = \sqrt{a} \end{matrix} \right] \Rightarrow CN \perp DM = \sqrt{a}$$

$$k = \sqrt{a}$$

● dotnote



$$C = 90^\circ$$

$$BD^2 + DC^2 = BC^2 \Rightarrow BC = \sqrt{50}$$

$$\left. \begin{aligned} x + x^2 &= y^2 \\ x - x &= y \end{aligned} \right\} \Rightarrow y^2 = 1^2 + x^2 - 1x \Rightarrow$$

$$1^2 = 1x$$

$$x = \frac{1}{2}$$

$$(EO)^2 + (\sqrt{50})^2 = \frac{50}{2}$$

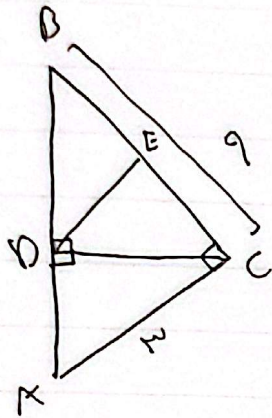
$$EO^2 = \frac{50}{2} \Rightarrow \frac{\sqrt{50}}{2}$$

$$OC^2 = EO \times OA$$

$$\frac{50}{2} = \frac{\sqrt{50}}{2} \times AO \Rightarrow AO = \frac{50}{\sqrt{50}} = \sqrt{50}$$

$$AE = AO - EO = \frac{50}{\sqrt{50}} - \frac{\sqrt{50}}{2} =$$

$$AO = \frac{50}{\sqrt{50}} \leftarrow \frac{50}{\sqrt{50}} = \frac{50}{\sqrt{50}}$$

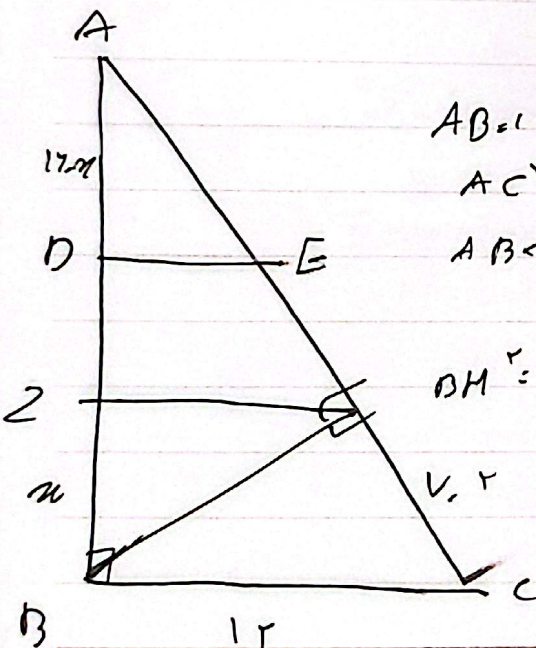


$$BA^2 = BC^2 + CA^2 \quad BA = \sqrt{10}$$

$$BC \times AC = AB \times DC \Rightarrow DC = \frac{9 \times 1}{1} = 9$$

$$DC^2 = EC \times BC \Rightarrow \frac{1}{1} = 9 \quad EC = \frac{9}{1} = 9$$

$$BE = BC - EC = \frac{9}{1} - \frac{9}{1} = \frac{1}{1} = 1, 1$$



$$AB = 17 \quad BC = 17$$

$$AC^2 = AB^2 + BC^2 \Rightarrow AC = 17$$

$$AB \times BC = AC \times BH \Rightarrow 17 \times 17 = 17 \times BH$$

$$BH = \frac{17}{17}$$

$$BH^2 = x \times 17 \Rightarrow \frac{17}{17} \times \frac{17}{17} = x \Rightarrow x = \frac{17}{17}$$

$$\triangle ADE \sim \triangle ABC \Rightarrow \frac{AE}{AC} = \frac{DE}{BC} = \frac{17}{17} = \frac{DE}{17} \Rightarrow$$

$$DE = 17 \times \frac{17}{17}$$

$$DC^2 = CH \times AC = 17 \times 17 = CH \times 17 \Rightarrow CH = 17$$

$$AH = AC - CH = 17 - 17 = 0 \Rightarrow AE = EH = 17$$