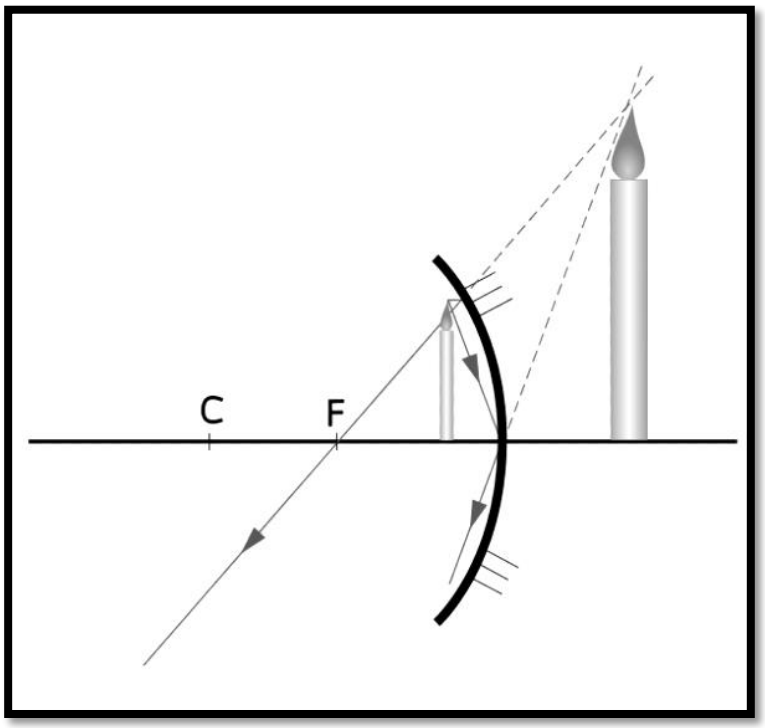
Answer on Question #46513, Physics, Other

Task:

Describe the image of a candle positioned 20cm in front of a concave mirror of focal length 30cm.

- virtual, inverted, 12cm behind mirror and magnified 3 times
- real, inverted, 12cm in front of mirror and diminished 3 times
- virtual, erect, 60cm behind mirror and magnified 3 time
- real, erect, 60cm in front of mirror and diminished 3 times

Answer:



Focal length (f) = - 30 cm

The distance between the object and the mirror (u) = - 20 cm

The distance between the image and the mirror (v) = ?

$$-\frac{1}{f}=\frac{1}{v}+\frac{-1}{u}$$

$$-\frac{1}{30}=\frac{1}{v}+\frac{-1}{20}\Rightarrow\frac{1}{v}=\frac{1}{60}\Rightarrow v=60cm$$

Let the size of the object be equal to x.

Given size of the image =y.

But we know that $\frac{y}{x}=\frac{v}{u}=3$

So the image of a candle virtual, erect, 60cm behind mirror and magnified 3 time.