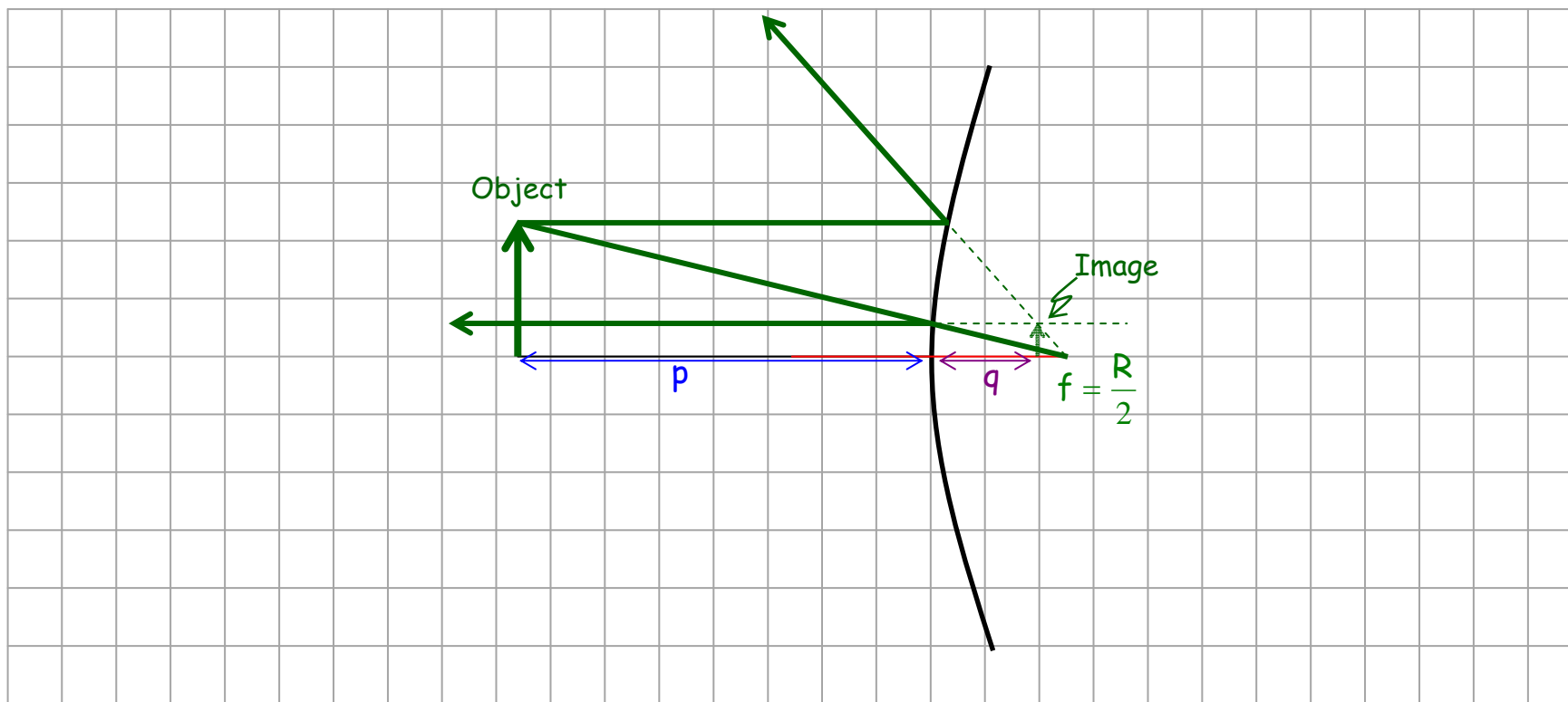


An object 2.00 cm high is placed 6.0 cm in front of a convex mirror with a radius of curvature of 4.00 cm. Where is the image formed? Is it real or virtual? Upright or Inverted? What is the magnification? How big is the image? Find these answers by calculation AND by ray sketching.

The image is found from the lens equation with $f = -2$ cm & $p = +6$

$$\frac{1}{f} = \frac{1}{p} + \frac{1}{q} \Rightarrow \frac{1}{q} = \frac{1}{f} - \frac{1}{p} = \frac{p-f}{fp} \Rightarrow q = \frac{fp}{p-f} = \frac{(-2)(6)}{(6)-(-2)} = -1.5 \text{ cm}$$

The image is 1.5 cm behind the mirror, so it is virtual. The magnification is +0.25 so it is upright and $\frac{1}{4}$ the size of the object = 0.5 cm tall.



An object 1.5 cm high is placed 7.0 cm in front of a concave mirror with a radius of curvature of 4.00 cm. Where is the image formed? Is it real or virtual? Upright or inverted? What is the magnification? How big is the image? Find these answers by calculation AND by ray sketching.

The image is found from the lens equation with $f = 2$ cm & $p = +7$

$$\frac{1}{f} = \frac{1}{p} + \frac{1}{q} \Rightarrow \frac{1}{q} = \frac{1}{f} - \frac{1}{p} = \frac{p-f}{fp} \Rightarrow q = \frac{fp}{p-f} = \frac{(2)(7)}{(7)-(2)} = 2.8 \text{ cm}$$

The image is 3.5 cm in front of the mirror, so it is real. The magnification is -0.4 so it is inverted and 40% the size of the object = 0.6 cm tall.

