## Answer on question #52720, Physics, Optics

**Question** How far should an object be from a concave mirror of radius 30cm to form a real image 1/6 of its size?

85 cm 95 cm 105 cm 115 cm

**Solution** Focal length of the mirror is f = R/2 = 15 cm. The magnification is

$$M = \frac{h_i}{h_o} = \frac{d_i}{d_o} = \frac{1}{6}$$

so we know that  $d_i = d_o/6$  now we can use mirror equation to find  $d_o$  - distance of object.

$$\frac{1}{f} = \frac{1}{d_o} + \frac{6}{d_o} = \frac{7}{d_o}$$
$$d_o = 7f = 7 \cdot 15 = 105 \, cm$$

Answer is 115 cm.