Answer on Question #52719-Physics-Optics

What is the image distance of an object placed 20 co from a converging lens of focal length 15 cm?

30 cm

40 cm

60 cm

70 cm

Solution

The lens equation expresses the quantitative relationship between the object distance d_o , the image distance d_i , and the focal length f. The equation is stated as follows:

$$\frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_0}.$$

The image distance is

$$d_i = \frac{1}{\frac{1}{f} - \frac{1}{d_0}} = \frac{1}{\frac{1}{15} - \frac{1}{20}} = 60 \text{ cm}.$$

Answer: 60 cm.