

Lenses: Kaylin Shanahan 26/09/22

A python programme to calculate the image distance and magnification of a convex lens using the equations:

$$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

$$m = -\frac{d_i}{d_o}$$

1. Ask the user to input the value for focal length in centimetres.
2. Calculate the image distance value and magnification using the formulas.
3. Output the answer.

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In [4]: # Input values for f and do
f = eval(input("Enter value for focal length in centimetres: "))
do = eval(input("Enter value for object distance in centimetres: "))

# Calculate the image distance and magnification
di = 1 / ((1/f) / (1/do))
m = - (di/do)

# Output the answer
print ("The image distance is: {0:6.1} centimetres".format(di))
print ("The magnification is: {0:10.2e}".format(m))
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Enter value for focal length in centimetres: 7.5
Enter value for object distance in centimetres: 11
The image distance is:    0.7 centimetres
The magnification is: -6.20e-02
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