The Thin Lens Equation (SwiftStudy Printable)

Key Formula

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

f	focal length of lens	m
d_o	object distance	m
d_i	image distance	m

Tips to Remember

- The object distance d_o and the image distance d_i are both measured **from the lens**. In your standard case with a convex lens, the lens will be between the object and the image, and both d_o and d_i will be considered positive.
- Be careful with the algebra in the fractions. If d_o and d_i are both 8 cm, that doesn't make the focal length 16 cm. See the example at the right for the correct algebra.

$$\frac{1}{f} = \frac{1}{8} + \frac{1}{8}$$
$$\frac{1}{f} = 0.125 + 0.125$$
$$\frac{1}{f} = 0.25$$
$$1 = 0.25f$$
$$4 = f$$