

12. A dentist's mirror is placed 2.0 cm from a tooth. The *enlarged* image is located 5.6 cm behind the mirror. **(a)** What kind of mirror (plane, concave, or convex) is being used? **(b)** Determine the focal length of the mirror. **(c)** What is the magnification? **(d)** How is the image oriented relative to the object?

Planar and Convex mirrors do not create larger images, so this must be a Concave Mirror!

$$\frac{1}{f} = \frac{1}{o} + \frac{1}{i} = \frac{1}{2.0 \text{ cm}} + \frac{1}{-5.6 \text{ cm}} = 0.500 \text{ cm}^{-1} - 0.1786 \text{ cm}^{-1} = 0.3214 \text{ cm}^{-1}$$

$$f = \frac{1}{0.3214 \text{ cm}^{-1}} = 3.11 \text{ cm}$$

$$M = \frac{-i}{o} = \frac{-(-5.6 \text{ cm})}{2.0 \text{ cm}} = 2.80 x$$

Since the magnification is positive the image is upright.

Concave Mirror!
 $f = 3.1 \text{ cm}$
 $M = 2.8 x$
The image is upright.

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