Table 2-1
Distance/Diopter Chart

Distance to the Object	Power Needed to Focus Image
5.0 cm (1/20 m)	20 D
10.0 cm (1/10 m)	10 D
12.5 cm (1/8 m)	8 D
20.0 cm (1/5 m)	5 D
25.0 cm (1/4 m)	4 D
33.3 cm (1/3 m)	3 D
40.0 cm (1/2.5 m)	2.5 D
100.0 cm (1 m)	1 D
200.0 cm (2 m)	0.5 D

D = diopters

Figure 2-2. To calculate diopters if the focal distance (F) is known, divide 100 by F. To calculate the focal distance if the power of the lens (D) is known, divide 100 by D.
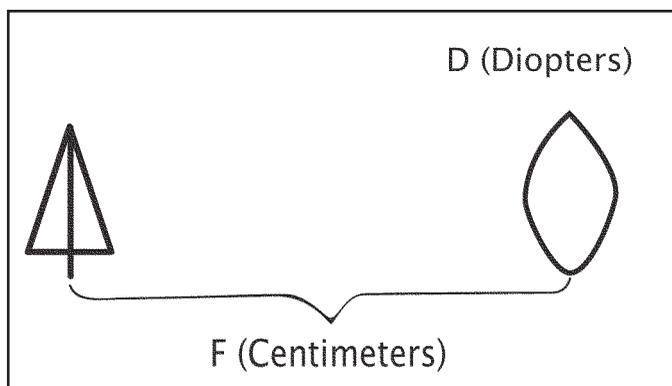
3 D are needed (1/3 meter = 3/1 D), and so on. (See Table 2-1 for more examples of dioptric requirements at various distances.) This standard principle is used when prescribing reading adds for patients with presbyopia as well as in low vision.

To calculate the power of a lens needed to focus at a particular distance, first convert that distance into centimeters, then divide 100 cm by that number. The result is the dioptric power. For example, suppose an object is at 1/2 meter. Converted to centimeters, the object is 50 cm away. Divide 100 by 50 and the result is 2 D of power needed to focus at this distance. The formula to remember is $D = 100/F$, where D is diopters and F is the focal length (or distance) in centimeters.

OptA   **Focal Length**

Focal length is the distance at which a lens focuses parallel rays of light. For instance, since a 1 D lens focuses rays of light at a distance of 1 meter, 1 meter is the *focal length* of a 1 D lens. To determine focal length, divide 1 meter (100 cm) by the dioptric power of the lens (Figure 2-2). This is the inverse of the diopter formula. For example, a 5 D lens has a focal length of 20 cm (100 cm ÷ 5 D = 20 cm). In general terms, focal length refers to the distance at which a lens will make an image appear to be in focus. For example, using the above situation, the 5 D lens will focus