

Refraction and Lenses : Test-50

1) What is the refraction of light?

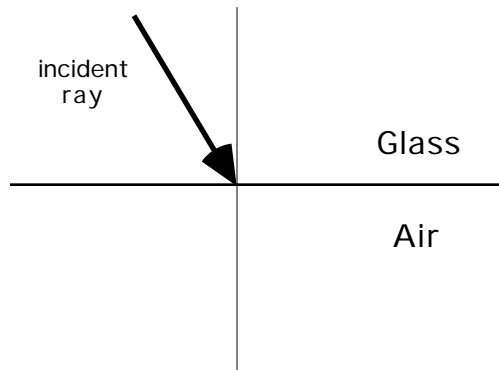
2) Give the equation for the index of refraction (n) for a substance, in terms of the speed of light (c).

3) Snell's Law for light entering a dense medium from air is:

$$n = \sin(i)/\sin(R)$$

If $n = 1.50$, and $i = 30.0^\circ$, then the angle of refraction $R = \underline{\hspace{2cm}}$

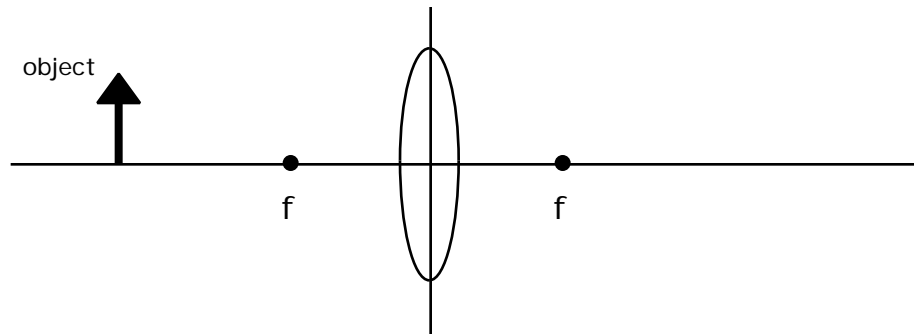
4) Draw the refracted ray.



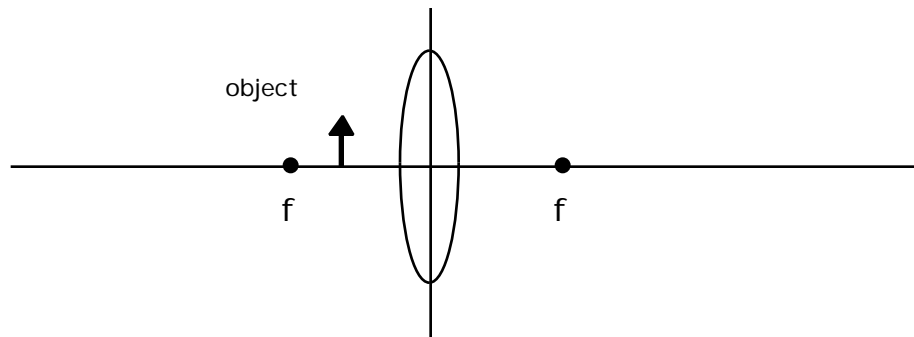
5) Find the critical angle for water. ($n=1.33$) $\underline{\hspace{2cm}}$

6) Find the speed of light in water. $\underline{\hspace{2cm}}$

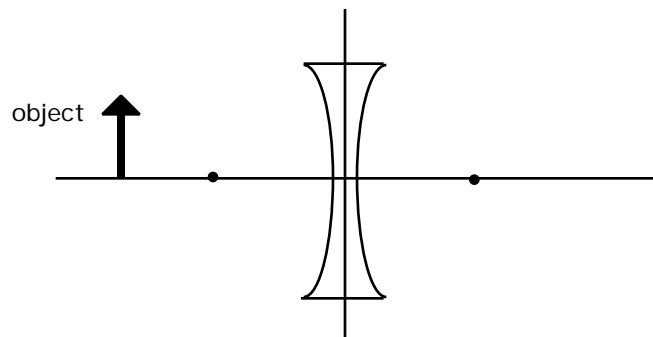
7) Find the image of the object.



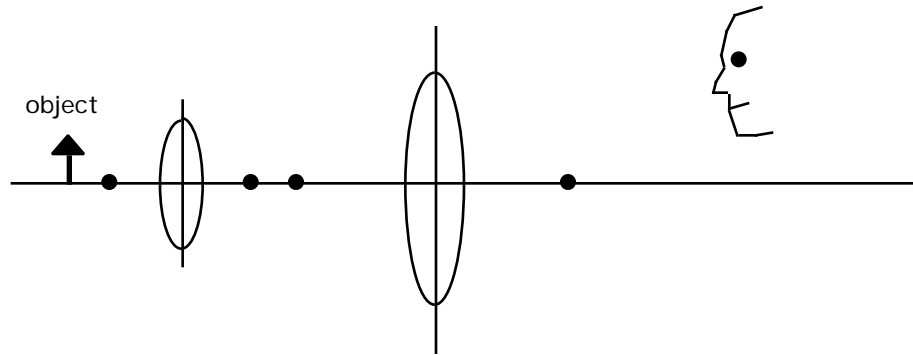
8) Find the image of the object.



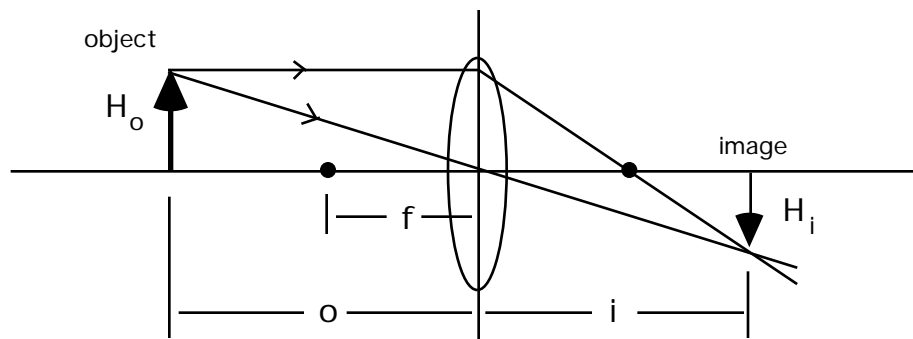
9) Find the image of the object.



10) Locate the image in the compound microscope below.



11) Answer the following questions about the convex lens shown below. Assume that the object distance (o) is greater than the focal length (f).



a) If the image height is 28 mm, and the object height is 7.0 mm, find the magnification.

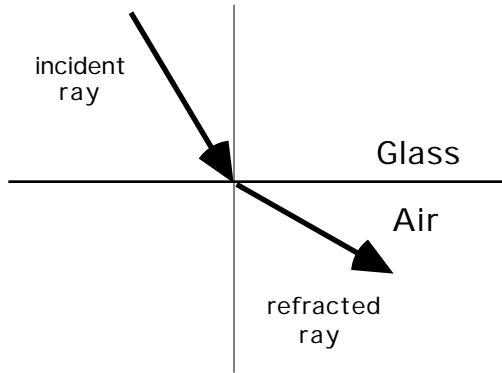
b) If $o = 5.0$ cm, find i .

12) If the object height is 3.8 cm, and the magnification is 0.66, find the image height.

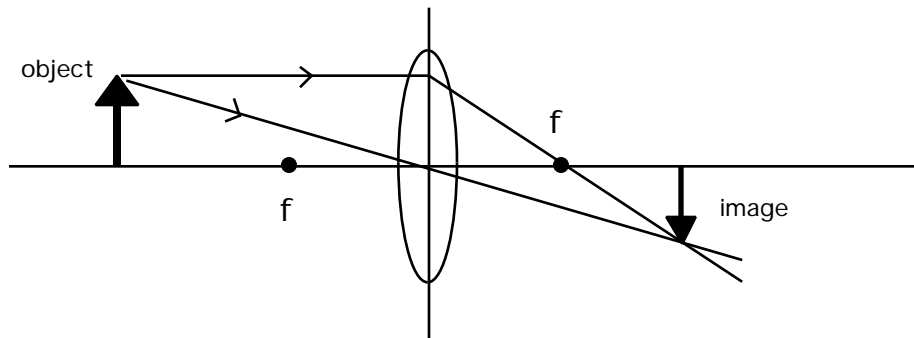
13) Use the formula $1/i + 1/o = 1/f$ to fill in the blanks.

i	o	f	M
5.0	5.0	—	—
—	8.0	3.0	—
6.0	—	—	5.0
—	—	8.0	10.0

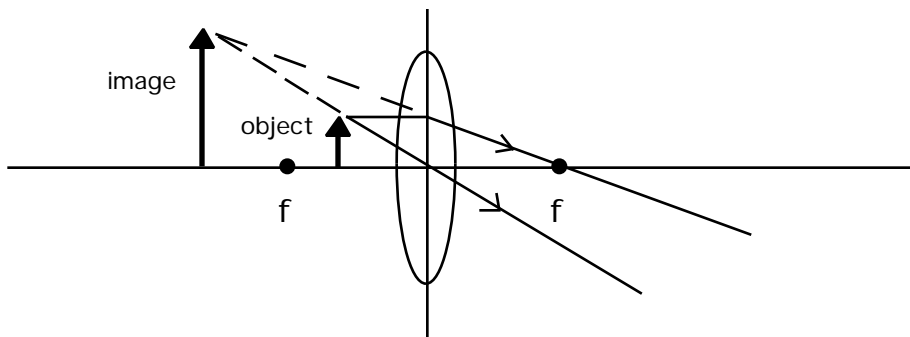
Answers: 1) Refraction is the bending of light that occurs when the speed of light changes., 2) $n = c_{\text{vacuum}}/c_{\text{substance}}$, 3) 19.5° , 4)



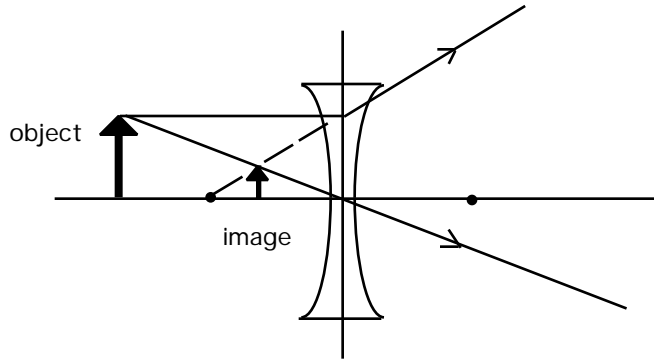
5) 48.8° , 6) $2.26 \times 10^8 \text{ m/s}$, 7)



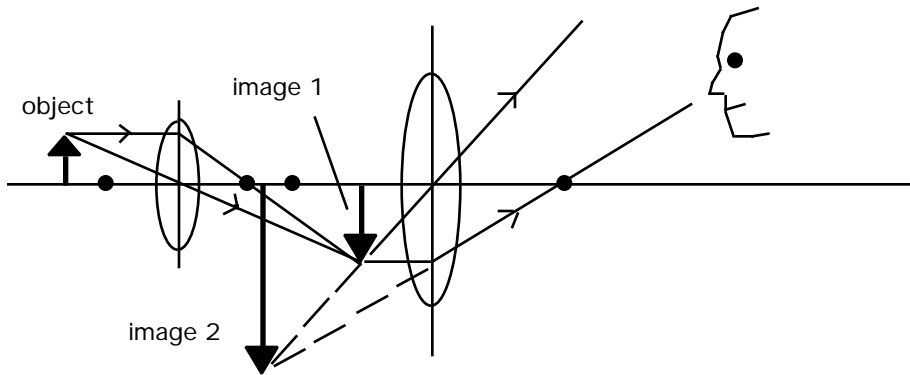
8)



9)



10)



11) a) 4.0, b) 20. cm, 12) 2.5 cm, 13) 2.5, 1.0; 4.8, 0.60; 1.2, 1.0; 88, 8.8.