Standardized Test Prep

MULTIPLE CHOICE

1. How is light affected by an increase in the index of refraction?

A. Its frequency increases.
B. Its frequency decreases.
C. Its speed increases.
D. Its speed decreases.

2. Which of the following conditions is *not* necessary for refraction to occur?

F. Both the incident and refracting substances must be transparent.
G. Both substances must have different indices of refraction.
H. The light must have only one wavelength.
J. The light must enter at an angle greater than 0° with respect to the normal.

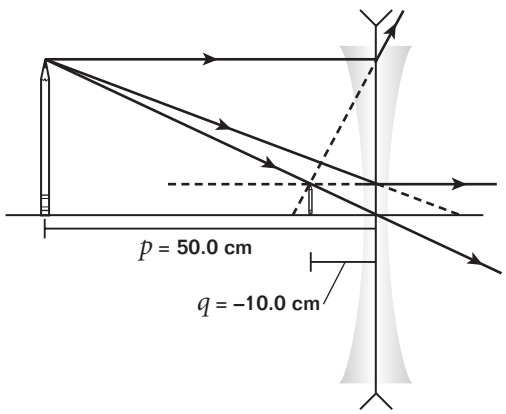
Use the ray diagram below to answer questions 3–4.

3. What is the focal length of the lens?

A. −12.5 cm
B. −8.33 cm
C. 8.33 cm
D. 12.5 cm

4. What is true of the image formed by the lens?

F. real, inverted, and enlarged
G. real, inverted, and diminished
H. virtual, upright, and enlarged
J. virtual, upright, and diminished



5. A block of flint glass with an index of refraction of 1.66 is immersed in oil with an index of refraction of 1.33. How does the critical angle for a refracted light ray in the glass vary from when the glass is surrounded by air?

A. It remains unchanged.
B. It increases.
C. It decreases.
D. No total internal reflection takes place when the glass is placed in the oil.

6. Which color of light is most refracted during dispersion by a prism?

F. red
G. yellow
H. green
J. violet

7. If an object in air is viewed from beneath the surface of water below, where does the object appear to be?

A. The object appears above its true position.
B. The object appears exactly at its true position.
C. The object appears below its true position.
D. The object cannot be viewed from beneath the water's surface.

8. The phenomenon called "looming" is similar to a mirage, except that the inverted image appears above the object instead of below it. What must be true if looming is to occur?

F. The temperature of the air must increase with distance above the surface.
G. The temperature of the air must decrease with distance above the surface.
H. The mass of the air must increase with distance above the surface.
J. The mass of the air must increase with distance above the surface.