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Grade 10 Physics Chapter 3 Revision Problems

Multiple Choice Questions.

Q1.	A part of a pencil that is placed in a glass of water appears bent in relation to the part of the pencil that extends out of the water. What is this phenomenon called?	
a.	Interference	
b.	Refraction	
c.	Diffraction	
d.	Reflection	

Q2.	The _____ of light can change when light is refracted because the medium changes.
a.	speed
b.	frequency
c.	color
d.	nature

Q3.	Which of the following is true for when light passes at an angle to the normal from one medium into another medium in which its speed is higher?
a.	It is bent toward the normal to the surface.
b.	It always lies along the normal to the surface.
c.	It is unaffected.
d.	It is bent away from the normal to the surface.

Q4.	What type of image does a Concave lens produce?
a.	Real
b.	Virtual
c.	Both real and virtual
d.	It depends on the focal point

Q5.	The focal length for a convex lens is _____.
a.	always positive.
b.	always negative.
c.	dependent on the location of the object.
d.	dependent on the location of the image.

Q6.	Under which conditions does a convex lens produce an enlarged virtual image?
a.	Never
b.	When the object is farther away than the focal point
c.	When the object is farther away than the center point
d.	When the object is between the focal point and the lens

Q7.	A virtual image has a _____ image distance (x_i) and is located in _____ of the lens.
a.	positive, front
b.	negative, back
c.	negative, front
d.	positive, back

Q8.	Atmospheric refraction of light rays is responsible for which of the following effects?
a.	Spherical aberration
b.	Mirages
c.	Chromatic aberration
d.	Total internal reflection in a gemstone

Q9.	Which of the following best describes what happens to an incident ray of light on a glass-to-air boundary at an angle greater than the critical angle?
a.	Total internal reflection
b.	Total external transmission
c.	Partial reflection, partial transmission
d.	Partial reflection, total transmission

Q10	An absolute value of magnification M is greater than 1, indicates that _____.
a.	the image is magnified
b.	the image is diminished
c.	an image is not formed
d.	the image has the same size as the object

Q11	An object is positioned in front of a concave lens between points F and $2F$. Determine the nature of the image produced by the concave lens.
a.	Virtual, upright and magnified
b.	Virtual, upright and diminished
c.	Virtual, inverted and magnified
d.	Virtual, inverted and diminished

Q12	If an image that is produced by a convex lens is smaller than the object, where is the object placed?
a.	At the lens's focal point.
b.	Between the mirror and the focal point.
c.	Between the focal point and center.
d.	Beyond the center of lens.

Q13	Which of the following lenses are used to correct farsightedness?
a.	Normal glass
b.	Convex lenses
c.	Concave lenses
d.	Any transparent lenses

Q14	An object is placed 20.0 cm from a thin convex lens along the axis of the lens. If a real image forms behind the lens at 8.00 cm from the lens, what is the focal length of the lens?
a.	5.71 cm
b.	-13.3 cm
c.	13.3 cm
d.	12.0 cm

Q15	Which of the following factors change as light waves pass from one transparent medium into another?
a.	f and v
b.	v and λ
c.	f and λ
d.	f , v and λ

Constructed Response Questions.

Q1

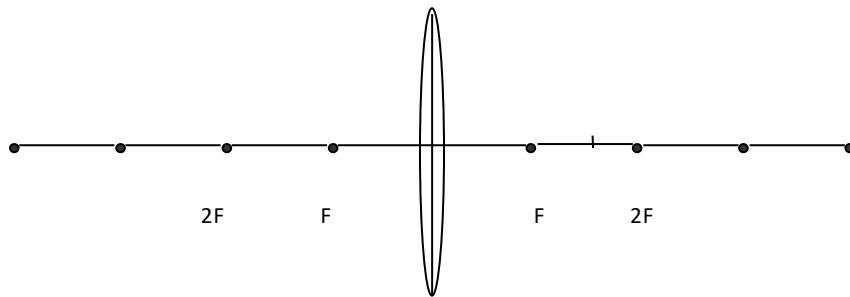
A ray of light passes from air into carbon disulfide ($n = 1.63$) at an angle of 28.0° to the normal. What is the angle of refraction?



Q2.

An object is placed 25 cm away from a convex lens with a focal length of 10 cm.

a. Complete the ray diagram below and locate the image.



b. Use the thin lens equation to calculate the image distance x_i



c. Calculate the magnification M of the lens then describe the image.