

## REFLECTION REFRACTION

READ/STUDY CHAP 32 SECTIONS 32-1, 32-5 AND 32-7

QUESTIONS TO HAND IN ON THE DUE DATE

1. When a ray (narrow beam of light) strikes a surface we measure an angle from a normal (perpendicular line) at the impact point. This angle is called the angle of?
2. What is the "Law of Reflection"?
3. Rays of light entering transparent media will change their direction. This bending of light is known as?
4. When a ray of light enters a transparent media like glass, we measure an angle inside the glass from a continuation of the normal outside. This angle is called the angle of?
5. It has been found that light entering transparent media changes its speed with respect to a vacuum measurement. The speed in the media is always \_\_\_\_\_? then in a vacuum.
6. The ratio of the speed of light in a vacuum to that in a media is called the?
7. Write an expression for the ratio in question 6.
8. When light bends in a media an analytical relation between its angle outside and its angle inside is known as?
9. Write an expression for the relation in question 8?
10. Look over figure 32-24 in your text which shows a ray of light passing through thin flat glass. The direction of the ray on emerging from the glass is in the same direction it entered but it is slightly \_\_\_\_? You will measure this in the experiment.
11. Fiber optics uses a phenomena known as "total internal \_\_\_\_\_"?
12. The angle of the approaching ray that causes the phenomena in question 11 is known as the "\_\_\_\_\_? Angle". Which you will also measure in this experiment.

Problems to add to your lab report at its end. Show all work (formulas and math used)

P1. A ray of light is measured to strike a reflecting and transparent glass surface ( $n_{\text{glass}}=1.4$ ). The ray hits at an angle of 28.7 degrees to a "normal" at the impact point. A part of the ray bounces off, and another goes through the glass.

- a) What is the angle to the normal of the part of the ray that bounces off the surface?
- b) What is the angle to the internal normal that the ray makes?
- c) The glass is 5mm thick. What is the amount of displacement of the emerging ray on the other side of the glass?
- d) What is the critical angle for this type of glass?