Light is an _____ wave! (or at least acts like one) This means three things: It can travel without a _____ (i.e. through space) It travels through space at _____m/s. It is part of the _____ _____ (a mix of all E-M waves)

The first person to accurately clock the speed of light was: _____ He clocked the _____ between two California mountains at 299799600 m/s in _____ For this 'speriment, he won the _____ He was the first American _____ to win a Nobel prize

There are three ways of describing light _____:
_____ - light moves through with no distortion (Clean air, water, glass, soda plastic) _____ - light moves through, but is distorted (White milk jugs, skin, shower glass, waxed paper) _____ - Light does NOT pass through. (Brick walls, wood, bone, metal) This is a _____, it does NOT contain definite breaks between categories.

When light bounces, it is called:_____ If you reflect off a _____ surface it is a _____ reflection (you can see yourself) If you reflect off a _____ surface it is a _____ reflection (you can <u>NOT</u> see yourself) What is smooth or rough? If the surface irregularities are smaller than 1 wavelength, it is "smooth."
The reflection formula (the law of reflection) is

Angles are measured from the _____. The normal is a line drawn _____ to the surface. The incoming angle is the angle of: _____ The outgoing bounce angle is the angle of: _____ Anything entering the new material is being refracted, not reflected and so is called the angle of: _____. _____'s rule is also called the law of refraction.

Ø1 & 2 are the angles of incidence and refraction, respectively.

The "n"s are the _____, a number that measures how much a material will bend light. The bigger "n"s mean that light travels more slowly in them.
THAT formula is n = c / v (c = 299 792 458 m/s v = the speed of light in that substance.)

A light ray hits a diamond at an 68º angle. What is the measurement between the incident and reflected angle? At what angle is the light refracted into the diamond?

We know 68º in = 68º out The total between them must be _____
to do the second Q, we need to know the index of refraction of air and diamond
n_{air} = 1.00 $n_{diamond}$ = 2.42

1.00(sin 68º) = 2.42(sin x) so 1.00 (sin 68º) / 2.42 = (sin x)
= inv sin = _____ = _____

_____ objects emit their own light
_____ ones reflect the light from a luminous object
The moon is _____ by the _____ sun
_____ light is light that is all waving in the same direction, though not always at the same time.
We can use this to discover stresses in transparent objects, to make 3-D movies and to tell whether a mixture of chemicals is man-made or organic.

We polarize light with filters or by bouncing it.
_____ are light that is coherent: all the same wavelength, all waving at the same time.
LASER stands for "Light Amplification by the Stimulated Emission of Radiation"
_____ _____ _____occurs when light is trying to _____ out of a more dense medium past the _____ angle.
The critical angle is the one that refracts out at _____, or at the boundary line. Anything past this point MUST reflect back in, rather than refract out, so 100% of the energy is retained. This is the principle behind _____ _____.