**Questions for Refractive Index and Wet Pants**

**Direction**s: After reading refractive index and wet pants answer the following questions. Remember to include part of the question in your answer.

1. What is refraction? (refracted) When light changes speeds.
2. What determines how much the light bends as it passes between objects? The difference between the speeds of light in two transparent materials.
3. How do you calculate the refractive index? (What is the formula) speed of light in a vacuum divided by speed of light in the transparent material.
4. What does a higher refractive index number mean? The slower the speed of light

Refractive Index

Using the data table on the second page of the reading answer the following questions.

1. In which of the transparent materials does light travels the slowest? diamond
2. Why did you pick the answer you did? Biggest number in refractive index
3. Which of the transparent martials does light travel the quickest? vacuum
4. Why did you choose the answer you did? Smallest number in refracted index

Use the formula **c/n = refractive** index. **C** stands for speed in a vacuum and **n** is the speed in the transparent material.

Optical fibers are generally composed of silica. The speed of light through in a vacuum is 300,000 m/s, and the speed of light in the silica is 208,000m/s.

1. What is the reflective index of the material? (SHOW YOUR WORK) 300,000/208,000 = 1.44
2. Is silica refracting light faster or slower than water? (Hint use the table in the reading) slower because the number if larger

Birdbrains and fishy physics

1. Light passing from a material with a lower refractive index to one with a higher refractive index bends towards or away from the normal? Towards the normal
2. Using your knowledge of Silica (question 9 &10) if light traveled from air through Silica how would the light refract. Towards because the 2nd  medium number is higher
3. What evidence do we have that birds, like the great blue heron, understand refraction? They are able to catch fish in water

Extension: At home lab

**Procedures:**

1. Fill a clear (see through) glass or bowl half way with water.
2. Put a pencil (or any straight object) in the water.
3. Look from the bottom of the glass up through the top.
4. What do you notice?
5. Remove the pencil and put in the water again
6. Again look from the side
7. What do you notice? Pencil looks like it is not connected

Watch this 2-minute video

<https://www.youtube.com/watch?v=SeaWCamCHWQ>