

Name: _____

REFRACTION TUTORIAL (WORKSHEET)

REFLECTION REVIEW

Light travels in _____. Because of this fact, you can determine the _____ (equal to the angle of incidence) when an _____ strikes a _____.

Draw the Diagram

REFRACTION INTRO

In the previous diagram, light was travelling in one medium only. The incident and reflected rays were both in air (for example). When light travels from one medium to another, the _____. It will either bend _____. Compared to air, water is _____. Bending of light in this way is called _____.

Does the refracted ray (in the water) bend towards or away from the normal?

Draw the Diagram

STICK IN WATER

Draw the Diagram

WATER INTO AIR

Does the refracted ray (in the air) bend towards or away from the normal?

Draw the Diagram

Light travels at a speed of _____ in a vacuum (ie. air) and at a speed of _____ in water. Does it speed up or slow down when it enters water?

Light travels at a speed of _____ in acrylic. If it travels from air to acrylic, will it bend/refract towards or away from the normal? _____

IDENTIFY MEDIA

One medium is _____ and the other is _____.
Draw the diagram and then use it to identify medium A and medium B.

Do you know in which direction the light beam is travelling? Does it matter?

INDEX OF REFRACTION

The index of refraction is a _____ property of matter. It affects the _____ of light and to what extent the light is _____.

The symbol for index of refraction is “ ” and the mathematical formula used to calculate it is: = / .

c = speed of light in a _____

v = speed of light in the _____

MEDIUM	INDEX OF REFRACTION
air	
ice	
water	
ethyl alcohol	
acrylic	
diamond	

INDEX OF REFRACTION ANIMATIONS

Notice how light is bent more by _____ than by _____ (it bends more towards the normal). This is because acrylic has a _____ index of refraction.

INDEX OF REFRACTION PROBLEMS

Problem 1:

The speed of light in sodium chloride is 1.96×10^8 m/s. The speed of light in air is 3.00×10^8 m/s. Calculate the index of refraction for sodium chloride. (Copy the solution below)

Problem 2:

The speed of light in vinegar is 2.30×10^8 m/s. Calculate the index of refraction for vinegar.

Problem 3:

The speed of light in olive oil is 2.03×10^8 m/s. Calculate the index of refraction for olive oil.

Problem 4:

Calculate the speed of light in a diamond. Use the index of refraction for diamond from your table. Re-arrange the equation to solve for "v".