Snell's Law Problem Set 1	Name		Block	Date	
Do all problems on a separate	sheet of lined p	oaper. Indicate your a	nswer by draw	ing a box around it.	
Common Indices of refraction:					
Air or vacuum: 1.000		Water: 1.33	Crow	n Glass: 1.523	
CR39 (plastic for eyeglass lenses): 1.498		Diamond: 2.42	Bariu	Barium glass: 1.60	
Polycarbonate: 1.586			Flint	glass: 1.70	
•Warm-ups:					
A] If the sine of an angle is 0.723, what is the angle?					
Answer: $\theta = \sin^{-1}(0.72)$?3) = 46.3° (You have the sine s	o use the inve	rse to find theta)	
·Pl What is the natio of th	$a \sin(50^\circ) + a =$	the cin(25°)2			
Answer: sin(50°)/sin(25°) = 0.766	/0.423 = 1.81 (not)	2!)		
1. A ray of light traveling from air into crown glass strikes the surface at an angle of 30°. What will the angle of					
retraction be? [Answe	er: 19°]				
2. Light travels through a liquid	at 2 25×10 ⁸ m/s	. What is the index of t	he liquid?	[Answer: 1 33]	
2. Eight travers through a riquid	at 2.25×10 m/s	s. what is the index of t	ne nquia:		
3. Light traveling through air encounters a second medium which slows the light to 1.88×10^8 m/s. What is the					
index of the second mediu	m? [Answ	ver: 1.60]	U		
	-	1			
4. What is the index of refraction of a refractive medium if the angle of incidence in air is 30.0° and the angle of					
refraction is 15.0°?	[Answer: 1.93]			
5. What is the index of refraction of a refractive medium if the angle of incidence in air is 40.0° and the angle of					
refraction is 29.0°?	[Answer: 1.33]			
6. What is the index of refrection of a liquid if the angle of incidence in air is 25.0° and the angle of refrection is					
14.0°2 [Answer: 2.37]	i or a fiquid fr d		all is 55.0° allu	the aligie of refraction is	
14.0 ? [Allswell 2.57]					
7. If the angle of incidence of light traveling through air, striking water, is 30°, what is the angle of refraction?					
[Answer: 22°]	8		, ,	6	
8. If the index of refraction for a certain glass is 1.50, and the angle of refraction is 15° for a ray of light traveling					
from air, what is the angle	of incidence?	[Answer: 23°]			
9. What is the velocity of light in	meters per sec	cond in a material with a	an index of refra	ction of 2.00?	
[Answer: $1.50 \ge 10^8 \text{ m/s}$]					
10 A light ray maying through ($^{\rm P}20$ at an ang	la of 10° oxits into anot	har madium at a	n angle of 11° What is the	
index of the second mediu	$-K39$ at all alignmed m^2	100149 exits into anot	ner meurum at a	in angle of 41 . What is the	
index of the second mediu	III? [Allsw	/er: 1./25]			
11. What is the angle of incidence	e for a light ray	v traveling from water i	nto flint glass, if	the angle of refraction is	
30.0°? [Answer: 40°]					
12. What is the refractive medium	n if a ray comi	ng from air at an angle	of incidence of 5	0.0° is refracted to an	
angle of 35.0°? [Answe	r: Index of refr	action equals, 1.34, so t	he medium coul	d be Water]	
13. Light travels at 1.76×10^8 m/s through an optical medium. What is the medium?					

[Answer: Index of refraction equals, 1.70, so the medium could be Flint Glass]