

Optics #5

p 804 Problems 33

p 844 MC 9, 10, 13

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Online ① TIR

② Lens produce image

p 804 - Problems

33) $n_{\text{glucose}} = ?$
 $\theta_c = 42.5^\circ$

A) $n_{\text{glucose}} = \frac{1}{\sin \theta_c} = \frac{1}{\sin 42.5^\circ} = 1.48$

B) How θ_c change if concentration greater?

\uparrow conc \uparrow n \downarrow θ_c

p 844 - Multiple Choice

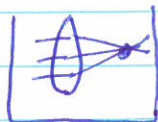
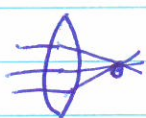
9) Convex lens see enlarged real inverted

Place object: $2f > s > f$

10) concave lens see enlarged real inverted

Place object: None of above

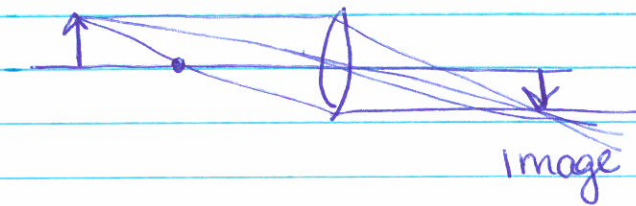
13) focal length is 10cm, submerge in water



more than 10cm
(doesn't bend as much)

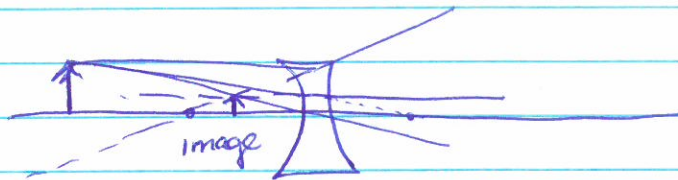
- Problems

25) A) Choose correct diagram for convex



(1)

B) Choose correct diagram for concave



26) Convex lens image distance for

A) $\cdot s > 2f$ Real reduced?

(1)

B) Real enlarged? $\cdot f < s < 2f$

C) Virtual image? $\cdot s < f$

- Online TIR concept

A) for which Scenarios is TIR possible

B water to air higher n to lower n

C diamond to air

E benzene to water

(1) F diamond to water

B) Rank them based on θ_c

$$\theta_c = \sin^{-1} \left(\frac{n_1}{n_2} \right)$$

large

small

$n_{benzene}$	1.50	n_{water}	1.33	$n_{diamond}$	2.42	$n_{diamond}$	2.42
n_{water}	1.33	n_{air}	1.00	n_{water}	1.33	n_{air}	1.00

② Lens Produce an image concept

→ lens produces Real image

A) inverted orientation?

B) - converging lens type?

C) • can't determine enlarged or reduced?

(1)

D) Two convex w/ different n
 $n_1 > n_2$

$f_1 < f_2$ (Bend more meet closer)

• smaller

e) lens 1 (↑n) same spot as lens 2 (↓n)
compare image size

• smaller (meet closer so shorter)