1. Answer the following question. Be clear and precise. No need to use ruler and compass to draw pictures (DO NOT spend more than 5 minutes for drawing picture). Show your work (write necessary equations) whenever necessary.

A. Draw two separate media that have a plane boundary and different refractive indices, $n_a$ and $n_b$ respectively.

B. In the picture show the incident and refracted ray clearly (put arrows indicating the direction of propagation of light).

C. Draw a normal to the surface (between the two different media) at the point where the incident ray crosses over to the other medium. *Note that the incident ray, refracted ray and the normal to the surface, all lie in the same plane.*

D. In the picture clearly show the angle of incidence ($\theta_a$) and the angle of refraction ($\theta_b$).
E. Write down the Snell’s Law (also known as the law of refraction). 

[Hint: Go to Chapter 33, Page 1082 of your book.]

2. Write down the sign rules associated to reflection and refraction. Explain clearly.

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[Hint: Go to Chapter 34, Page 1113 of your book.]