1 (a) (2 points) The picture to the right shows a ray of light traveling from a region filled with medium 1 to a region filled with medium 2, and then to a region filled with medium 3. (The reflected beams are not shown.) Rank these media in order from smallest index of refraction to largest index of refraction.

Smallest:__________

Middle:__________

Largest:__________

(b) (1 point) For the situation shown, is there a critical angle at which you could aim the incident beam A so that it would be entirely reflected, with no transmission? (Circle one.)

A) Yes

B) No

Rewrite and sign the Honor Pledge: I pledge my honor that I have not violated the Honor Code during this examination.
2. An object is placed 30 cm to the left of a converging lens with a focal length of 10 cm.
(a) (3 points) Draw a ray diagram showing the position of the image that is formed. (Your drawing should include three principal rays.)

(b) (3 points) If the object is 2 cm tall, what is the height of the image? (Be careful with the signs!)

(c) (1 point) Now a second converging lens with focal length 10 cm is placed so that the image you found in part (a) is exactly at the focal point F₂. Where is the new image formed by this lens?