Quiz 2b - 1

ⓘ This is a preview of the draft version of the quiz

Started: May 24 at 8:39pm

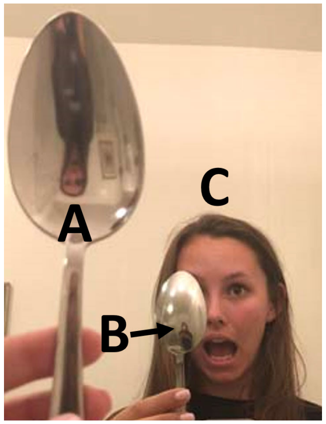
Quiz Instructions

This quiz is "open book"; allowed aids include the textbook, all course notes, and a calculator or spreadsheet for performing calculations. However, you must answer each quiz question **individually**. No group work or chats with other students are allowed **during the quiz**. If you have a question Prof. Sealfon is...

The assessment will end 25 minutes after you start, or at 12:10pm, whichever comes *first*. You will see one question at a time. [You must submit each answer by clicking **Next** in order to see the next question; you will not have the ability to go back change any answer after it has been submitted.] After completing all 6 questions you must click **Submit Quiz** before the time has ended.

All quiz questions refer to and will be based on this image:

There are three images of the physics student in the photo, which we will label A, B, and C for clarity:



Question 1

1 pts

Identify whether each image is real or virtual, and choose the best justification.

Image A must be [Select] because it is [Select] .

Image B must be [Select] because it is [Select] .

Image C must be [Select] because it is [Select] .

Question 2

1 pts

In analyzing this image, what are reasonable approximations or assumptions about the focal lengths? (Select all that apply.)

Let f_A = the focal length of the reflective surface that produces image A.

Let f_B = the focal length of the reflective surface that produces image B.

Let f_C = the focal length of the reflective surface that produces image C.

- [ ] $f_A \approx -f_B$
- [ ] f_C is infinite
- [ ] $|f_B| > |f_C|$
- [ ] $f_A > 0$
- [ ] $f_B > 0$
- [ ] $|f_A| > |f_C|$

Question 3

1 pts

Image A of the student appears "stretched out" vertically. (The image is more reduced horizontally than vertically.)

Image B of the student does not appear stretched out in this way.

Which factors are necessary to explain these observations? (Select the best answers that apply.)

- [ ] The front of the spoon acts as a converging mirror, while the back of the spoon acts as a diverging mirror.
- [ ] The camera views the two images from different angles, and the images are produced by reflection off of different parts of the spoon.
- [ ] Image B is reflected twice, while image A is only reflected once.
- [ ] The object distance is greater for image B than for image A.
- [ ] The radius of curvature of the spoon is greater vertically than horizontally.

- [ ] The back of the spoon has different focal lengths than the front of the spoon.

Question 4

1 pts

Which of these changes would invert image B? (Select all that apply. Consider each change by itself, keeping everything else the same.)

- [ ] Moving the spoon much closer to the mirror.
- [ ] Moving the spoon much farther away from the mirror.
- [ ] Rotating the spoon upside-down, so that the handle is held above the spoon (keeping the same side of the spoon facing the mirror).
- [ ] Flipping the spoon around back-to-front, so the concave surface faces the mirror (keeping the handle under the spoon).
- [ ] Increasing the distance between the person and the spoon.

Question 5

1 pts

How could the student create an enlarged image of herself?

She could create an enlarged image of herself by simply moving the spoon [Select] her face. This enlarged image would be an [Select] , [Select] image formed by reflection off the [Select] of the spoon.

Question 6

1 pts

If the student is holding the spoon so the spoon is 14 cm from the student's face and the spoon is 17 cm from the flat mirror, and we can model the bottom part of the spoon as part of a sphere with radius 2.2 cm, what is the magnification of image B? (Sign matters.)

linear magnification: [Select]

In the mathematical representation of this situation, the focal length of the mirror is [Select] and the effective object distance *s* is [Select] .

Quiz saved at 8:39pm

Submit Quiz