# SI A&P - Full Discipline Demo - Digital

## Senses - No Materials

## Final Report - Answer Guide

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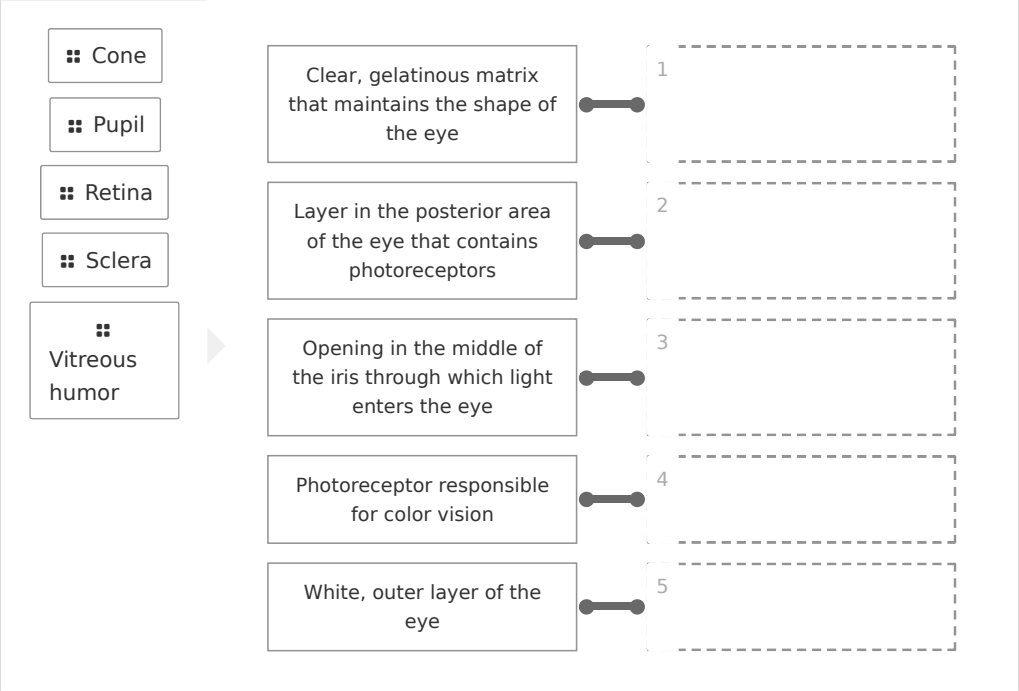
|---|---|
| **Institution** | Science Interactive University |
| **Session** | SI A&P - Full Discipline Demo - Digital |
| **Course** | SI A&P - Full Discipline Demo - Digital |
| **Instructor** | Sales SI Demo |

## Test Your Knowledge

**Match each term with the best description.**




Correct answers:

1 Vitreous humor 2 Retina 3 Pupil 4 Cone 5 Sclera

## Exploration

**The _____ is the layer of the eye containing the blood vessels and connective tissues.**

- cornea
- sclera
- fovea centralis
- choroid ✔

**The pupillary light reflex constricts the pupil in response to light.**

- True ✔
- False

## Exercise 1

**What is the hole in the center of the iris? What is its function?**

The adjustable circular opening in the front of the iris is the pupil. It contracts or expands to regulate the amount of light that enters the eye.

**What is the function of the lens?**

The lens, by changing shape, functions to change the focal distance of the eye so that it can focus on objects at various distances, thus allowing a sharp real image of the object of interest to be formed on the retina.

**What part of the eye controls the shape of the lens?**

The ciliary muscles.

Photo 1: Eye External Anatomy
(SAMPLE ANSWER BELOW)

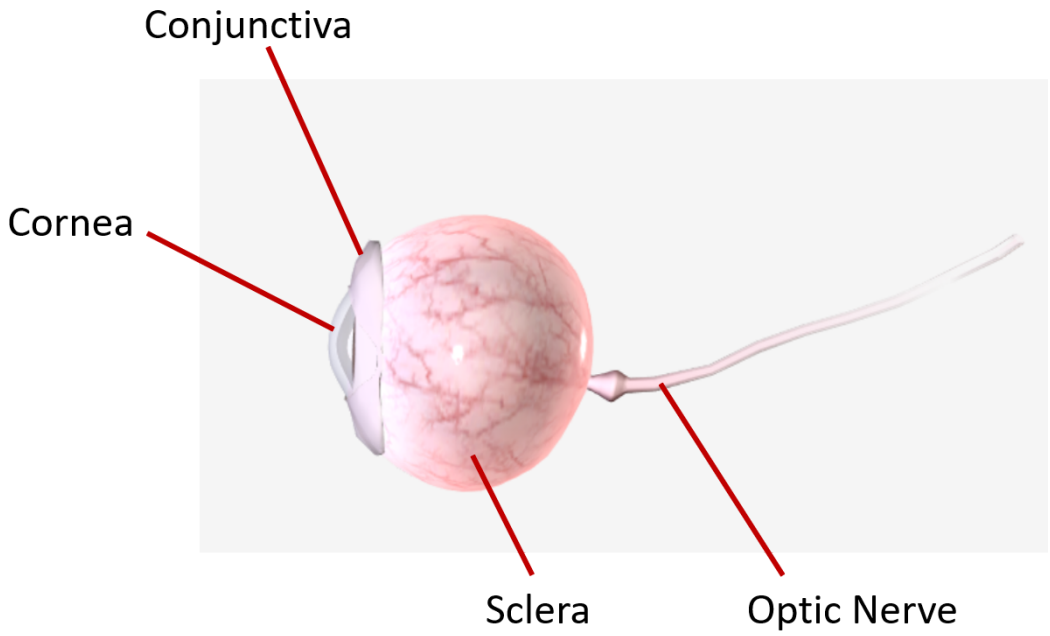


Photo 2: Iris and Pupil
(SAMPLE ANSWER BELOW)

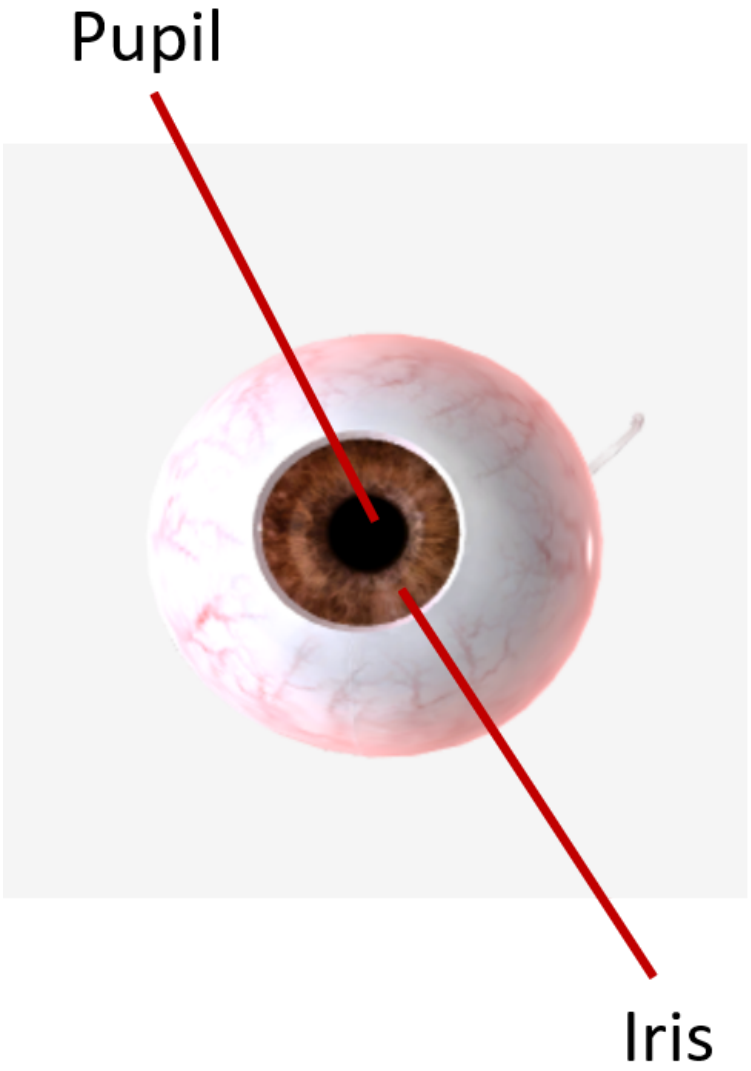


Photo 3: Lens, Ciliary Muscle, and Choroid
(SAMPLE ANSWER BELOW)

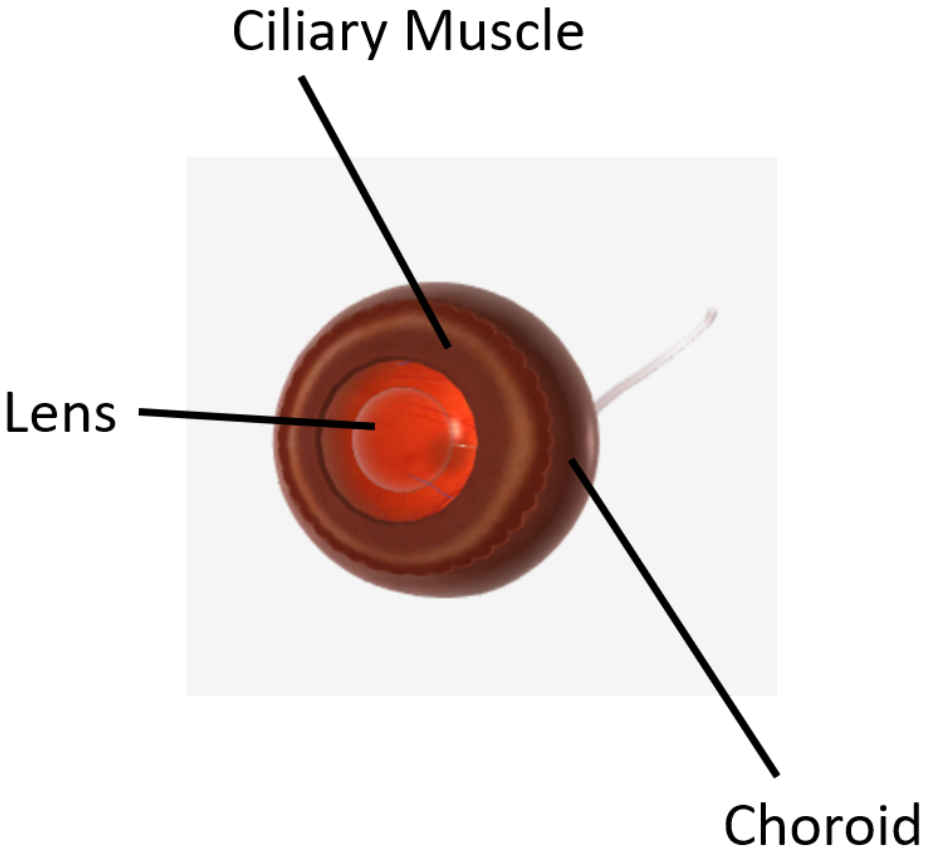



Photo 4: Virteous Body and Retina
(SAMPLE ANSWER BELOW)

Retina

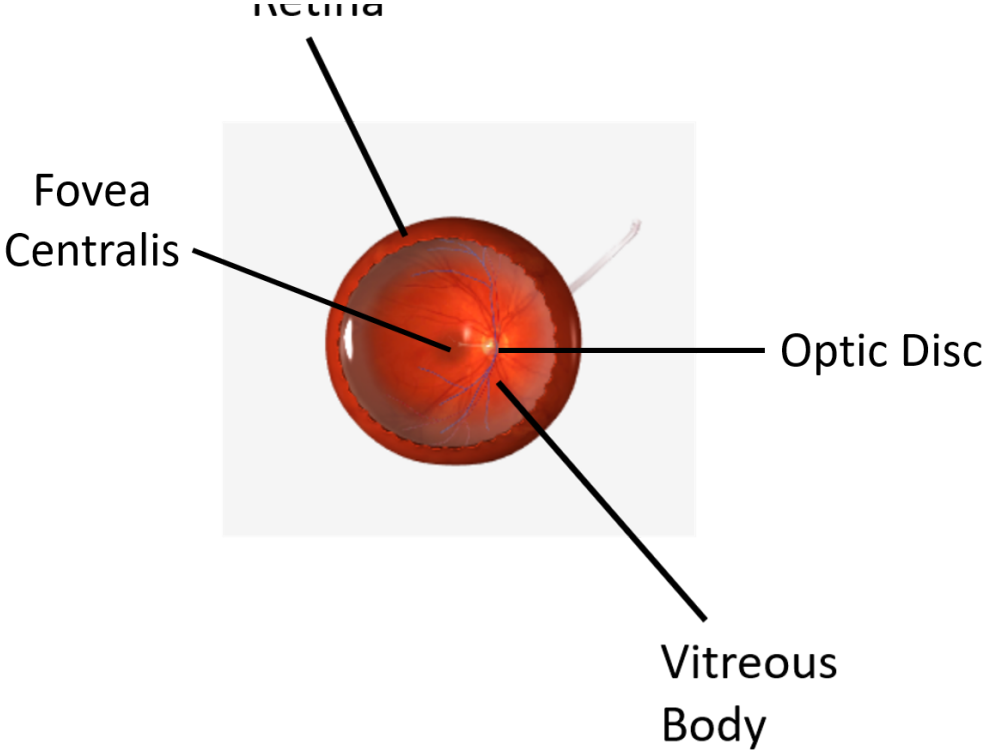
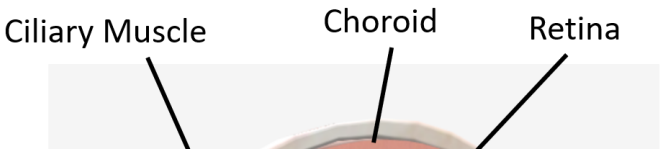
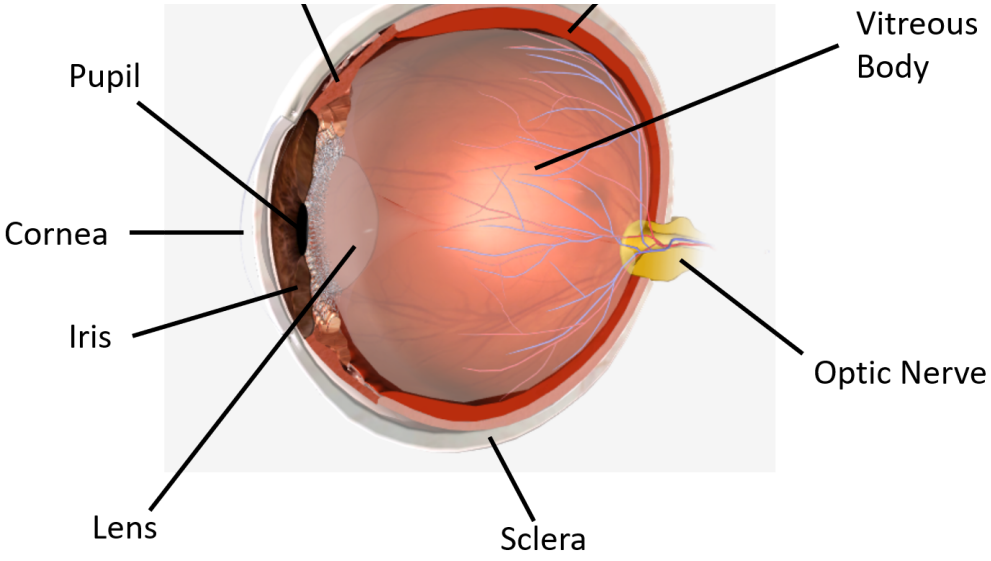



Photo 5: Eye Sagittal Cross Section
(SAMPLE ANSWER BELOW)






## Exercise 2

**What did you observe with regard to the pupillary reflex and the consensual response?**

The pupillary reflex constricts the pupil in response to light. Also, the consensual response is observed as the contralateral pupil constricts even when only one eye is exposed to light.

**What is an afterimage? Why does it occur?**

If cone cell photoreceptors are focused on an image for long amounts of time, they become overstimulated. In order to adapt, the eyes move very small amounts rapidly. If the area is too large and the small movements are not enough to move the image out of the range of these photoreceptors, they tire and cease responding to a specific signal (a specific color). Therefore, when the eyes are moved to a blank space, the photoreceptors that were targeted by the image do not respond as well to that color as the ones that surround the area, which still respond to the normal sensitivity of that color. The resulting “afterimage” is seen, where the color that was seen previously is degraded, and the afterimage looks like the “opposite” color.

Panel 1: Pupillary Response in the Right Eye
(SAMPLE ANSWER BELOW)

The pupil will constrict when exposed to a bright light.

Panel 2: Pupillary Response in the Left Eye
(SAMPLE ANSWER BELOW)

The left pupil should constrict when a bright light is shown into the right eye.

Panel 3: Yellow Triangle
(SAMPLE ANSWER BELOW)

Students should see a blue afterimage.

Panel 4: Blue Triangle
(SAMPLE ANSWER BELOW)

Students should see a yellow after image.

## Competency Review

**The anterior chamber of the eye contains a fluid called the _____.**

- aqueous humor ✔
- sclera
- lens
- vitreous humor

**An afterimage is the opposite color of the original image.**

- True ✔
- False

**What is the gelatinous mass in the posterior segment of the eye?**

- Aqueous Humor
- Retina
- Vitreous Humor ✔
- Cornea

**The _____ is the structure that causes the "blind spot" in the eye.**

- optic disc ✔
- cornea
- lens
- iris

**Which component of the eye contains the photoreceptors?**

- Cornea
- Sclera
- Choroid
- Retina ✔

**An individual cone can only detect a limited range of light wavelengths.**

- [x] True ✔
- [ ] False

**During the consensual response, one pupil constricts when exposed to light, and the other pupil dilates.**

- [ ] True
- [x] False ✔

**The iris is located under the cornea.**

- [x] True ✔
- [ ] False

## Extension Questions

**A cataract is the clouding of the lens in the eye. Cataracts are very common in older people, affecting more than half of Americans by age 80. Based on your knowledge of the physiology of the eye, describe how a clouded lens affects vision.** (SAMPLE ANSWER BELOW)

A clouded lens would reduce the amount of light reaching the retina and therefore change the nerve signals that are sent to the brain. A cloudy lens will result in a blurry and dull image. A cloudy lens may also produce vision with a brownish shade.