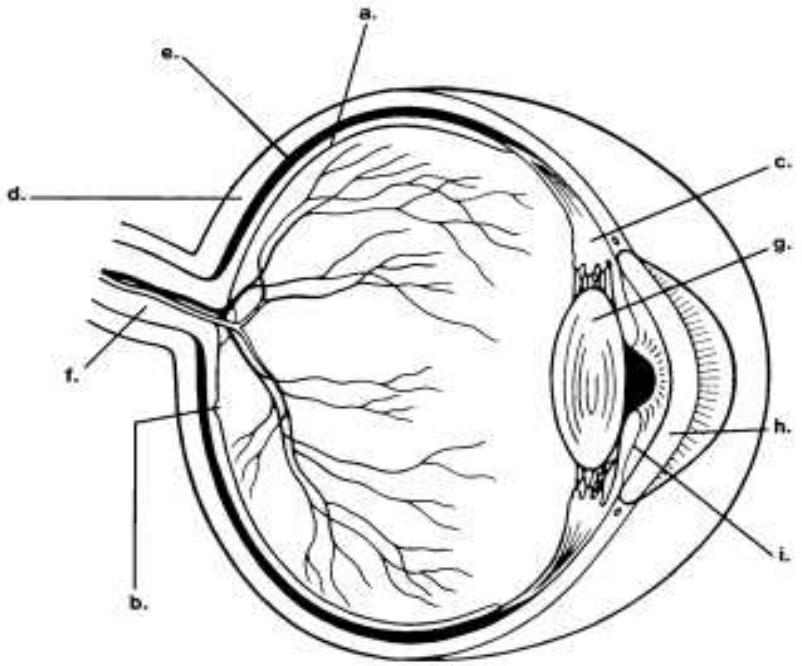
Visual Physiology

A. Anatomy of the Eye

In the following diagram, label the parts of the eye using the following alphabetized list of terms. Using the answer blanks provided, state the name and function of each part of the eye indicated in the illustration.

choroid
ciliary body
cornea
fovea centralis
iris
lens
optic nerve
retina
sclera



	Structure	Function
a.		
b.		
c.		
d.		
e.		
f.		
g.		
h.		
i.		

B. Testing Visual Acuity (VA)

1. Have your partner stand 20 ft from the Snellen eye chart and cover one eye with a hand.
2. As your partner reads each consecutive line aloud, check for accuracy. If this individual wears glasses, give the test twice – first with glasses off and then with glasses on.
3. Record the number of the line with the smallest-sized letters read. If it is 20/20, the person's vision for that eye is normal. If it is 20/40, or any ratio with a value less than one, he or she has less than normal visual acuity (VA). (Such an individual is myopic, so a person with 20/40 vision is seeing objects clearly at 20 feet that a person with normal vision sees clearly at 40 feet.)
4. Repeat this process for each eye.

VA of right eye 20/_____ VA of left eye 20/_____

Name: _____

C. Testing for Astigmatism

1. The astigmatism chart tests for defects in the refracting surface of the lens and/or cornea.
2. View the chart first with one eye and then with the other, focusing on the center of the chart. If all the radiating lines appear equally dark and distinct, your refracting surfaces are not distorted. If some of the lines are blurred or appear less dark than others, you have at least some degree of astigmatism.

Astigmatism in right eye? Y/N Astigmatism in left eye? Y/N

D. Near Point of Accommodation

1. Hold a sample of text about 14 inches from the face.
2. Cover the left eye and read the text.
3. Slowly move the text closer to your face until the letters are blurry.
4. Measure the distance from the text to the subject's eye in centimeters.
5. Using the chart below, compare age and near point of accommodation.

Approximate near point: _____

Correlation of Age and Near Point of Accommodation Near Point

Age	cm	inches
10	7.5	2.95
20	9.0	3.54
30	11.5	4.53
40	17.2	6.77
50	52.5	20.67
60	83.3	32.80

E. Dominant Eye

1. Hold your arm straight out in front of you.
2. Form a hole of about one-inch in diameter using both outstretched hands.
3. With both eyes open, view a small object across the room such as the wall clock through the hole between your hands.
4. Alternately close each eye to determine the one being used to view the target.

Which is your dominant eye? _____ Are you right or left handed? _____

F. Demonstrating the Blind Spot

1. Take one of the cards with a cross (+) and circle (o) on it.
2. Close your left eye, and hold the card about a foot in front of your right eye with the + on the left and focus on the +.
3. Although you are concentrating on the +, the o will also be within your range of vision. 4. Now move the card towards your face and right eye and find the spot where the circle disappears. (If it doesn't disappear, concentrate harder on the +).

Name: _____

4. Repeat the test for the left eye. This time close the right eye and focus the left eye on the o.
Why does the o 'disappear' from your vision? _____

_____

G. Color Blindness

Ishihara's color blindness plates are designed to test for deficiencies in the cones or color photoreceptor cells. There are three cone types – absorbing red, blue, and green wavelengths respectively. Interpretation of the intermediate colors of the visible light spectrum is a result of simultaneous input from more than one cone type. Use the Ishihara's book located on the front desk to test your color vision.

Any color vision defects revealed? Y/N

If defect revealed, explain. _____

_____

H. Depth Perception: Polarized Lens Screener

1. Use the black stereo vision screening book and glasses located on the front desk.
2. Put on the glasses and keep both eyes open
3. Verbally (don't touch) tell the examiner the location of 3-D perception in the exam book

Record results _____

_____

I. Binocular Vision and Convergence

1. Have your laboratory partner focus on the point of a pencil held about 2 feet (two thirds of a meter) from his or her nose.
2. Slowly bring the pencil toward your partner's nose until he or she sees two pencils points.
3. Observe the action of your laboratory partner's eye.

Record results _____

_____

J. Pupillary Reflexes

1. Have your laboratory partner cover his or her right eye with an index card.
2. Hold a small penlight about 6 inches (15 cm) from your laboratory partner's left eye.

Name: _____

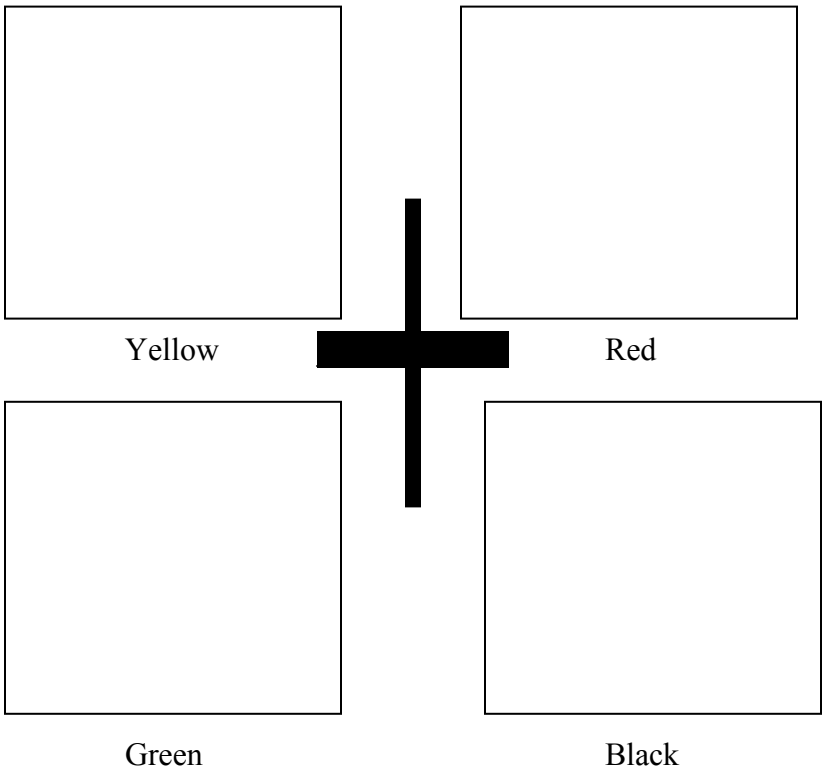
3. Shine the light into the eye for 2 seconds. Note any changes in the pupil.
4. Wait about 2 minutes and repeat the procedure with the right eye.

Record results _____

_____

K. Afterimage

1. Color the afterimage card below according to the designated colors.
2. Stare at the cross in the center of the afterimage card for 30 seconds.
3. Immediately stare at an unlined white card. Record your observations. (This may take several tries.)



Record results _____

_____

Name: _____