

EXERCISE II: The Visual Senses

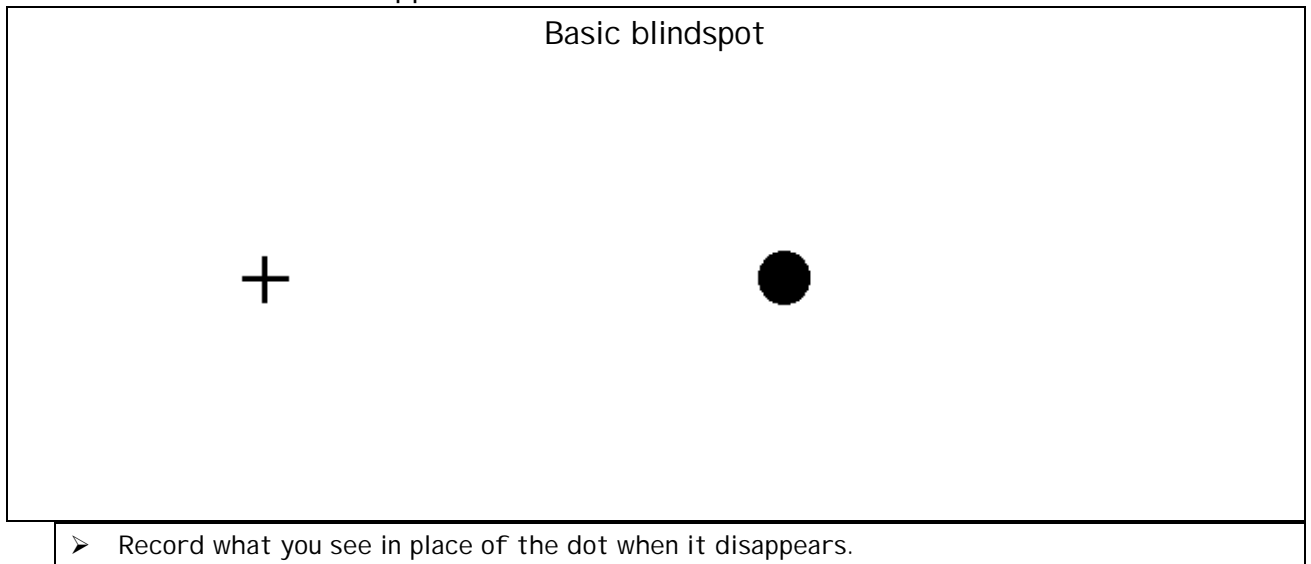
A. Basic Blind Spot Determination

Look around. Do you see a blind spot anywhere? Maybe the blind spot for one eye is at a different place than the blind spot for the other (this is actually true), so you don't notice it because each eye sees what the other doesn't. Closing one eye should cause you to have a blind spot. **Close one eye and look around again.** Now do you see a blind spot? Hmm. Maybe its just a little TINY blind spot, so small that you (and your brain) just ignore it. Nope, its actually a pretty BIG blind spot, about the size of someone's head, as you'll see if you look at the diagram below and follow the instructions.

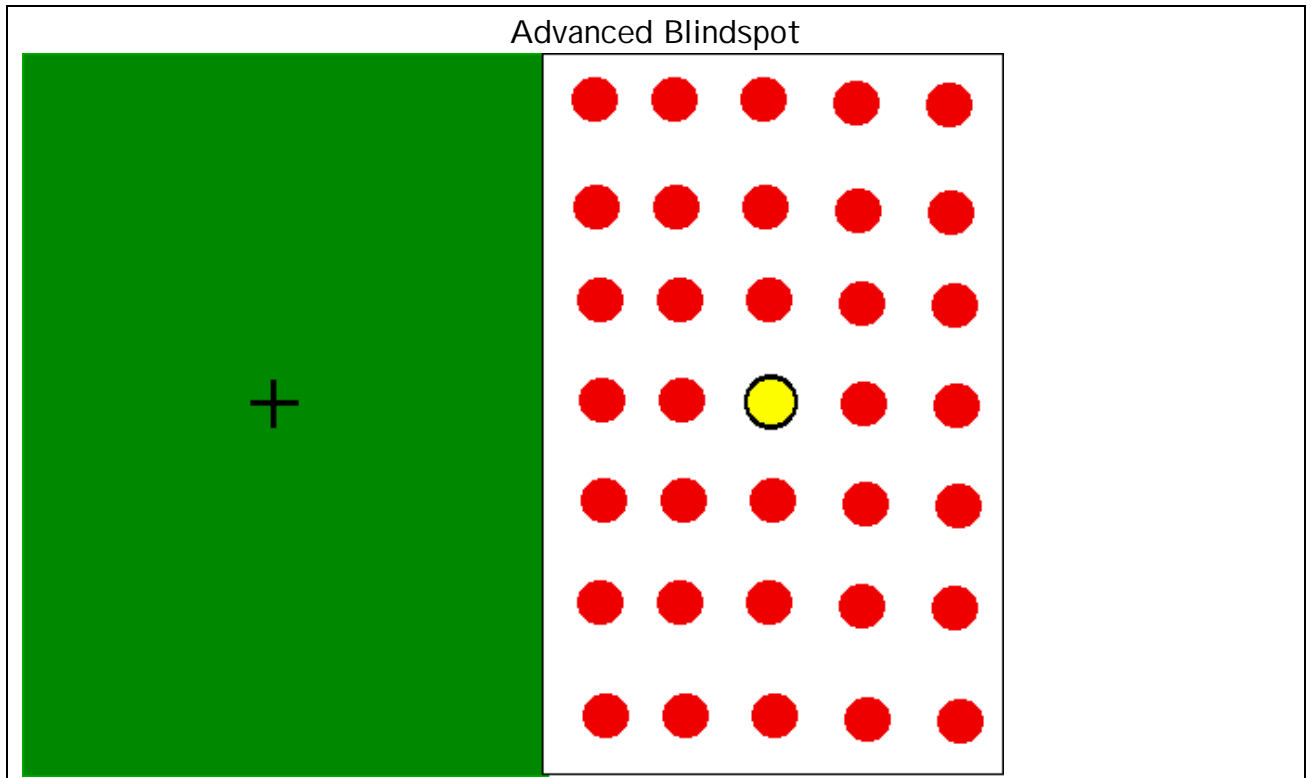
1. Close your left eye. Start with the paper at arms length from your face with the cross directly in front of the right eye. You should be able to see the cross and the circle when you close the left eye. Keeping the left eye closed, slowly bring the paper closer to the face while fixing the right eye **on the cross**.

At certain distances, the circle will disappear from the field of vision because its image falls upon the blind spot. Record what you see in place of the dot in part A of the data sheet.

Use the X and dot that appear below:



Try this again with the diagram on the next page.



➤ Record what took the place of the dot now.

B. Dominant Eye Determination

Most individuals do not make equal use of both eyes. They depend more heavily on one eye, the dominant eye. The dominant eye can be identified in one of the following ways:

1. Make a tube about 1 inch diameter from a sheet of notebook paper. Look through it at some object across the room with both eyes. Notice how things look. Now switch eyes with the tube and repeat. With the tube on your dominant eye, you will get the impression that you are looking at the object from inside the tube. With your other eye, you will feel like you are next to the tube.
2. With both eyes open, look at a small object (less than 1 ft. wide) across the room from you. Without thinking about it too much, put your thumb up so it covers the object. Keep focused on the distant object. Don't move your thumb from that spot. Now close your left eye and watch what your thumb does. Open your left and close your right. The eye that keeps your thumb on the object is your dominant eye. The eye that makes your thumb jump to the side is your non-dominant eye.

A. Visual acuity

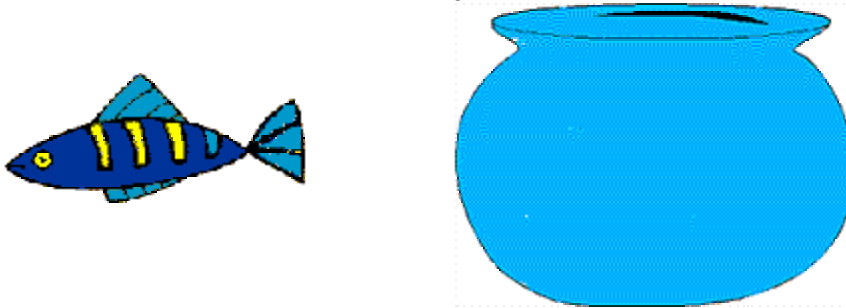
The Snellen test letter chart used for measurement of visual acuity is based on the fact that the letters, at the distance of 20 ft, subtend a visual angle of 5 min, and the lines that form the letters subtend a visual angle of 1 min of arc.

How to use the eye chart:

- The Snellen Eye Chart is read while standing 20 feet from the chart. Be sure the room you are in is well lit but is not in full sunlight.
- Test one eye at a time (cover the other eye with your hand or card etc.). The lowest line that you can read correctly is your visual acuity (*see below*).
- At 20 feet (6 meters) you should try to read the letters on the row 6th from the top. If you can read that line ok it means you have visual acuity of 20/40 or better: 1/2 normal.
- Standing at 10 feet from the eye chart if the smallest letters you can read were on the 6th row from the top, this would give you an acuity of 10/40: 1/4 normal.

D. Afterimages

Looking steadily at a bright light or at bright colors seems to produce fatigue in the receptor cells. As a result, "afterimages" are seen. Stare at the yellow stripes in the fish for 30 seconds. Keep your eyes as still as possible. Then look at the fish bowl. What do you see there? What color is it?



E. Pupil Response

1. Allow a strong light from a window or lamp to fall on your eyes and then look at a dark surface away from the light while your partner observes the pupils of your eyes. Record result.
2. Next place your hand over one eye for about 10 seconds and have your partner observe what happens to the uncovered eye. Now remove your hand and have your partner observe what happens to the eye that was not covered. Record result on the data sheet.

F. Depth Perception

1. To demonstrate the difference of using one vs. two eyes to judge depth hold one pencil in your hand while your partner holds a second pencil in their hand. Hold

them either vertically or horizontally facing each other at arms-length from your body. With one eye closed, try to touch the eraser of your pencil to the eraser of the other pencil. Now try with two eyes: it should be much easier.

