



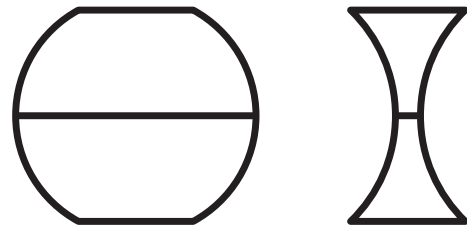
Optical Illusions



1. Which line is longer?



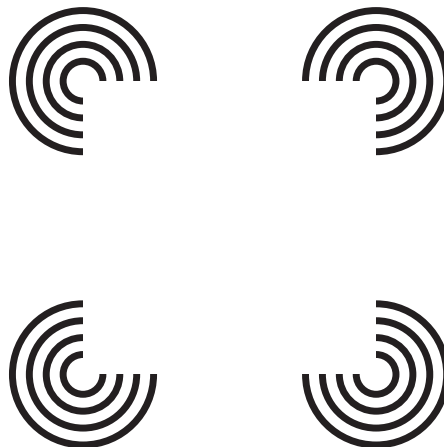
2. Which of the bottom lines of each object is longer?



3. What do you see?



4. What shape do you see inside the four partial circles?



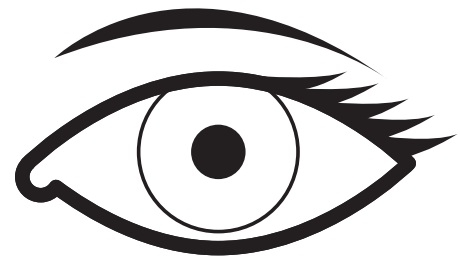
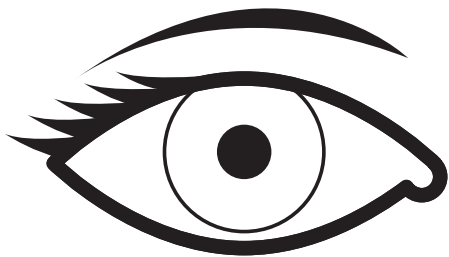


Our Eyes Are All Different



The part of the eye that is colored is called the iris. Everyone in the world has a different color iris! What color is your iris? That's one of many things that make you special.

Color your iris in the picture below. Color some of the other color eyes you see in your room.



Safe Eyes



There are some things you can do to protect you and your friends' eyes.

1. Play with toys the way they were meant to be played.
2. Don't throw toys, dirt or rocks at others.
3. Don't run with sharp or pointy things in your hands.
4. If something gets stuck in your eyes, don't rub. Have an adult help you.
5. Wear safety glasses when helping an adult with sanding wood, sawing, blowing leaves or any other job that might get dust in your eyes.
6. Get plenty of sleep.
7. Make sure to have your eyes tested.

Pick one of the safety tips above and draw a picture in the space below to help teach other children.

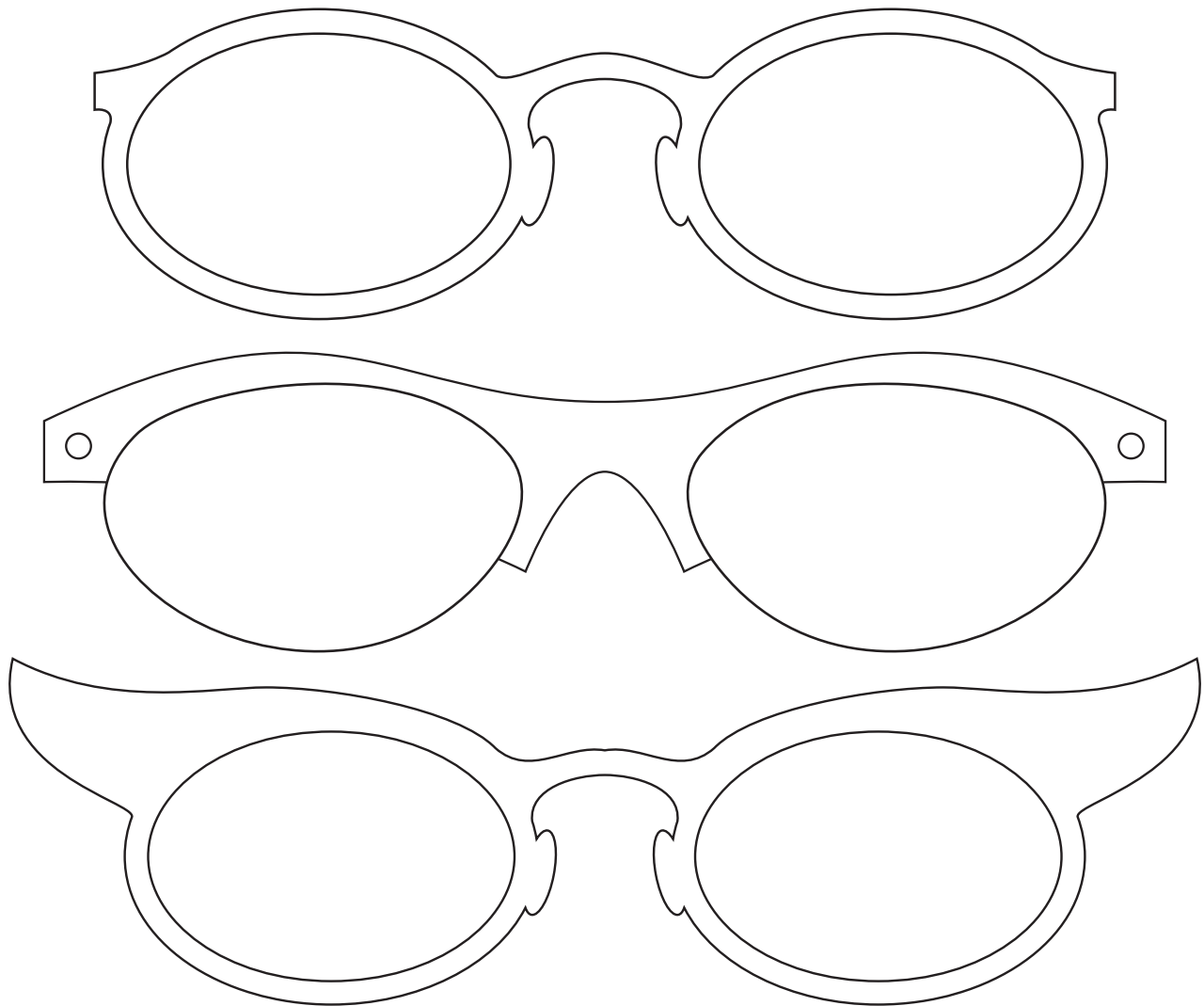
Why Do Some People Wear Glasses?



People wear glasses or contacts so that they can see things clearly. When things are blurry, it's hard to see things like words on a black board or an exit sign if there is a fire. It's almost like glasses give that person a super-power to see things they couldn't see before.

How many people do you know that wear glasses or have contacts?

Color your own super-power glasses. What would they let you see?



Day and Night



Learning Objective:

To understand how the eyes react and adjust to light.

Materials:

A mirror and a flashlight

Procedure:

Set up a mirror in a darkened room. A student or several students should stand in front of a mirror for a few minutes. They should be able to notice that the pupils in their eyes have become larger. That is because, in the dim light, the muscles in the iris enlarge the pupil to let in more light. Now, give the flashlight to the student or students and instruct them to carefully shine it at their eyes while they continue to look into the mirror. Ask them what they see. They should see their pupils react by becoming smaller to let in less light.

Ask students to give examples from their everyday lives of the effects of light on their eyes. These might include:

- Entering a dark movie theater on a sunny day, and then leaving the theater to return to the bright sunlight.
- Being awakened by a bright light when you are sleeping.
- Being on an amusement park ride that suddenly goes into a tunnel.

Pinhole Focusing



Learning Objective:

To show that light travels in a straight line and can be focused to form an image or picture.
To illustrate the effect a lens has in bending light rays.

Materials:

Poster board, sheet of waxed paper, scissors, push pin, darning needle, masking tape, a drop light or table lamp shielded to emit the most light in one direction.

Procedure:

Cut a piece of poster board about 12 inches square. Make a small, clean hole in the center of the poster board with a push pin. (Make sure the hole is very small and very sharp.) In a very dark room, ask one student to hold the poster board with the pinhole in line with, and between 5 to 10 feet away from, the drop light or lamp. Ask another student to hold the waxed paper about an arm's length away from the poster board. Explain that the waxed paper serves as a screen, and that an image focused by the pinhole will appear on that screen upside down.

Demonstrate this by asking a third student to hold an object, such as a scissors, between the light source and the poster board. Ask the student to move the waxed paper closer and farther away and ask students to tell you what they observe.

Conduct the same demonstration two or three more times, enlarging the hole gradually each time until it is the size of the circumference of a darning needle. The image should become brighter and more blurred due to overlapping light rays. If the hole gets too large, mask it with tape and start again.

Explain to the students that the cornea and lens of the eye bend the entering light rays and narrow them to focus on the retina. Note that at this point the picture is upside down, just as the students saw in the demonstration. The image is turned around in the brain and we "see" it right side up.

NOTE: Since you are performing this experiment in a dark room, remind students to be careful.

Safety Tips for Eyes



Eyes are very precious. They allow you to read, to draw, to learn, to play, to see people, to watch television. In fact, nearly everything you do begins with what you see. *So, protect your eyes. Take care of your vision. Our world is full of wonderful things to see!*

There are five important eye safety tips to remember:

1. Be careful not to throw, point or run with sharp objects.
2. Stay away from BB guns, bows-and-arrows and sling shots that can shoot objects in your eyes.
3. Use proper lighting for reading, writing, using your computer or watching television.
4. If something gets in your eyes, wash them out with water right away.
5. Tell your parents or teacher if you have trouble seeing clearly. You may need to see your optometrist, a doctor who can help you see better.

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Activity Sheets Answer Key



How The Eye Works, Level 2 & 3

ANSWERS:

1. Cornea.
Outermost transparent layer of eye.
Begins focusing process.
2. Pupil.
Opening to the inner eye.
3. Iris.
Controls size of pupil.
4. Lens.
Focuses image of object (on retina).
5. Vitreous Humor.
A jelly-like fluid that keeps
the eye round.
6. Retina.
Contains cells that detect light.
7. Optic Nerve.
Transmits information to the brain.

Your Eye-Q Test, Level 2 & 3

ANSWERS:

- | | |
|----------|-----------|
| 1. True | 11. True |
| 2. False | 12. False |
| 3. True | 13. False |
| 4. False | 14. True |
| 5. False | 15. False |
| 6. False | 16. False |
| 7. True | 17. True |
| 8. True | 18. True |
| 9. False | 19. True |
| 10. True | 20. True |

Focus On Seeing, Level 3

ANSWERS:

1. Ciliary Muscles
2. Retina
3. Inverted or upside down
4. Front, Retina
5. Back, Retina
6. Nearsighted or Myopic
7. Lenses

Healthy Eyes Checklist, Level 3

ANSWERS:

- | | |
|--------|--------|
| 1. B-3 | 5. C-2 |
| 2. D-3 | 6. G-1 |
| 3. H-3 | 7. E-4 |
| 4. A-5 | 8. F-6 |

Optical Illusions, All Levels

ANSWERS:

1. They are the same lengths.
2. They are the same lengths.
3. You may see a vase or two faces looking at each other. You may see both, but not at the same time.
4. You should clearly see a square box, even though it is not drawn, just suggested by the partial circles.