



Vision UnLocked!

Engage • Educate • Empower



A STEM Curriculum for Students: Grades 6-8



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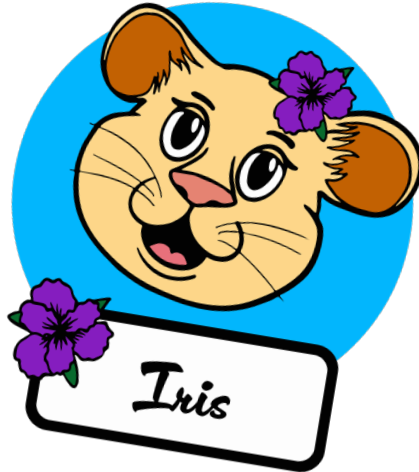
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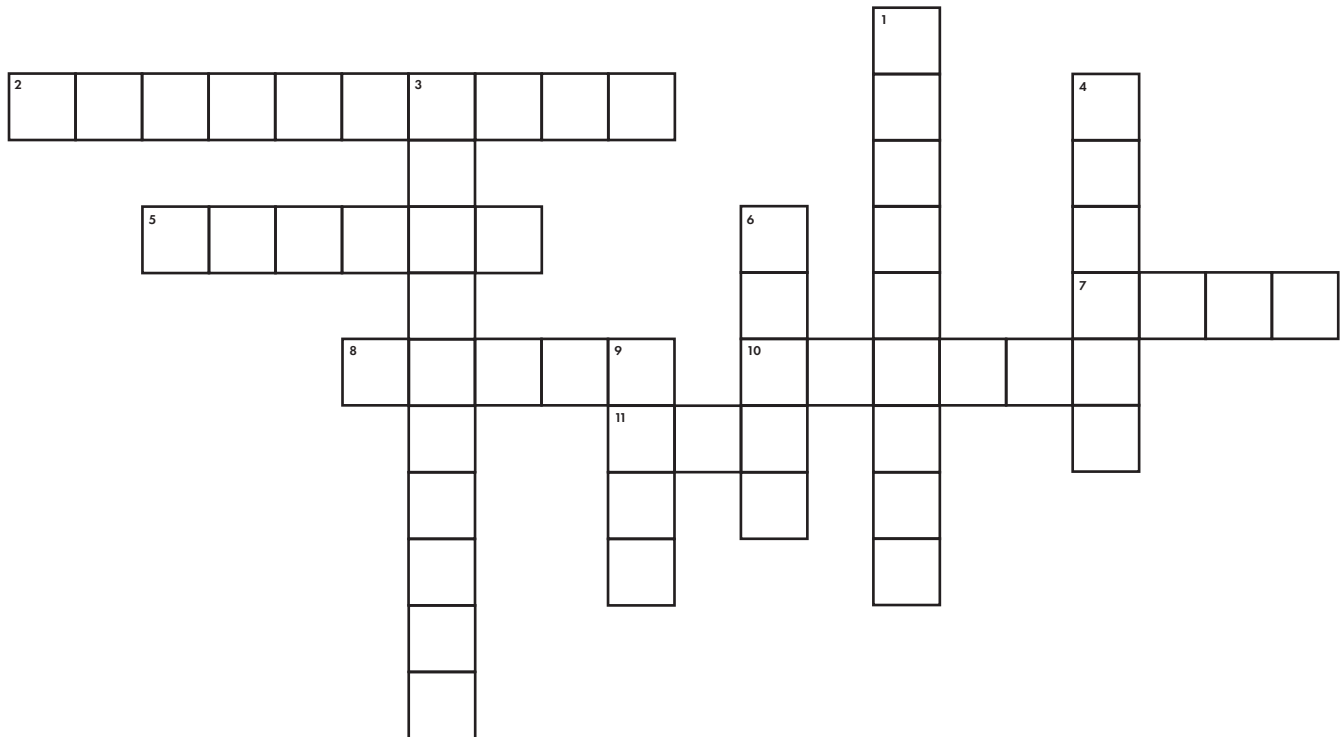
Meet Lens, Iris, & Friends

Lens and Iris are siblings. They have a spirit for adventure and love to “see things,” “find things,” and “watch” things. Ever since Lens got his glasses when they were kids, they’ve been fascinated with their eyes!

Now that they’re in middle school, Lens and Iris are in Mrs. Obscura’s science class with their new friends Crystal, Keene, and Pierce, who has been quiet and moody ever since his grades started dropping in Mrs. Obscura’s class.



Worksheet 1.1: Vocabulary Practice



Down:

1. This is a small area in the back of the eye where the optic nerve connects to the retina. This area lacks light-sensitive cells. As a result, the blind spot does not contribute to our ability to see.
3. These are a group of muscles surrounding and within the eye that work together to control the movement and positioning of the eyeball. These muscles allow us to perform essential functions such as looking in different directions, tracking moving objects, and maintaining a stable gaze.
4. The tissue found in the back of the eyeball. The retina "receives" images, and sends it to your brain. The information is transmitted through the optic nerve.
6. This is a small, central area within the retina of the eye that is responsible for sharp, and detailed vision.
9. Located toward the front of the eye. The lens is held in place by ligaments. It helps focus light rays that enter the eye.

Across:

2. This nerve carries messages from the retina to the brain. This process results in a visual image. There are millions of fibers that make up an optic nerve.
5. A clear, or transparent tissue that covers and protects the eye. The main function of the cornea is to refract, or bend light. The cornea acts as the eye's outermost lens, and helps focus light as it enters the eye.
7. This is the colorful part of the eye that is front, and center of the eyeball. The iris helps control the amount of light that enters the eye.
8. The pupil is the opening in the eye's center. This is where light enters and then goes through the lens. The pupil has muscles. When the pupil needs more light, it expands. In bright light, the pupil is made smaller.
10. The act or power of seeing.
11. The eyes are organs that allow one to see. Eyes take in light, and send visual information to the brain. Eyes can see in all directions including the front, and sides (peripheral vision).



Eye Anatomy

NAME _____

Instructions: Label the parts of the eye using the vocabulary bank. *Hint: One word appears twice!*

CORNEA

EYEBROWS

EYELASHES

EYELIDS

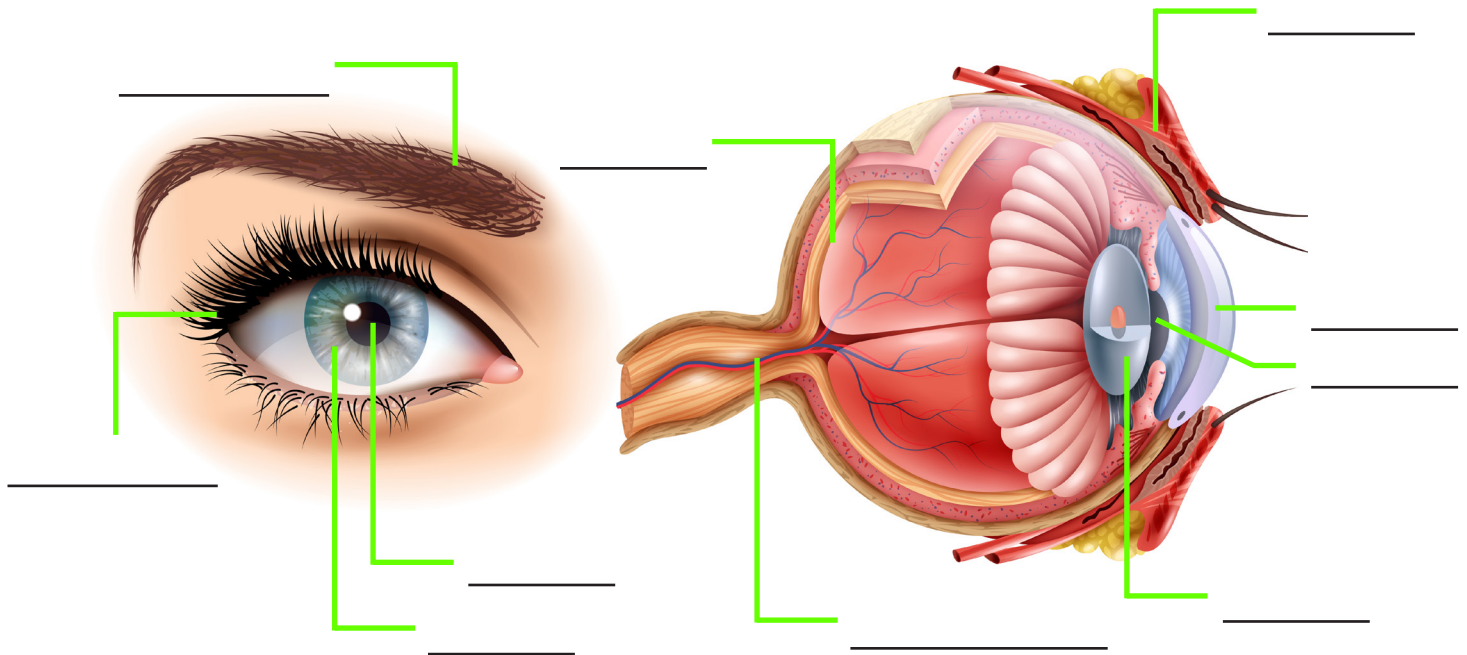
IRIS

LENS

OPTIC NERVE

PUPIL

RETINA





What Exactly Children See

NAME _____

Instructions: Match the milestone to its Appropriate Age Range.

Age Range Timeline:

Milestone:

Birth to 6 months

Better perception and object recognition; can start scribbling with crayons

6 months to 1 year

Learning to recognize and copy lines and shapes. Builds early reading skills. Should be able to identify pictures. Depth perception, hand-eye coordination, fine motor skills, and visual memory should all show improvement

1 year to 2 years

Improved hand-eye coordination, distance judging, and grabbing

Preschool

A child’s vision is fully developed

10 years

Eyes are gaining abilities like focusing and seeing in 3D with more color; first eye exam at 6 months



Overview of Statistics

NAME _____

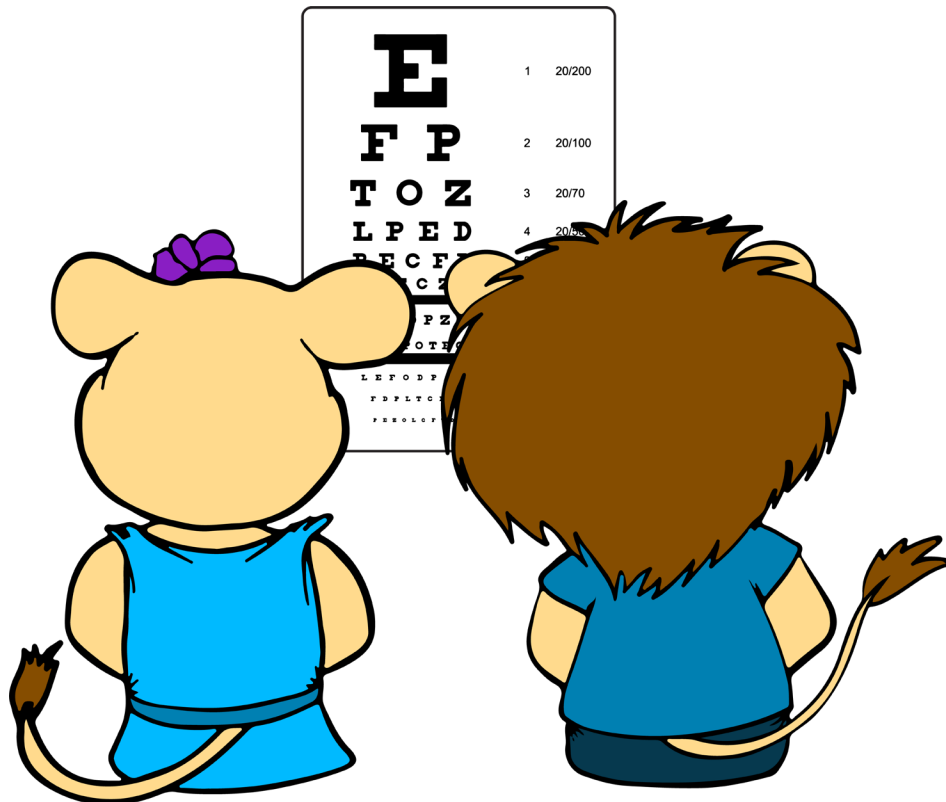
Instructions: Fill in the blanks with the number that you guess, or circle one of the options.

According to the CDC, _____ % of children younger than 18 in the United States have a diagnosed eye and vision condition, and _____ % are blind or visually impaired.

Less than _____ % of preschool children receive some type of vision screening.

Marginalized communities are at higher or lower risk of blindness.

In a survey, _____ % of respondents said their day-to-day life would be greatly impacted by losing their vision, but less than _____ % knew there were no early warning signs of some eye diseases like glaucoma and diabetic retinopathy.





Signs of Vision Issues

Instructions: Fill in the columns with the signs that your teacher says, then brainstorm with your peers what these signs can masquerade as.

NAME _____



VISIBLE SIGNS:

INVISIBLE SIGNS:

VISION ISSUES CAN MASQUERADE AS:



Common Vision Issues

NAME _____

Instructions: Fill in the left column with what you think causes the condition in the right column.

CAUSE:

EFFECT:

Amblyopia: Impaired or dim vision without obvious defect, or change in the eye.

Astigmatism: A defect in the eye, or in a lens, which results in distorted images, as light rays are prevented from meeting at a common focus.

Color Vision Deficiencies: Color vision deficiency is the inability to distinguish certain shades of color. The term "color blindness" is also used to describe this visual condition.

Hyperopia: Farsightedness.

Myopia: Nearsightedness.

Strabismus: Also known as hypertropia, and crossed eyes.