

Kentucky Summative Assessments



Grade 4 Science Released Items 2022



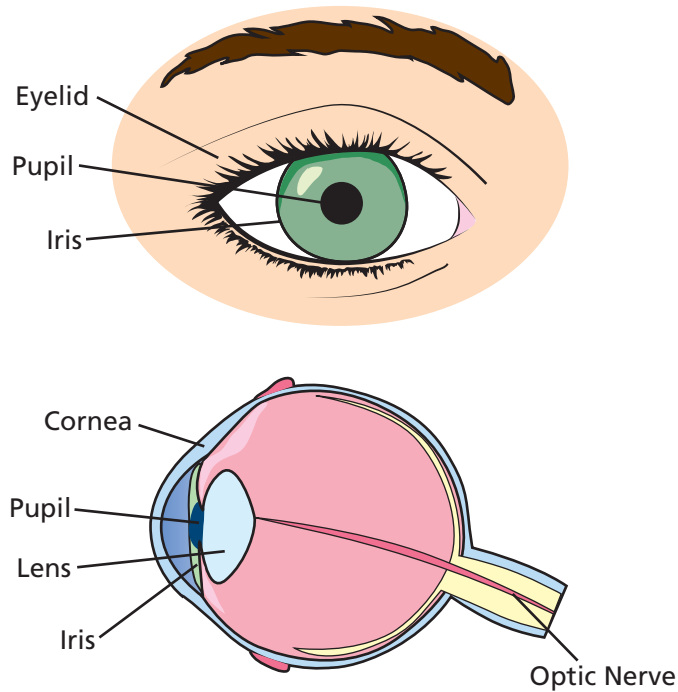
SC041607_00

Tom and Vicky are playing “fetch” with their dog one evening. Tom or Vicky throw the ball, and the dog brings it back to them to throw it again. Their dog wants to keep playing even after dark.

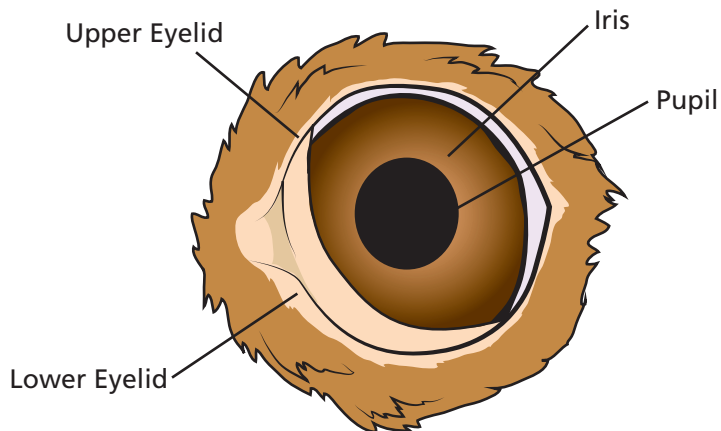
After it is dark, the dog is still able to find the ball and bring it back. Tom and Vicky research dogs’ senses to determine how the dog finds the ball.

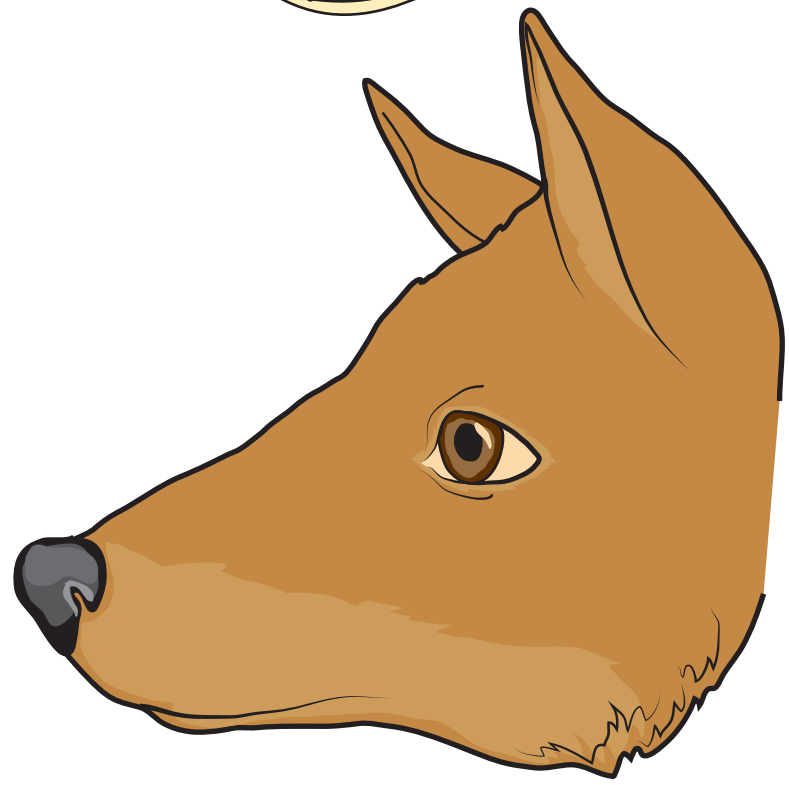
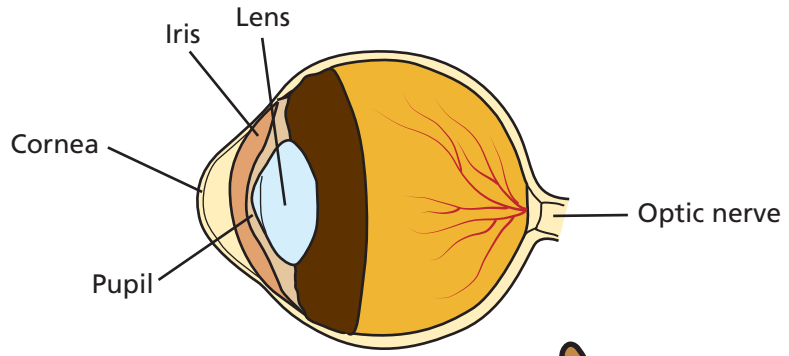
Their research indicates that dogs’ eyes are similar to human eyes, but that dogs have better night vision. Both dogs and humans have a cornea that gathers light and a lens that focuses the light.

HUMAN EYE DIAGRAM



DOG'S EYE DIAGRAM



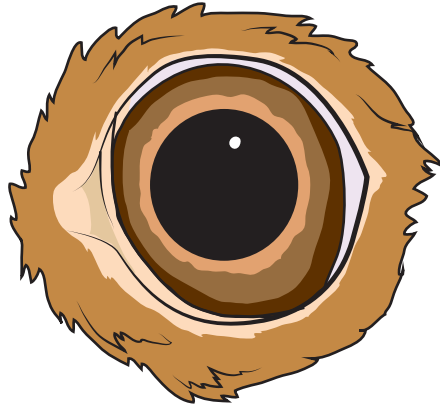




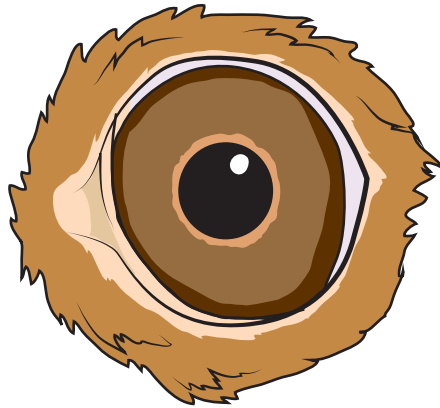
SC041607_00a

In science class, Tom and Vicky look at diagrams of a dog's eye in bright light and dim light. They are talking about the reason that the pupil of a dog's eye might get larger in dim light.

Dim Light



Bright Light





1

SC041607_01_1

The one reason that the pupils of a dog's eyes get larger in dim light is **most likely**

- A** to allow more light to enter the eyes
- B** to protect the eyes from too much light
- C** to allow light to travel from the dog's eyes to the object
- D** to increase the speed of the light waves that enter the eyes



SC041607_00b

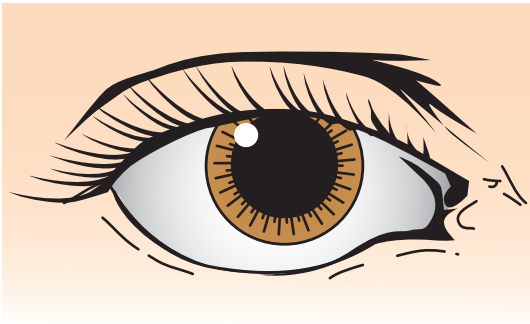
Tom and Vicky want to see if human eyes work the same way dog eyes do under dark and light conditions. Vicky sits in different locations, some of which are dark and some of which are bright. She sits in each location for a few minutes to let her eyes adjust to the light. Tom draws an image of her eyes while she sits in each location. Tom tells Vicky that her eyes look different in different light conditions.

2

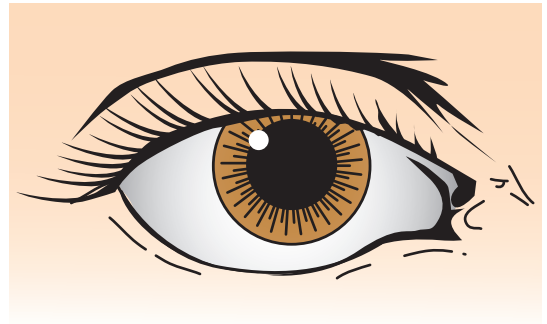
SC041607_02_4

Select the one image that **best** illustrates Vicky’s eye when she sat in the brightest location.

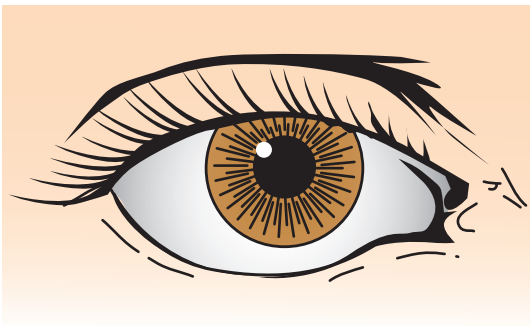
A



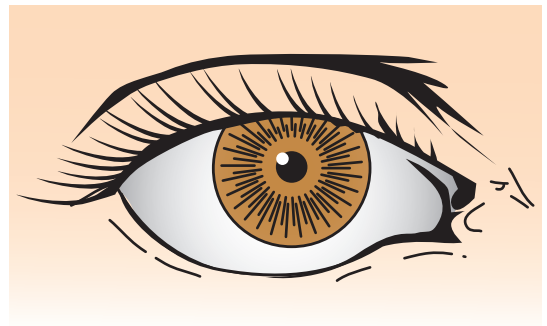
B



C



D





SC041607_00c

Next, Tom and Vicky decide to play with their dog outside in the bright sunlight. The sunlight is very bright, so Vicky suggests that Tom put on sunglasses. Vicky wears sunglasses too. They talk about how sunglasses are helpful, especially on a bright summer day.



3

SC041607_03_3

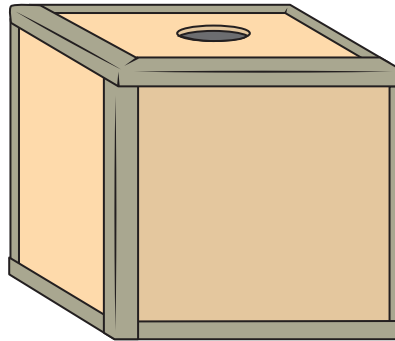
If Tom forgets to remove his sunglasses when he goes back indoors, the one **most likely** reason he will have difficulty seeing is because

- A** the lens of the eye is better at focusing dim light
- B** sunlight is a different kind of light than indoor light
- C** his pupil cannot open far enough to admit enough light
- D** the sunglasses block the rays when Tom's eyes produce light



SC041607_00d

Tom and Vicky talk to their teacher about light, and he shows them a box that is sealed so that no light can enter.



The box has a single hole for looking into the box. The teacher tells Tom and Vicky that there is a mirror, a small white ball, and a dark red button in the box. The teacher asks, “What will you see when you look into the box by putting your eye over the viewing hole?”

4

SC041607_04b_2

Which statement best explains what you will see in the box?

- A** You will see the white ball because white objects reflect every color of light.
- B** You will not be able to see anything because there is no light in the box.
- C** You will see the mirror because it reflects the light from your eye.
- D** You will not see the mirror because all the light will reflect off the mirror and onto the other objects.



SC041607_00e

Tom and Vicky read about senses other than sight that their dog may use to find the ball in the dark.

Tom and Vicky's research shows that dogs use their sense of smell to understand their environment. A dog also uses much more of its brain to control its sense of smell than a human brain does: A dog's sense of smell is from 1 million to 100 million times stronger than a human's sense of smell.

In addition to its sense of smell, a dog's hearing allows the dog to hear sounds that are about four times farther away than a human's weaker hearing can detect. Dogs also have more muscles in their ears than humans. Dogs can move their ears toward sounds. Finally, dogs can hear high-pitched sounds humans can't hear.

5

SC041607_05_3,1

After research and playing fetch, Tom and Vicky claim the dog was able to locate the ball in the dark. Which pieces of evidence support this claim?

Select the TWO **best** answers.

- A** Dogs are able to see in dimmer light.
- B** Dogs are able to see when no light is available.
- C** Dogs' strong sense of smell helps locate the ball.
- D** Dogs know how far humans usually throw the ball.
- E** Dogs' hearing can hear the ball after it stops moving.



SC041607_00f

It starts getting dark, and Tom and Vicky start having trouble locating the ball. Tom said, “Wait a minute, Vicky. I will go inside and get a flashlight.” Once he brings the flashlight, they are able to find the ball easily.

6

SC041607_06_1

When it starts getting dark outside, the flashlight **most likely** provides which one of these?

- A light waves that are reflected by the object and gathered by the eye
- B light waves absorbed by the optic nerve to receive signals from the brain
- C light waves that supply energy to the eye so that the iris can change size
- D light waves reflected by the center of the eye, the pupil, back to the object



SC041607_00g

Tom and Vicky talk with their teacher, and their teacher tells them that dogs can sense when people have certain diseases. They ask how this is possible.

7

SC041607_07_2

Which one statement **best** explains why dogs have this ability to sense human diseases?

- A** Dogs have extra senses humans do not have.
- B** Dogs have a strong sense of smell and hearing.
- C** Dogs can determine if human eyes are open or closed.
- D** Dogs' eyesight is better than humans' eyesight during the day.



SC041607_00h

The next day, Tom and Vicky go outside to play with their dog. Their dog gets excited when she sees the ball they use to play with. She wags her tail and jumps up and down.

8

SC041607_08

Explain why Tom and Vicky's dog starts wagging her tail and jumping around when she sees the ball Tom and Vicky use to play the game "fetch." Be sure to include the senses the dog uses and the information the dog receives from those senses.



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