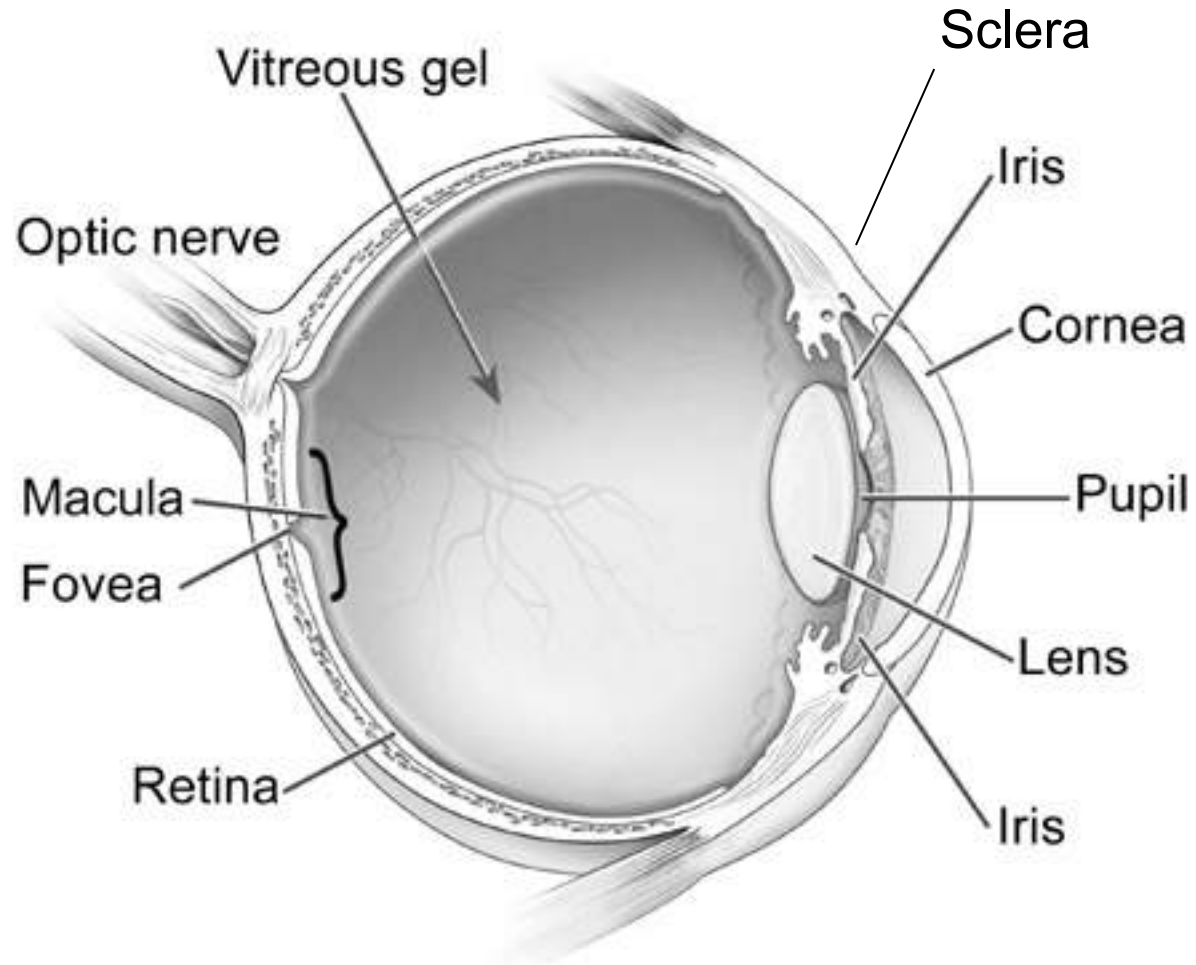


An Exploration of the Eye



Anatomy of the Eye



Our plans for exploring the eye

Week 1 – discuss the eye, game

Week 2 – activity, model eye, game

Week 3 – eye dissection

Week 4 – compare results, activities

Results of eye dissection

How were the cow, pig, and sheep eyes alike?

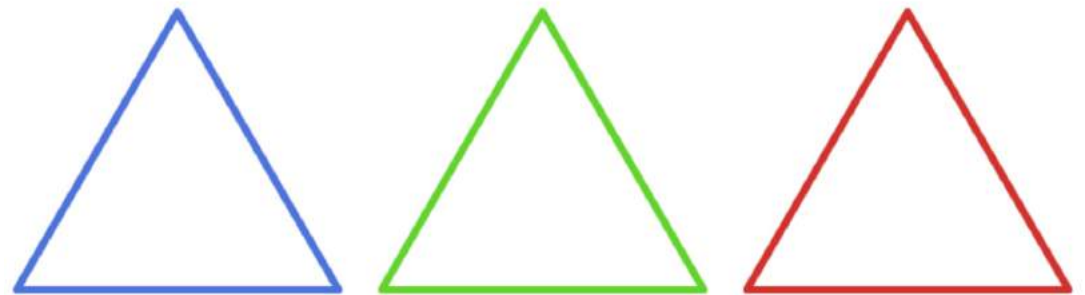
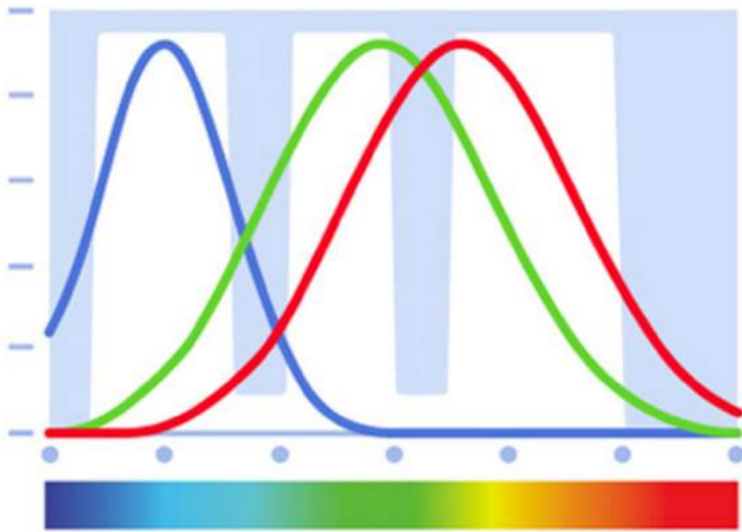
How were they different?

Iris – could you find the two sets of muscles?

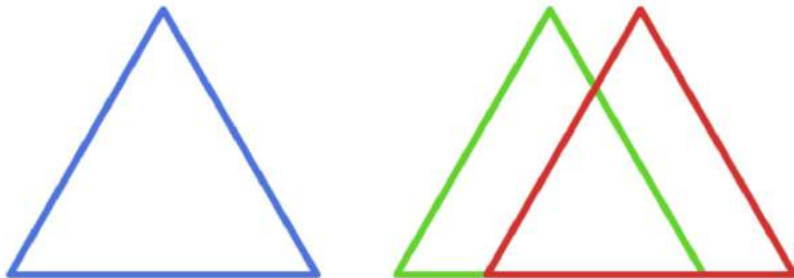
What else did you find? extra-ocular muscles, tapetum lucidum, blind spot, fovea?

Glasses for color blindness

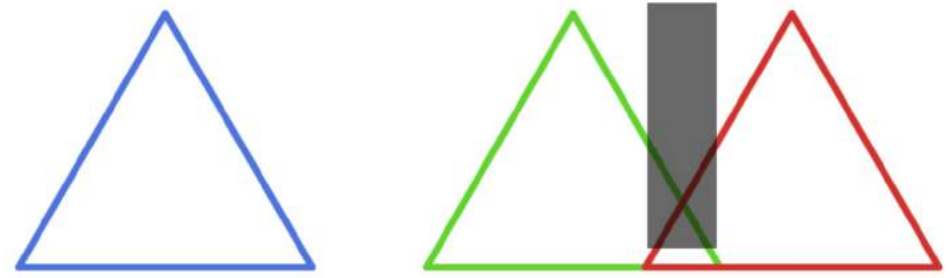
Yes, they do exist! How do they work?



Normal Color Vision



Red-Green Color Vision Deficiency (CVD)



Red-Green CVD with EnChroma Lenses

Eye color – why is your eye a certain color?

Determined by genetics

Brown is dominant, but several genes

Brown eyes – more melanin

Brown is the most common eye color

Green is the least common eye color

Babies eyes can change color –

more melanin as they get older



Do carrots help your eyesight?

Yes!

Carrots have beta-carotene, which your body uses to make vitamin A. Vitamin A helps vision.



Rods and Cones

Rod



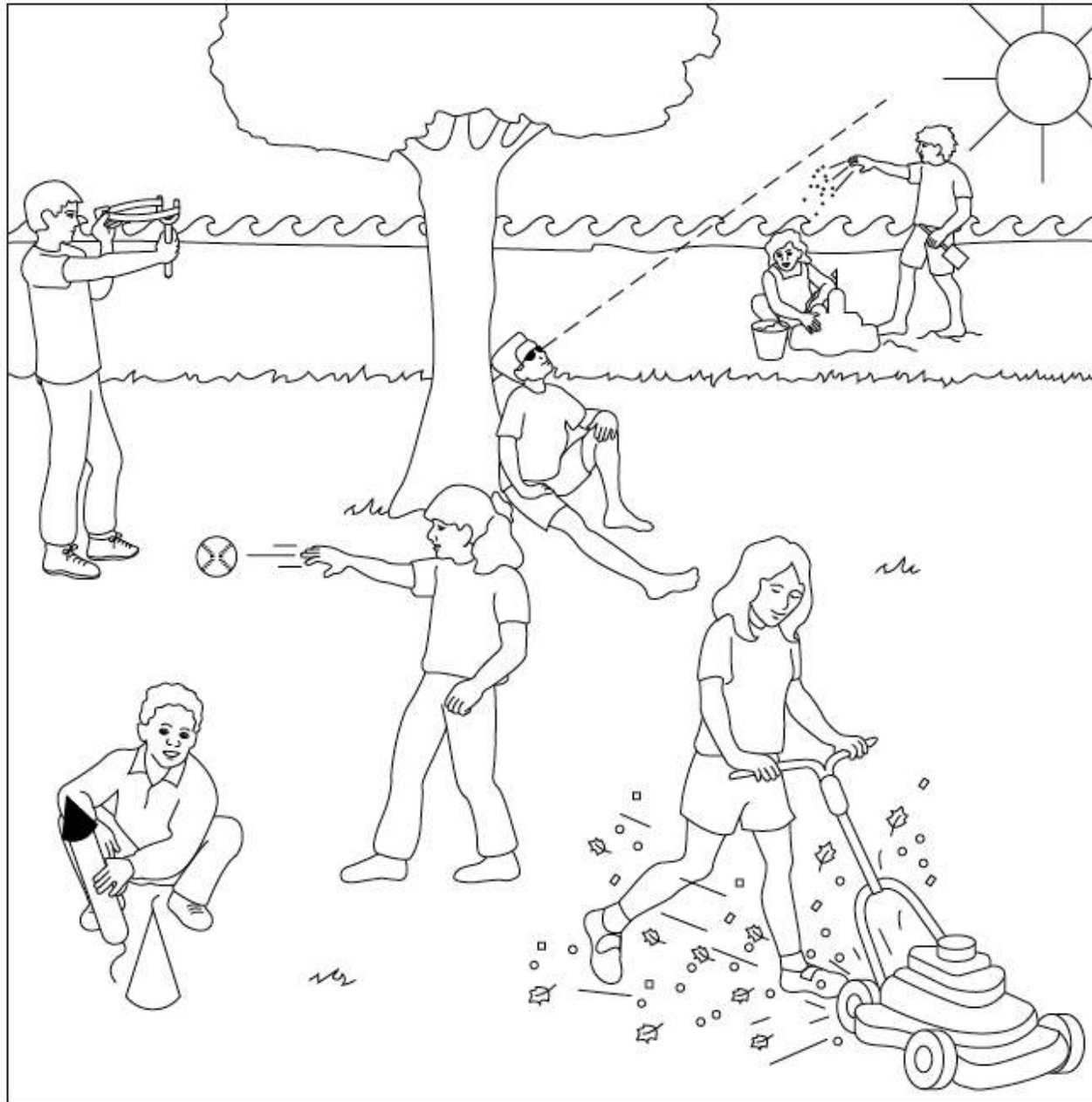
black and white
concentrated at edges
of retina

Cone



color vision
concentrated at middle
of retina (fovea)

Eye safety – protect your eyes



Identify 3 eye dangers

Staring at screens can damage eyes

phones, laptops, tablets, TVs, etc

Time spent in front of digital devices:



Issues commonly associated with over-exposure to digital devices:

- eye strain
- dry eyes
- blurred vision
- headache
- neck/shoulder/back pain

63% of adults do not know that electronics emit high-energy visible or blue light

41% of adults have never tried – or don't know how – to reduce their digital eye strain

SOURCE: The Vision Council reports on digital eye strain, 2012 & 2013

Screens give off blue light that can damage eyes

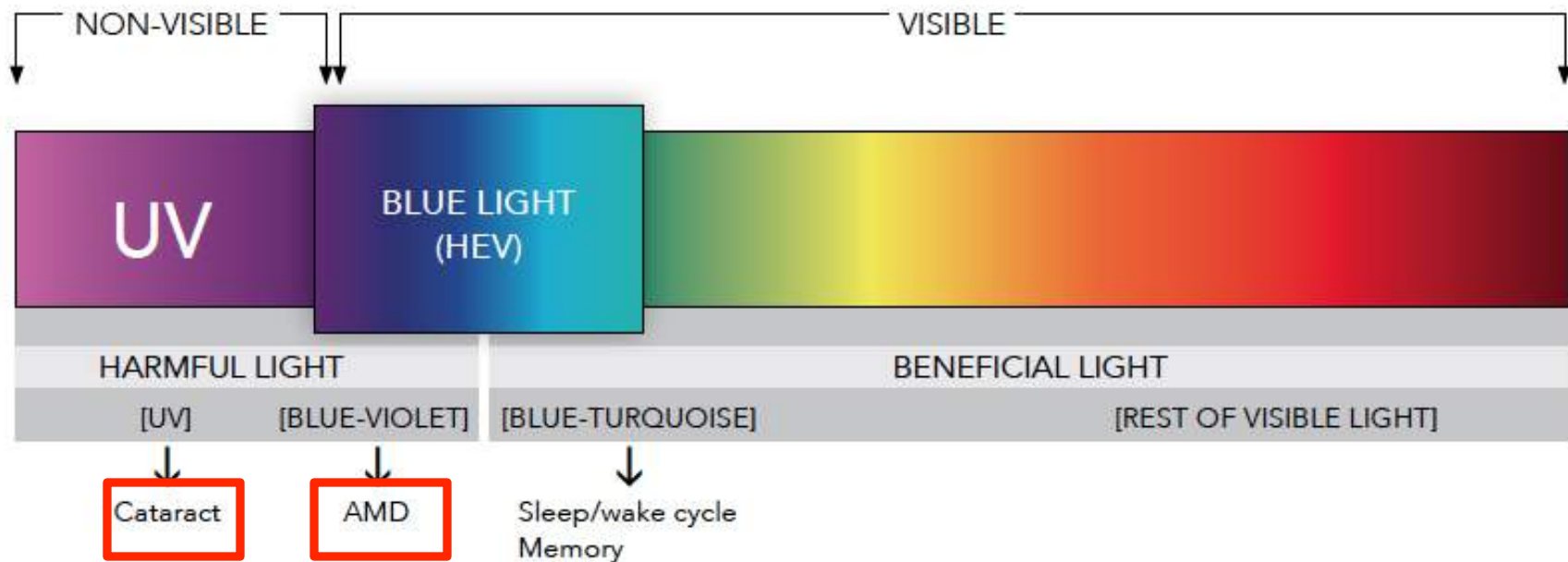


FIGURE 3: The band of blue-violet light that is most harmful to retinal cells ranges between 415 and 455 nm.

Studies suggest that overexposure to HEV light can damage the retina, the part of the eye that brings objects into focus. This occurs when blue light penetrates the macular pigment of the eye and causes a breakdown of that protective shield. This leaves the eye more susceptible to blue light exposure and cell degeneration.

Over time, accumulated damage can increase the likelihood and severity of eye disorders such as age-related macular degeneration and cataracts.

Cataracts - lens

Macular degeneration - retina

How can you protect your eyes?

Keep the screen as **far away** as possible from your eyes

Try to **blink** more often – staring at a screen we blink less

Use the **20-20-20 rule** – for each 20 minutes staring at a screen look away for 20 seconds at something 20 feet away

Keep the screen slightly **below eye level**

Limit screen time

Get special glasses that **block blue light**