Science 11/14/18

Essential Question: What is the difference between visible and non-visible light?

CW: Activity 12.2

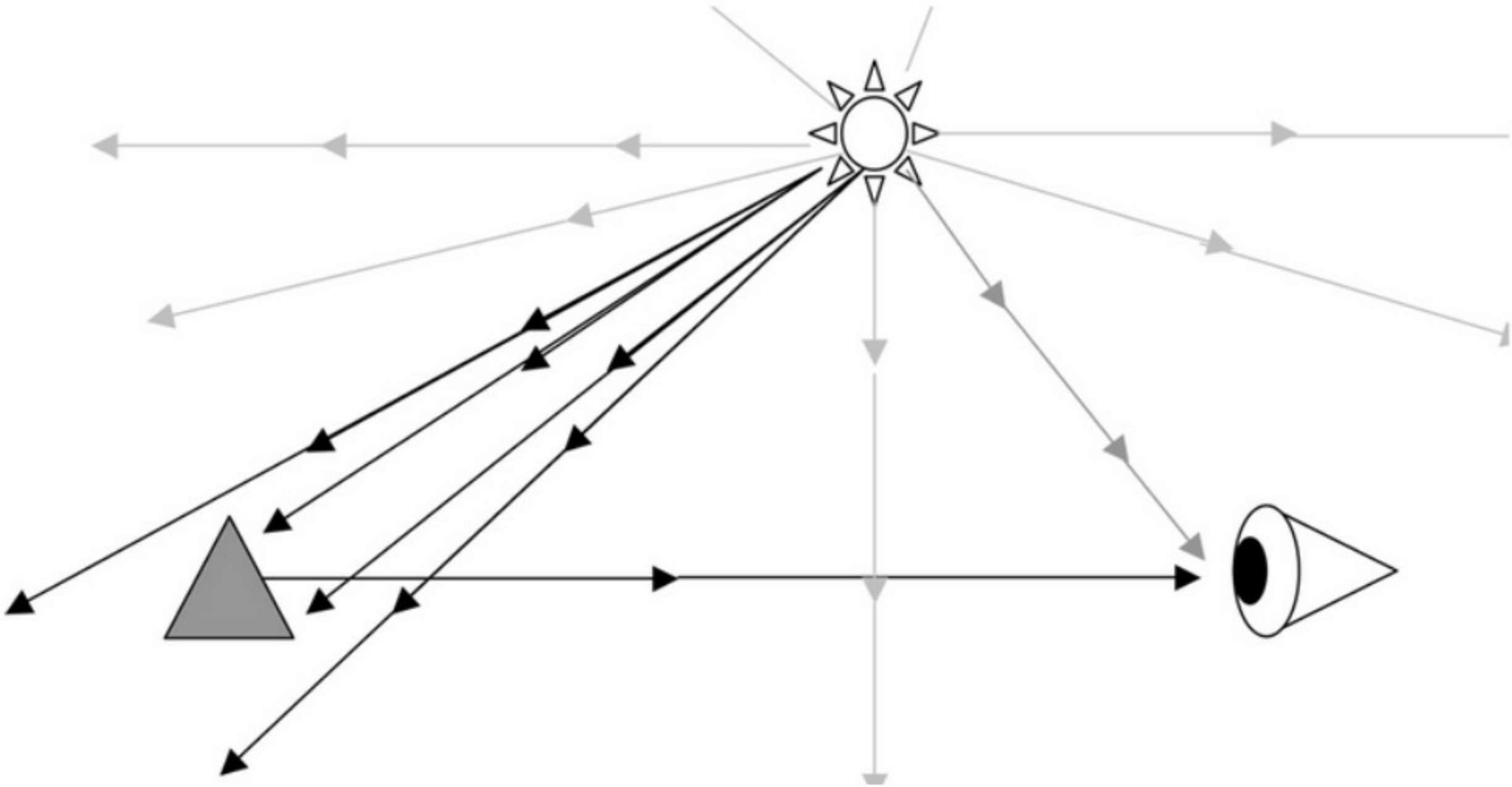
HW: Finish Reading 12.1 (Write in margins/answer questions) pgs. 136-

Agenda

1. Activity 12.2

Although the slides are student-paced, I still expect you to follow along with the class.

Think back to the activity with the projector and the remote. How does the model account for our observation that what is emitted by the remote



What are some examples of things that you know are present but your senses cannot detect?

Activity 12.2 pg.

What Will We Do?

We will do some activities to learn more about the differences between visible and nonvisible light. Then we will revise our model of light to account for new evidence.

Procedure

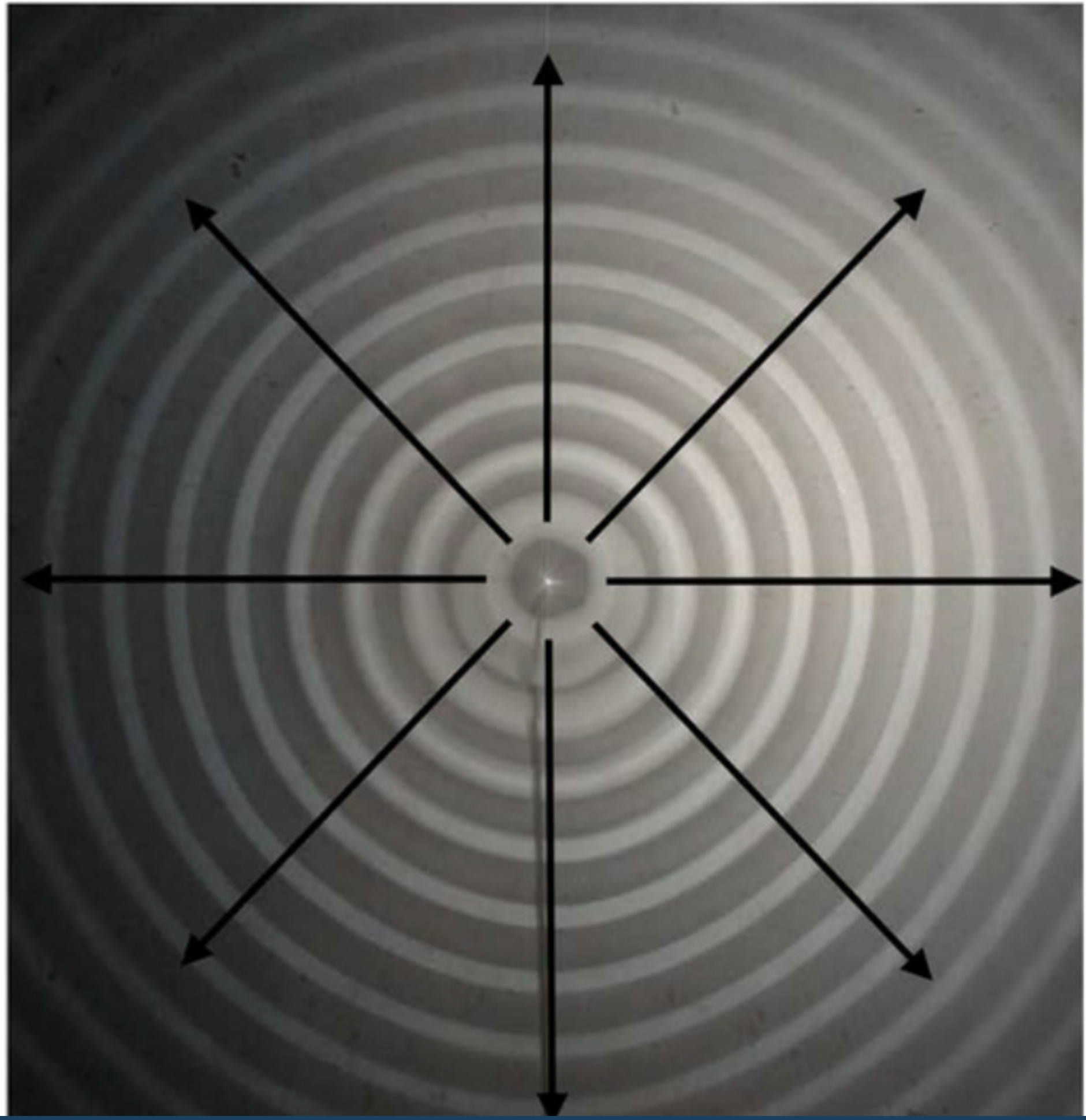
1. As your teacher changes the pitch coming from the computer, raise your hand when you can no longer hear the sound.

   a. Did everyone's hand go up at the same time? Why?

   b. Are there sounds that you cannot hear? Explain.

Not everyone’s hand went up at the same time. Why do you think that was?

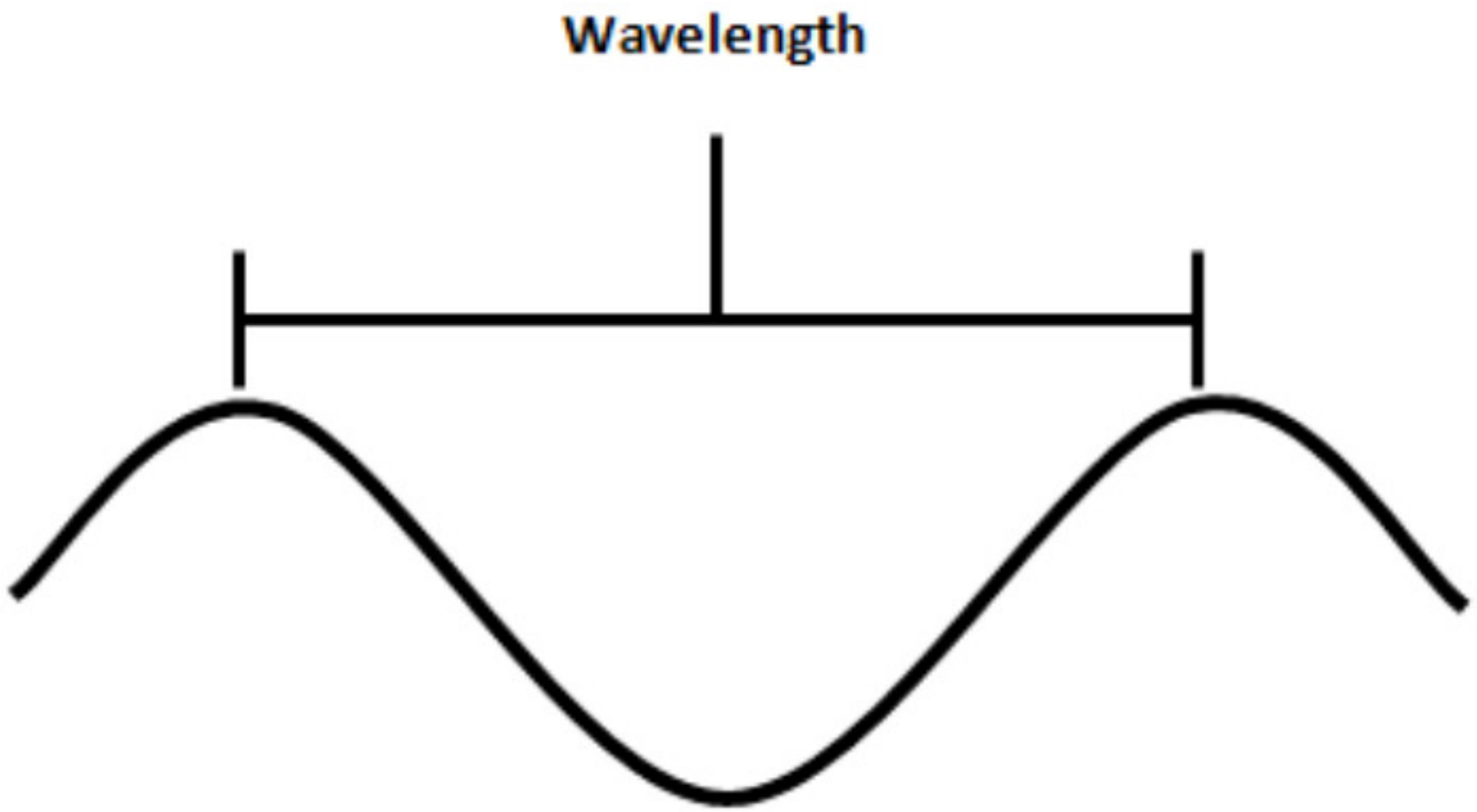
The range of pitches that we can hear, and the pitches that are too high or too low, provide one comparison to help us think about light that we cannot see.

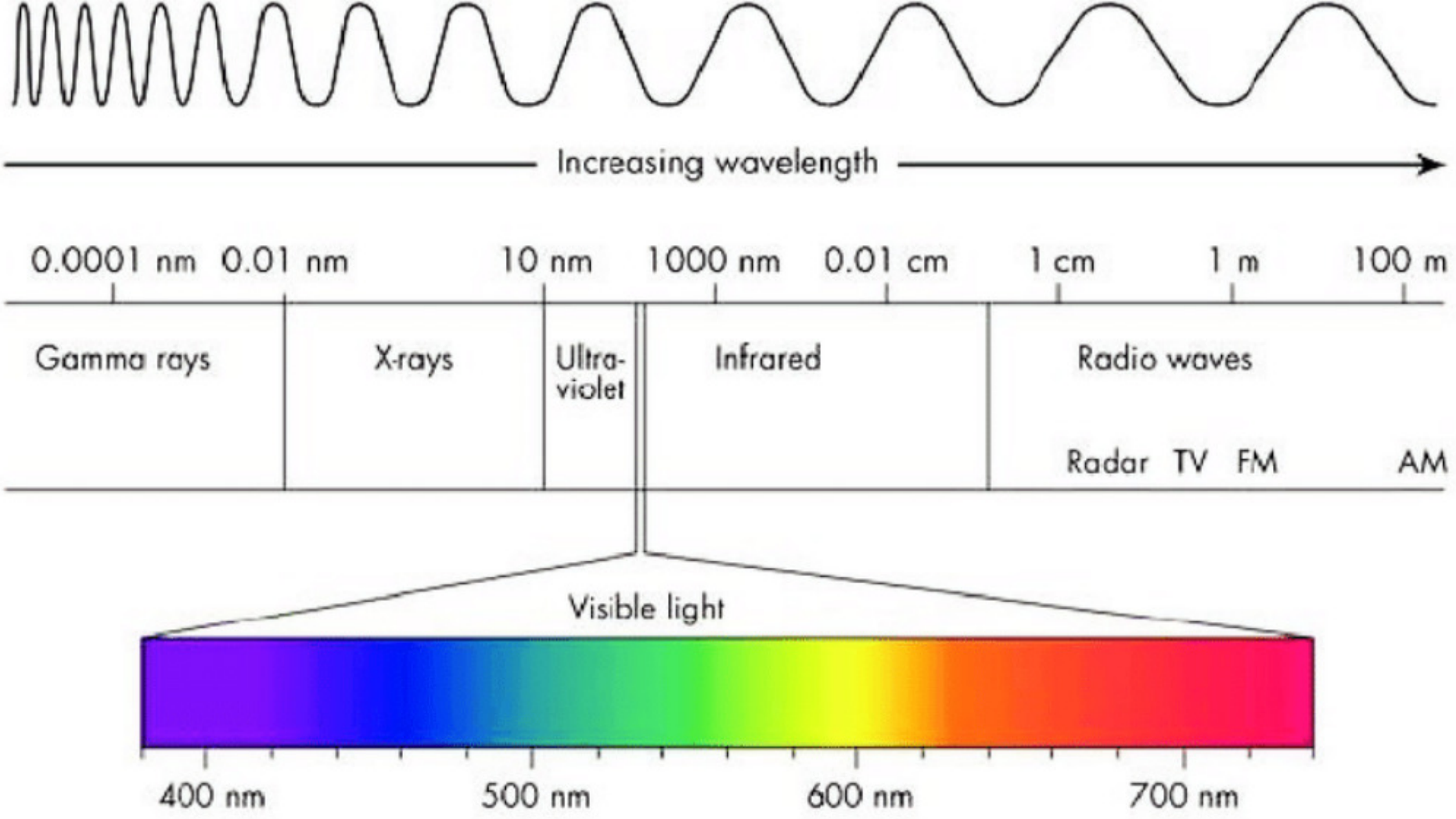


Scientists call the distance between two waves the wavelength.

Pay attention to what happens to the wavelength in the simulation when we tap faster or slower.

Wavelength: Distance between two waves




Increasing wavelength
0.0001 nm
0.01 nm
10 nm
1000 nm
0.01 cm
1 cm
1 m
100 m
Gamma rays
X-rays
Ultra-violet
Infrared
Radio waves
Radar
TV
FM
AM
Visible light
400 nm
500 nm
600 nm
700 nm

Open Ended Question

Thinking about what we just learned about our ability to see a range of wavelengths of light, why do you think our eyes could not see the light from the remote control, but a camera could?

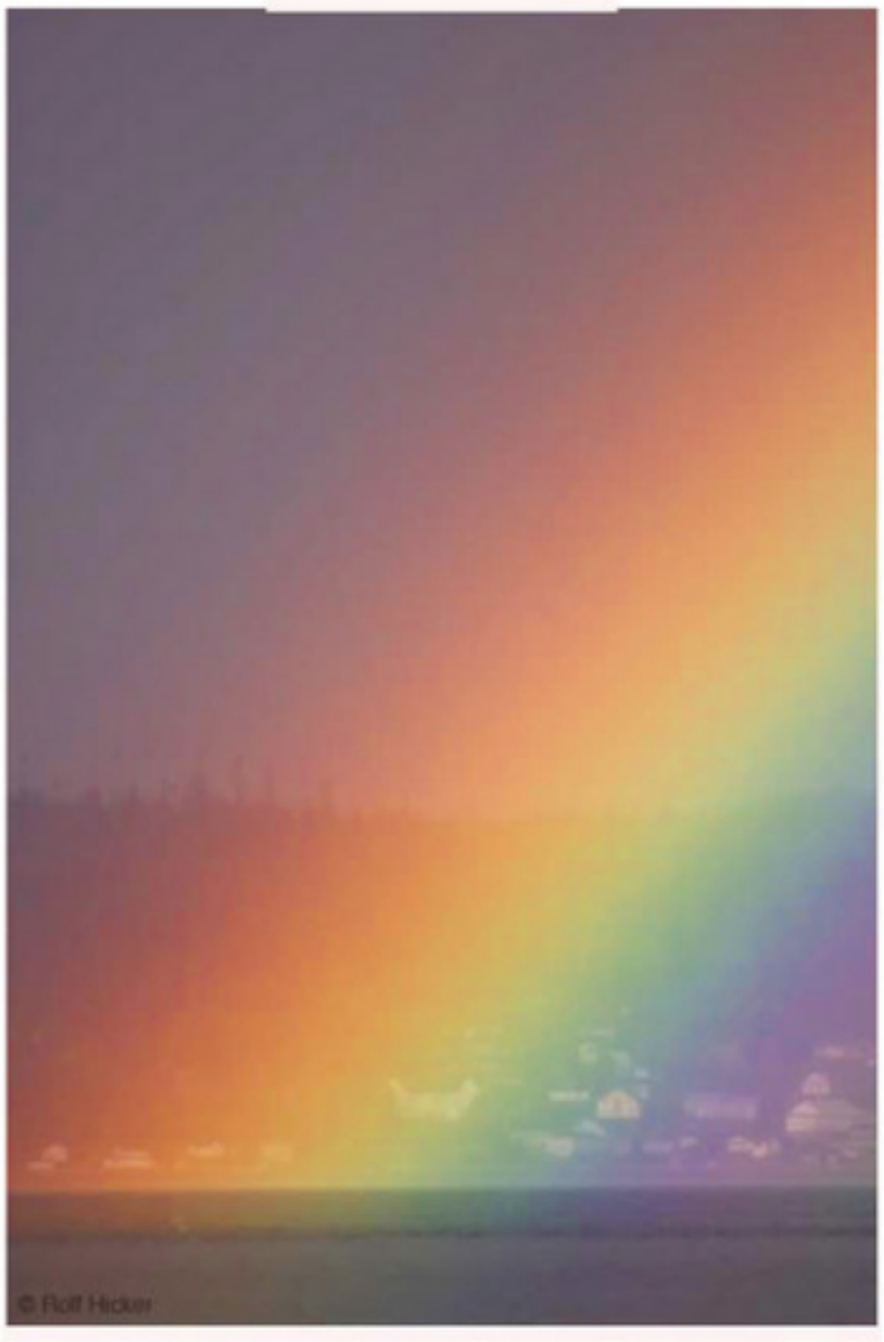
Please enter your answer here.

In your book answer questions 2 and 3

2. Describe the wave model presented in class.

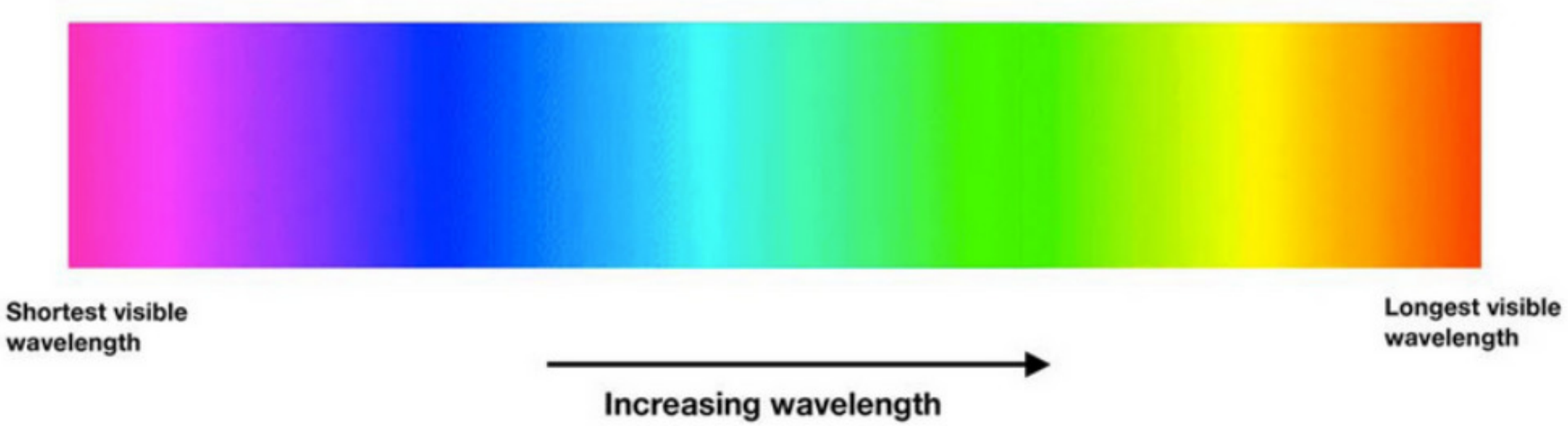
3. Based on your understanding of the wave model, explain why your eye could not detect the light coming from the remote but the camera could.

What colors do you notice on the edge of the rainbow?

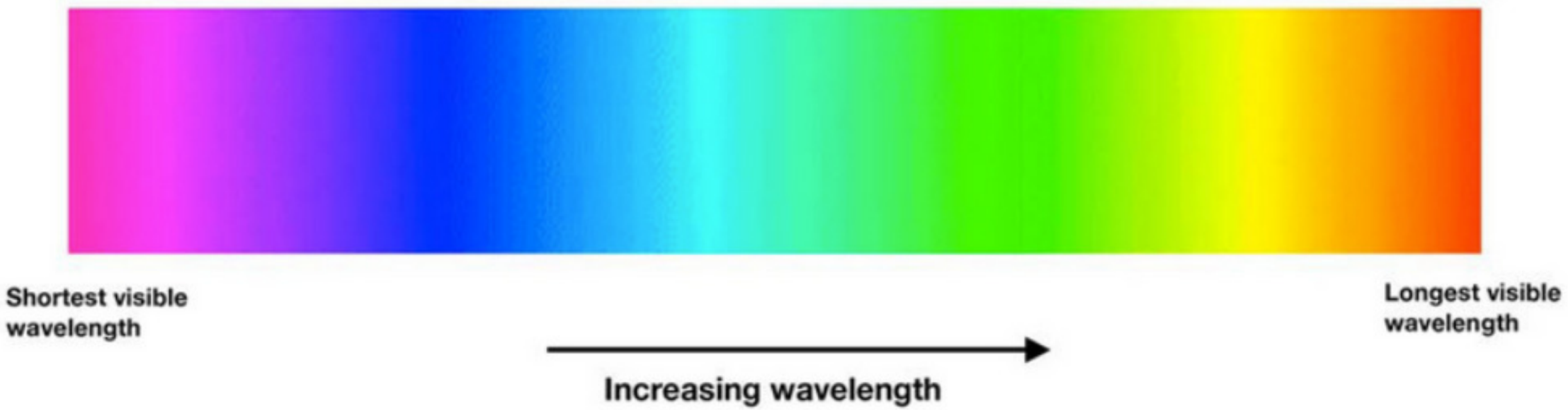


When a rainbow forms, the water droplets in the air are separating light into the different colors of which it is made. The colors separate based on their wavelengths with the shortest wavelength at one end (violet) and the longest wavelength at the other (red).

This is representation of the visible spectrum—the range of light wavelengths that we can see.

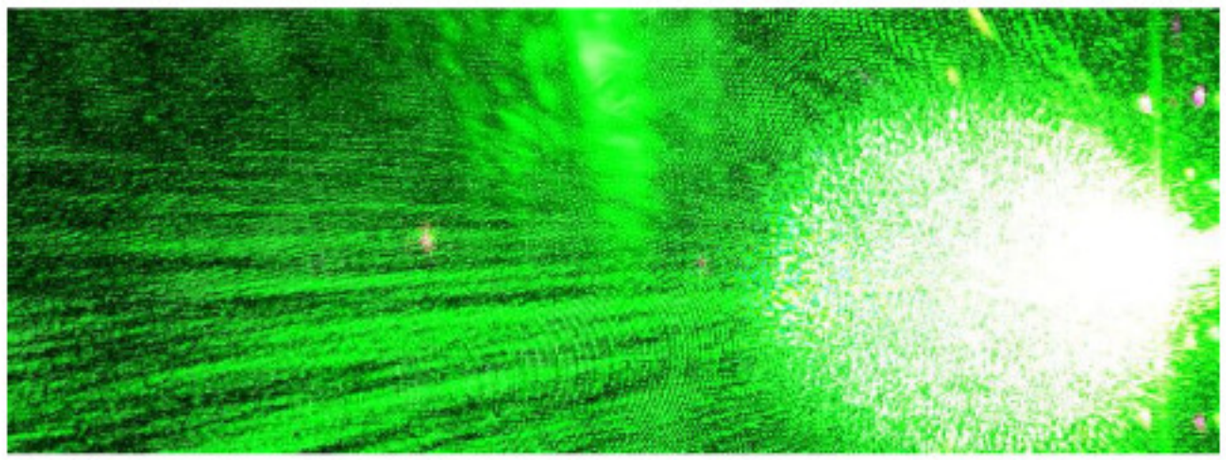


Notice that violet light is on one side with the shortest wavelength and red light is on the other with the largest wavelength.



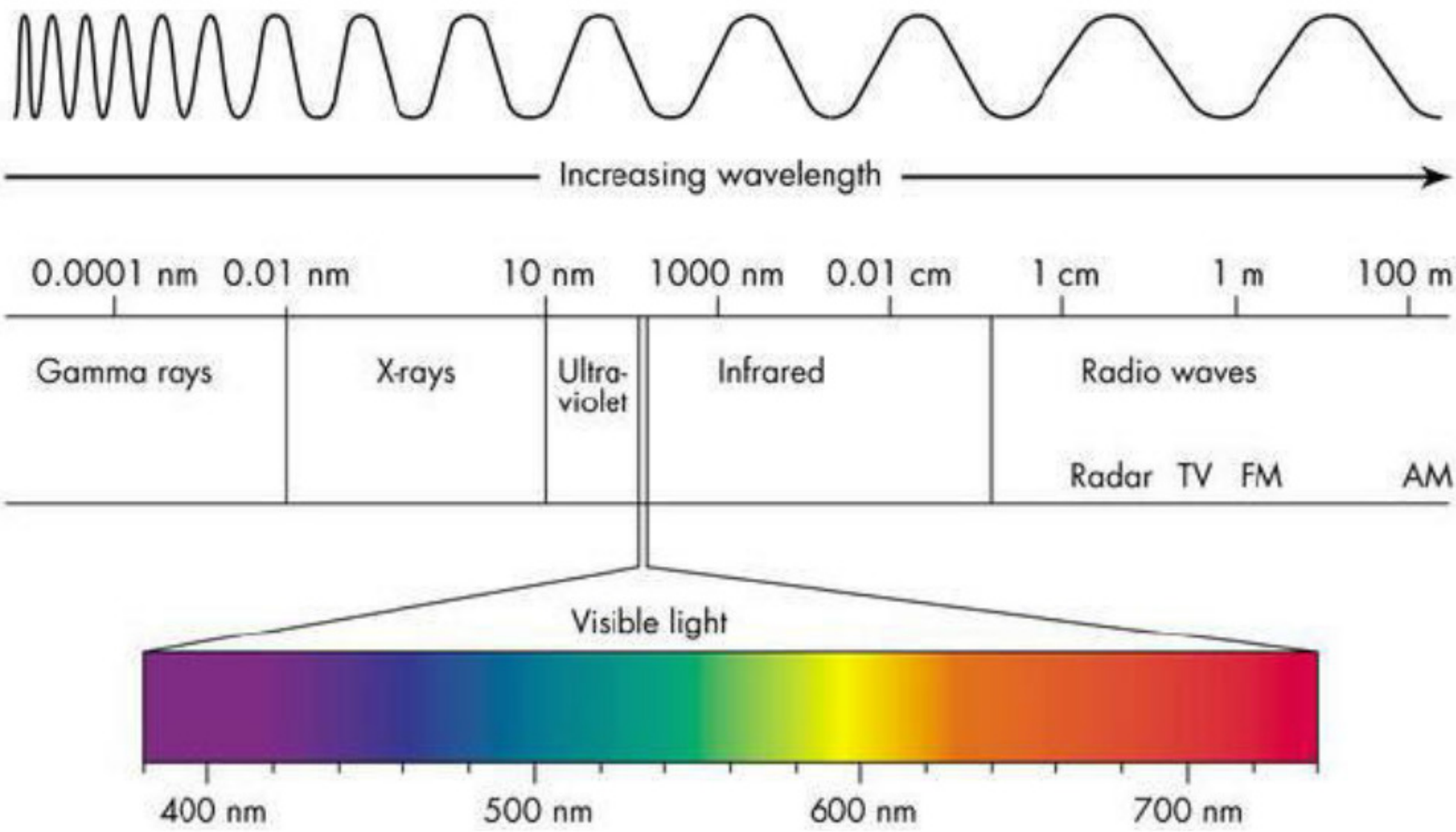
The light from the remote control is not visible because its wavelength is a little bit longer than red light. Scientists call this kind of light infrared light, and this is the kind of light that remote controls emit.

According to the wave model of light, what makes blue light different from green light?



How does red light compare with the infrared light that comes from the remote?

How is visible light different from nonvisible light?



Answer Making Sense pg. 143

Making Sense

1. According to the wave model of light, what makes blue light different from green light?

2. Compare red light with the infrared light that comes from the remote. (Remember that *compare* means to describe what is similar and what is different.)

3. Describe how visible light is different from nonvisible light.

Add to Scientific Principles

- There are many different wavelengths of light. Most of these cannot be seen.
- Different wavelengths of visible light appear to us as different colors.