

Bill Nye Video Worksheet (Light and Optics)

Part 1:

Watch this video on Light and Optics and answer the following questions:

<https://www.youtube.com/watch?v=H8gX6a6yTT4>

1. What are the three things light can do?
 - reflected/bounce, refract/bend, absorbed
2. What happens to light when it travels through a curved piece of glass in the water box?
 - it bends or refracts
3. What are three pieces of technology that uses refraction?
 - eye glass, telescope, microscope
4. What happens to light when it is reflected or refracted?
 - it changes direction
5. How many mirrors do you need to make a periscope?
 - 2 mirrors
6. What happens to waves when they slow down?
 - they change direction
7. What kind of light does the TV remote use?
 - infrared
8. Why won't you be able to turn the TV on if black paper is used?
 - the black paper absorbs the light instead of reflecting it
9. How do things look through a concave lens?
 - smaller and farther away
10. How do things look through a convex lens?
 - bigger
11. What kind of lens is in our eye?
 - convex
12. What kind of mirror makes u look upside down?
 - concave
13. When bill places the curved glass in front of the three beams of light, what kind of point do they meet at on the other side?
 - the focal point

14. What can you only see one end of the pencil (the end in the water)?
 - because of internal reflection
15. What technology is used in knee surgery (to not cut the knee open)?
 - fiber optics
16. What kind of light gets trapped in a greenhouse?
 - infrared

Part 2:

Watch this video on Light and Colours and answer the following questions:

<https://www.youtube.com/watch?v=g5BHxozBPuA>

1. White light is a mixture of what?
 - all the colours of the rainbow
2. What does bill use to break up the white light?
 - a prism
3. What are the colours of the rainbow?
 - roygbiv
4. Can you break up the colours with a second prism?
 - no they are pure colours
5. Why is a red car red?
 - it reflects red light. absorbs all other colours.
6. Why is it when you mix red blue and yellow paint, you get black?
 - because all the colours are being absorbed.
7. What are lasers?
8. What is the difference between red and blue light wavelengths?
 - red is long and blue short
9. Why is the sky blue?
 - blue light gets scattered more (reflected) in air particles than any other colour.
10. Why is the ocean blue?
 - light from the sky is reflected. the sky is blue therefore the water is blue.