How Color Affects Absorption and Emission

You probably know what will happen if you compare the amount of light absorbed by a white or black container. But what about other colors? What happens if you compare red to blue? What about silver? What about flat or shiny paint? Let's find out!

Procedure:

Click Here for a Video

1. Gather four bottles. Paint them different colors.

2. Fill each bottle with water.

3. Turn on Vizeey on your cell phone or chromebook.

4. Attach two temperature probes and choose dual temperature as your experiment.

5. Record the temperatures in the bottles. You can measure two at a time.

Color of bottle	Initial temperature of water in the bottle

6. Shine a heating light bulb on the bottles for 10 minutes.

7. Record the temperature of each:

Bottle	Temperature after heating	Change in temperature
1		
2		
3		
4		

8. Now turn the light off and allow the bottles to cool for 10 minutes.

9. Record the temperature of each bottle.

Bottle	Temperature after cooling	Change in temperature from warm bottle to cooler bottle
1		
2		
3		
4		

Analysis:

Compare your data to those of other lab groups.

Which colors absorbed heat more efficiently?

Which colors emitted heat more efficiently during cooling?

Why does color affect heat absorption and emission?

How might the color of a car affect its temperature on a sunny day?

Why do we wear light-colored clothing in the summer and dark clothing in the winter?

How do these concepts apply to designing energy-efficient buildings or solar panels?