

Thursday, November 29, 2018

Your Learning Goal:

Students will explore the visible spectrum with spectrosopes and filters to understand the properties of light.

Table of Contents: Spectacular Spectra- 22L + R

Catalyst (22L):

Describe a time you saw a rainbow. How did it form?



Homework:

Final Exam
Dec 13/14



Agenda:

1. Catalyst
2. Spectrosopes
3. Reflection

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11/6/18	Star Bright	17 L + R
11/8/18	Heartbeat Frequency	18 L + R
11/13/18	Spring Into Waves	19 L + R
11/26/18	EM Spectrum Hero	20L + R
11/27/18	Reflections	21L + R
11/29/18	Spectacular Spectra	22L + R

11/29/18

Catalyst:

Describe a time you saw a rainbow. How did it form?

Spectacular Spectra

22L

22R

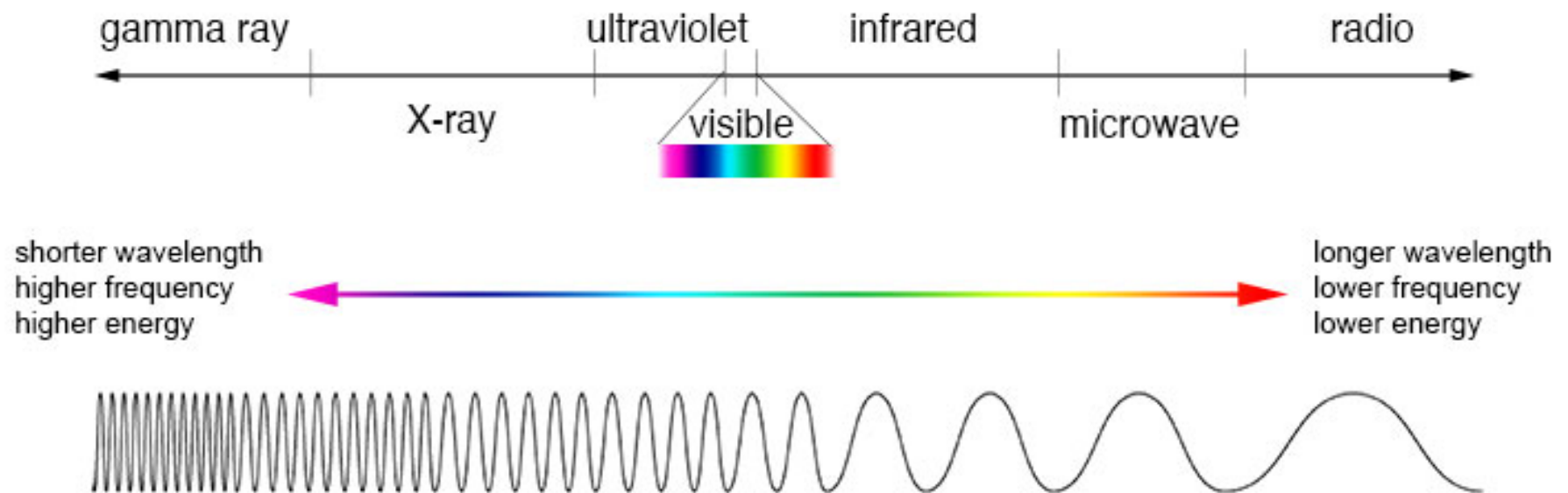
How Do Rainbows Form?



Visible Light

And its properties:

reflection, refraction, absorption, transmission



Reflection

Reflection: Light bouncing. Light hits a shiny surface and bounces off at a predictable angle.



22R

Catalyst:

Describe a time you saw a rainbow. How did it form?

22L

11/29/18

Spectacular Spectra

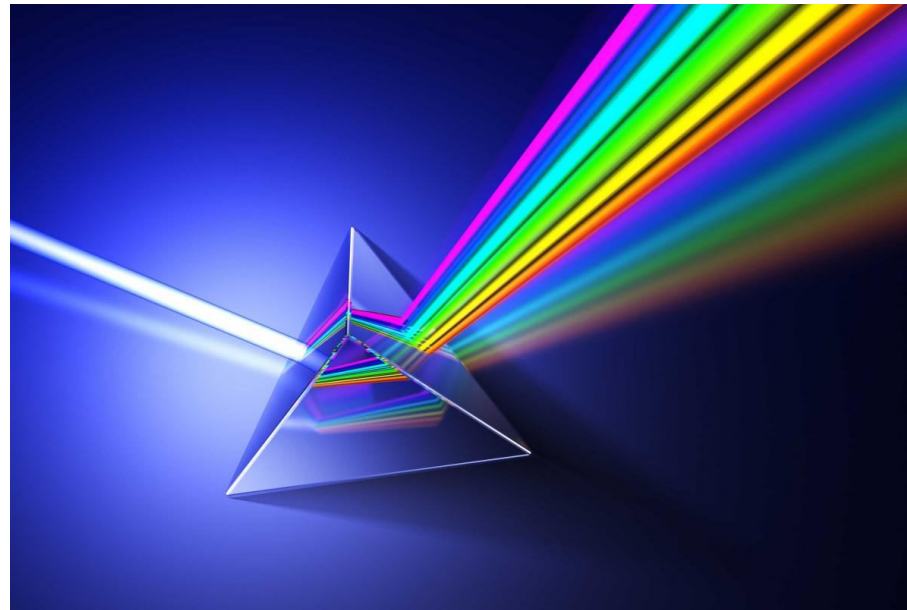
Reflection: Light bouncing. Light hits a shiny surface and bounces off at a predictable angle.

22R

Refraction

- Refraction: Light bending.

When light travels through a medium it changes speed and bends.



22R

Catalyst:

Describe a time you saw a rainbow. How did it form?

22L

11/29/18

Spectacular Spectra

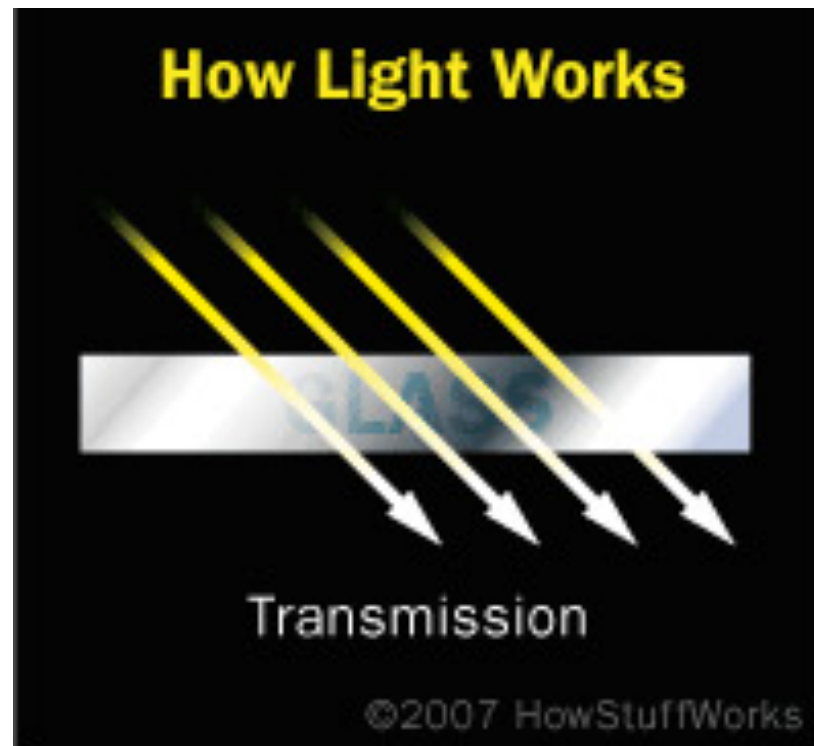
Reflection: Light bouncing. Light hits a shiny surface and bounces off at a predictable angle.

Refraction: Light bending. When light travels through a medium it changes speed and bends.

22R

Transmission

- Transmission: Light passes through a medium unchanged.



22R

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22L

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Spectacular Spectra

Reflection: Light bouncing. Light hits a shiny surface and bounces off at a predictable angle.

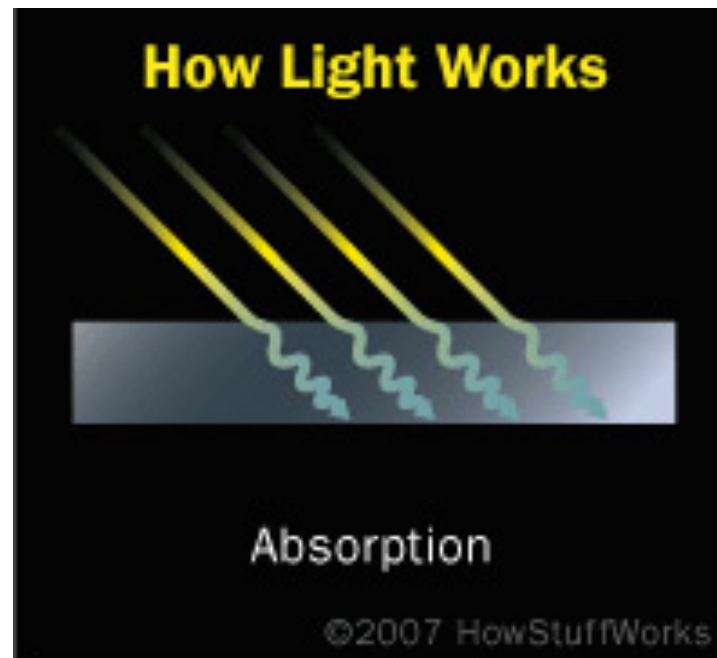
Refraction: Light bending. When light travels through a medium it changes speed and bends.

Transmission: Light passes through a medium unchanged.

22R

Absorption

- Absorption: Light is trapped inside the medium.



22R

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Spectacular Spectra

Reflection: Light bouncing. Light hits a shiny surface and bounces off at a predictable angle.

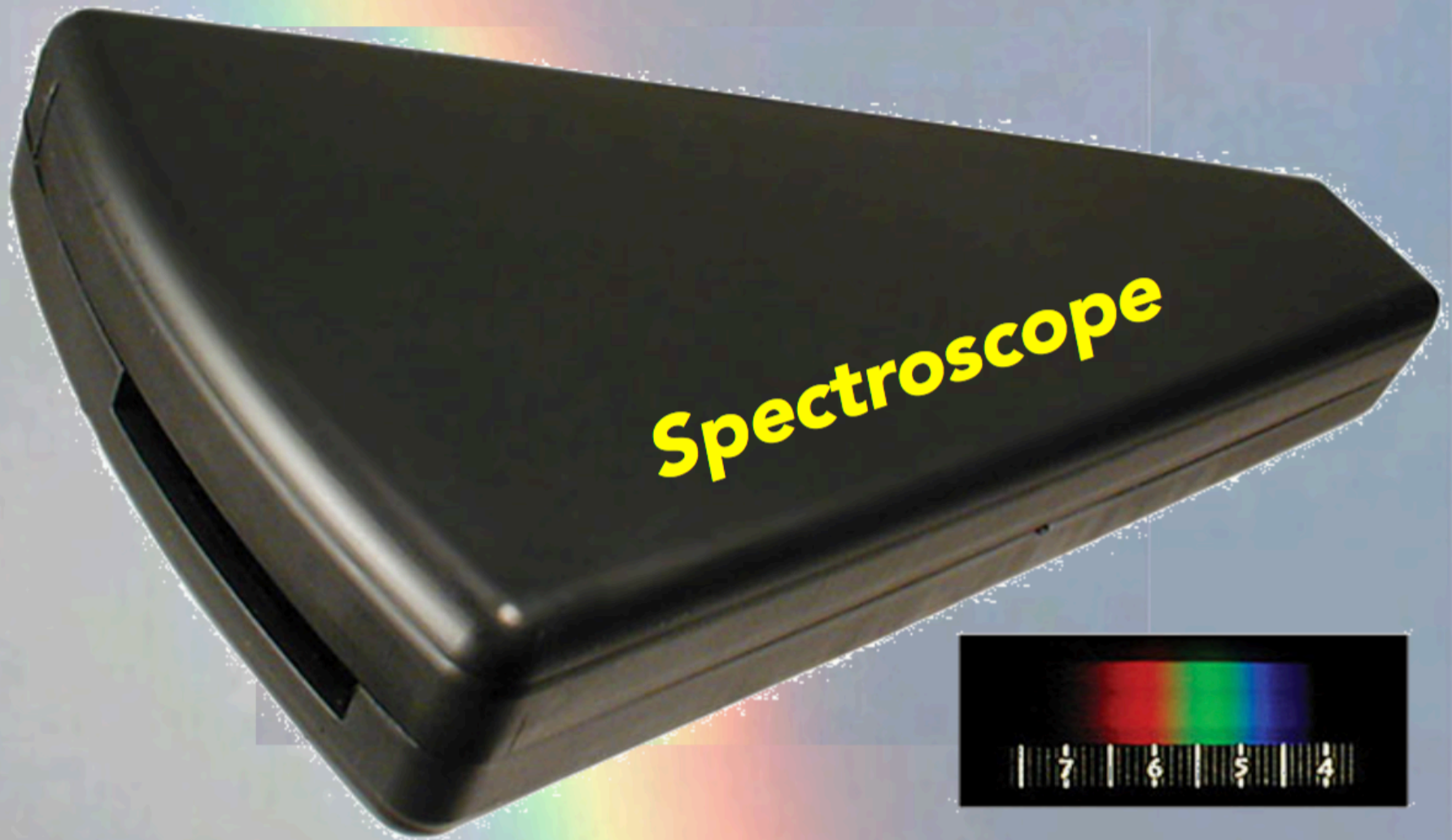
Refraction: Light bending. When light travels through a medium it changes speed and bends.

Transmission: Light passes through a medium unchanged.

Absorption: Light is trapped inside the medium.

22R

Explore Light Around The Room



Complete the handout :

Spectra Diagrams

Observations

LED bulb



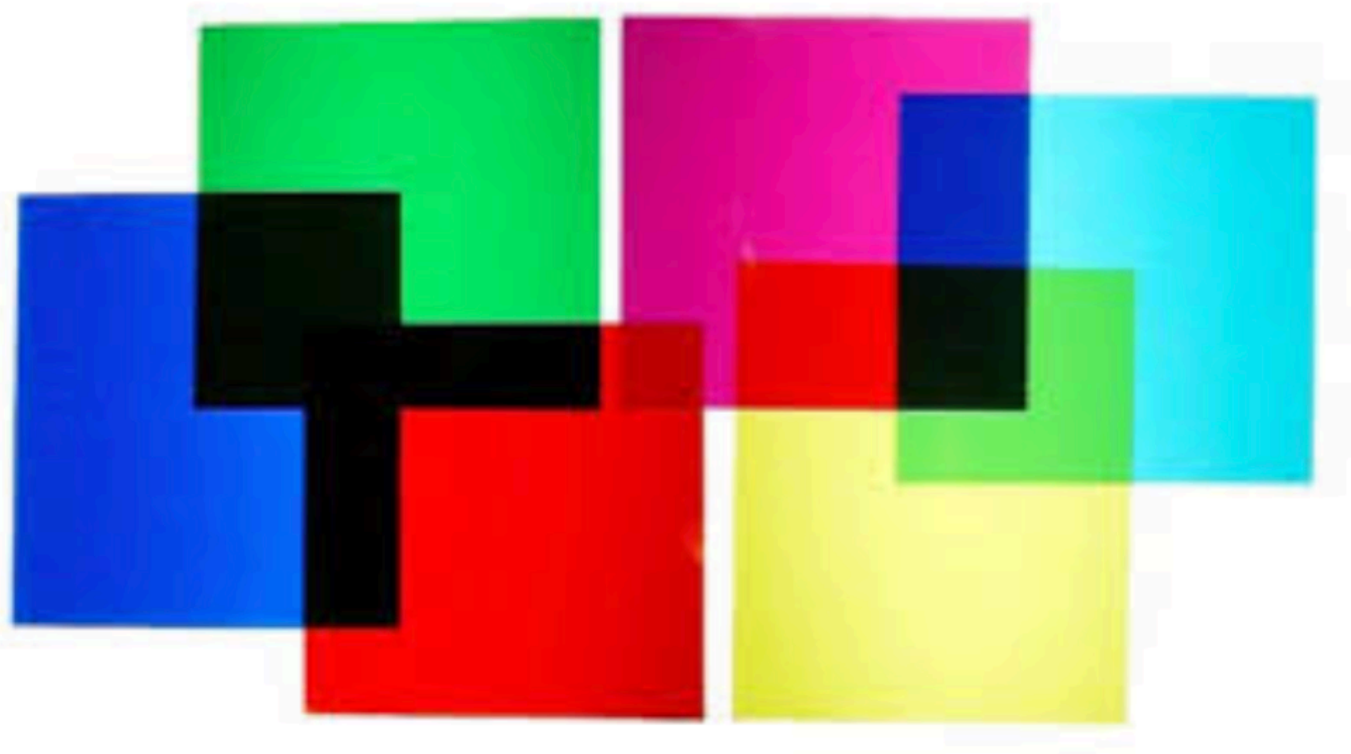
LED bulb with red filter



Conclusions

What does a filter do? Describe evidence in your explanation.

Look around Using Green and Red Filters



What does the *red* filter do?

What does the *green* filter do?

Complete the handout :

Part A: Record observations (light or dark) in the data table.

	Red filter	Green filter
Red box		
Green box		
White box		
Black box		

Color Reflection Observations

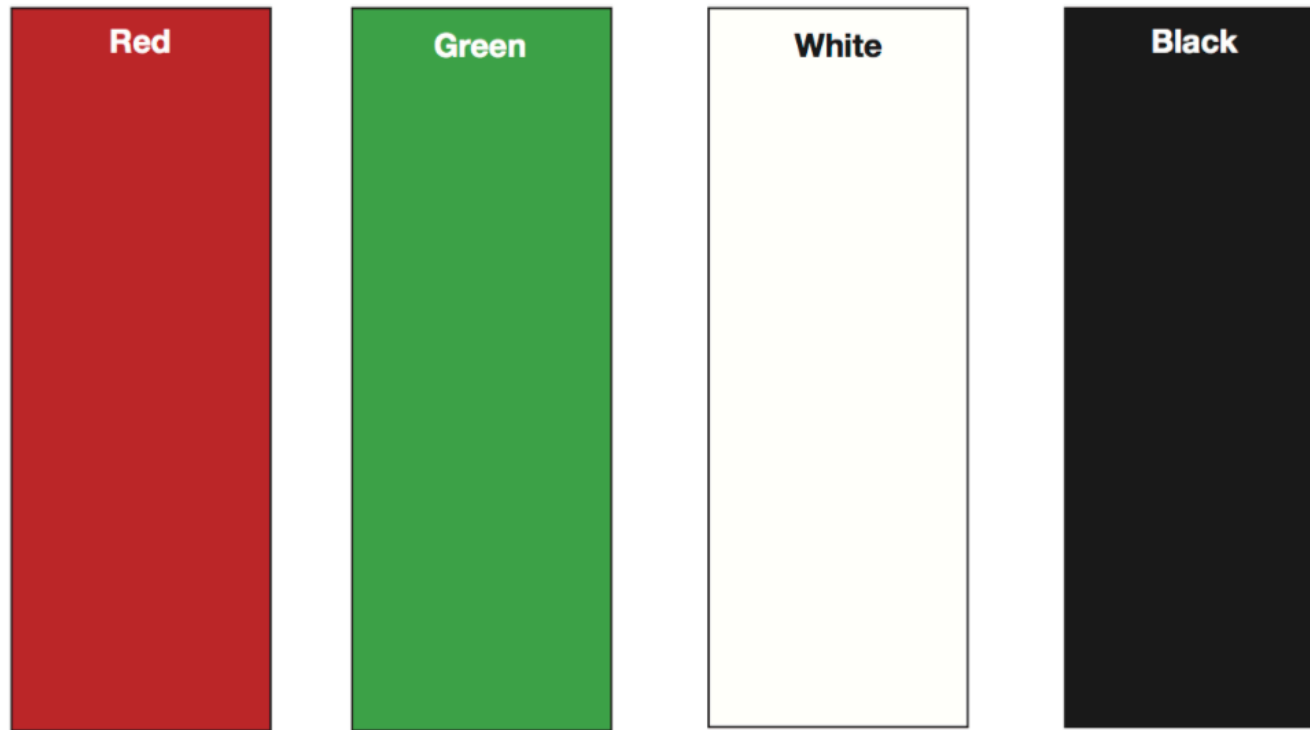
Part B: Use the words *all*, *no*, *reflect(s)*, and *absorb(s)* to fill in the blanks below.

White objects reflect(s) _____ colors of light and absorb(s) _____ colors of light.

Black objects reflect(s) _____ colors of light and absorb(s) _____ colors of light.

An object of a particular color _____ light of that color and _____ other colors.

Look around Using Green and Red Filters

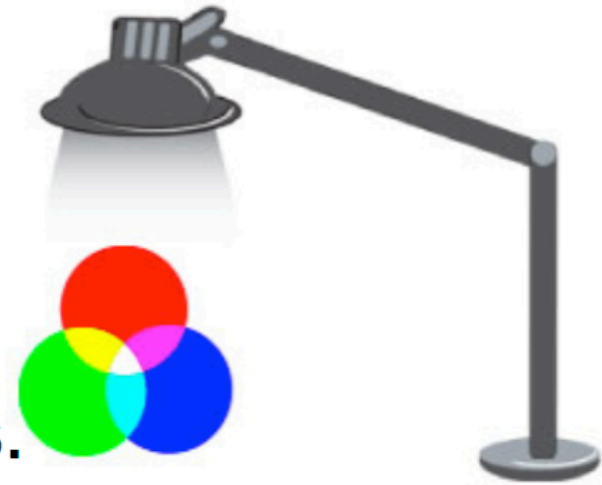


What does the **red** filter do?

What does the **green** filter do?

Light & The Eye

- Newton observed that color is not inherent in objects.
- The surface of an object reflects some colors and absorbs all others. We see only the reflected colors.
- “Red” is not IN the apple. The surface of the apple is reflecting the wavelengths we see as red and absorbing all the rest.
- An object is seen as white when it reflects all colors, black when it absorbs them all.



11/29/18

Catalyst:

Describe a time you saw a rainbow. How did it form?

Refecation:

- What can you conclude about visible light?
- White light?
- What does a filter do to color images?

22L

Spectacular Spectra

22R