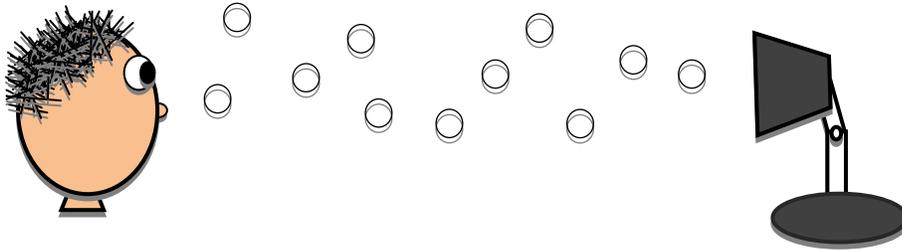


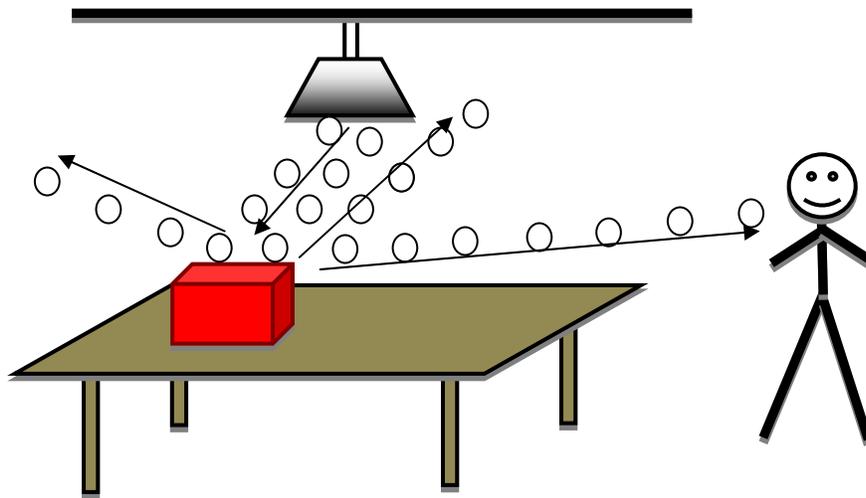
Name: _____

Grade: _____

Topic: Light and Color-The Photon Model



Draw photons as little circles coming out of the lamp and put in arrows to show the direction they are going.



How has to happen so that we see the box? Draw photons as little circles coming out of the lamp and what has to happen so that we can see the box on the table.

1. Get a mirror. Place a pencil on your table. Put a book halfway between the pencil and your eyes so that you cannot see the pencil. Next, find a way to hold the mirror so that, without moving your head, you can see the pencil by looking at the mirror. Why can you see the pencil in the mirror? (**The photons bounce off of the pencil towards the mirror and are then reflected by the mirror into our eyes.**) Draw a picture showing the path of the photons starting from the lamp and ending up in your eyes. Include arrows in your diagram to show which way the photons are going. In your drawing, include a light source, mirror, pencil, and your eyes. Be ready to share with the class!

2. Hold a book an inch above your table and observe that the table below the book is darker than the rest of the table. How can you explain what you notice using the photon model?
(The area of the table beneath the book appears darker because the book is blocking a lot of the photons so fewer are bouncing off of the table into your eyes.)
3. Watch the teacher demonstration using a laser pointer. Using what we have learned about the photon model, let's answer these questions about why we couldn't see the laser beam until chalk dust was in the air:

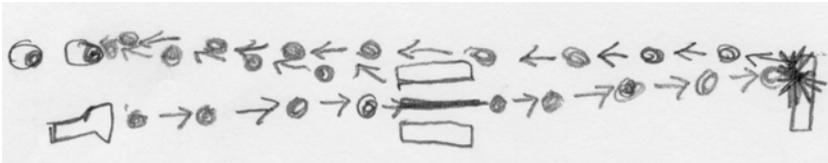
How do photons leaving the red laser pointer get into our eyes?

(The photons reflect off of the wall and back into our eyes.)

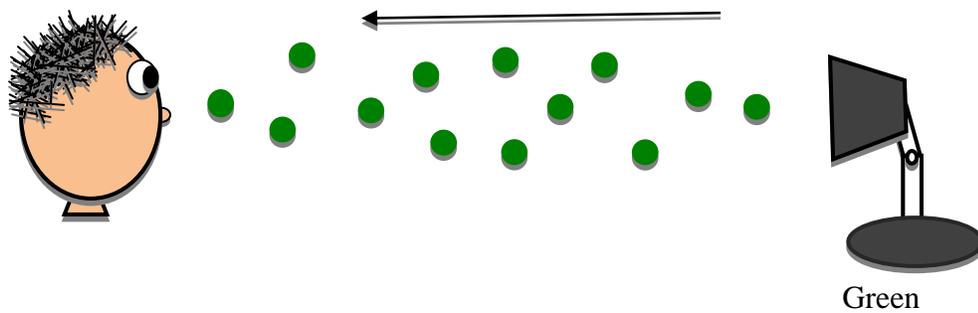
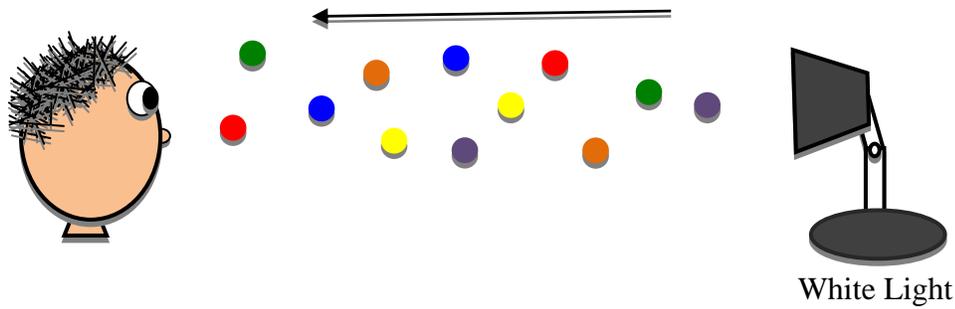
Why weren't photons going into our eyes before chalk dust was present?

(There weren't enough particles in the air that you noticed the reflection of the beam. After adding the chalk particles, the laser light had a lot to reflect off of.)

Draw a picture showing the photons reflecting off the chalk dust and entering your eyes.



Using our new and improved photon model that now includes color, draw in the colored photons. Use arrows to show the direction they photons are going.



What color photons come out of the room lights? How do you know?

(All colors come out of the white lights in the room. We know this because we can see lots of different colors being reflected into our eyes throughout the room.)

Which photons do you think go into your eyes from my shirt?

(If my shirt was orange, then you would have lots of orange photons reflecting into your eyes.)

If photons of different colors hit my shirt, then why might only orange ones go into your eyes?

What happens to all the other colors?

(My shirt absorbs all the other photons besides orange. Black clothing would then absorb all the photon colors which is why black material heats up faster than white material.)