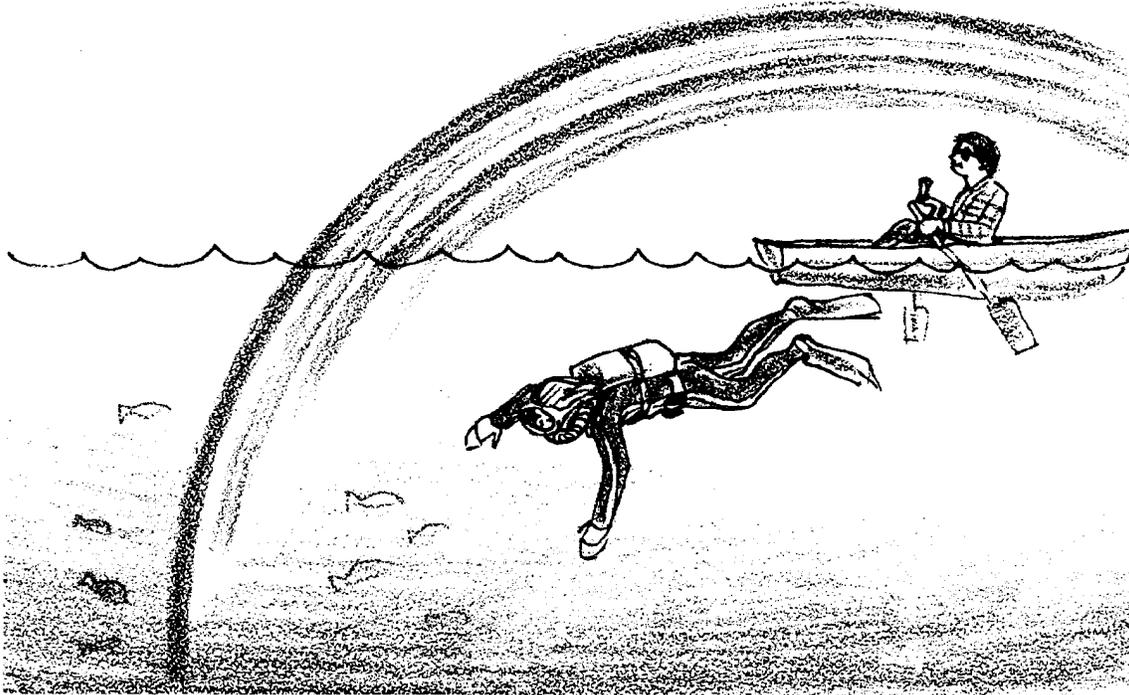


Properties of the Deep Sea



Simulating Deep Sea Light

We only see objects if they emit their own light or if light is reflected off them and enters our eyes. The light we see is made of the different wave lengths. We call all the wave lengths that we can see “the visible spectrum”. We recognize the different wave lengths as different colors.

An object can reflect light (like a mirror) absorb light (like a piece of black paper) or allow light to pass through it (like a pane of clear glass).

White objects reflect all the visible light that hits them. Black objects absorb all the visible light that hits them. Colored objects absorb all the visible light except one. That one is reflected by the object and enters our eyes. That is the color we see. For example, a yellow rose appears yellow because the petals absorb all visible light except the yellow light. The petals reflect the yellow light. The reflected yellow light enters our eyes. We see the object as a yellow rose.

Water absorbs light. But it does not absorb all the light at the same time. The deeper the water, the more light it absorbs. At about 200 m, water has absorbed all of the light. The water looks black.

The first color that water absorbs is red. Below that depth, the only colors that will be reflected are orange, yellow, green, blue, indigo, and violet. What do you think a red fish would look like if no red light could hit it?

The next color to be absorbed by water is orange. Next yellow is absorbed, then green, and so on. Blue light goes through water the furthest. This is why objects under water look blue.

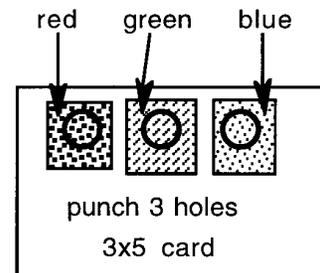
Materials

- red, green, and blue transparency paper, small pieces of each
- scotch tape
- hole punch
- 3x5 index card
- black construction paper
- white construction paper
- red, green, and blue markers
- “Fish Tessellation” sheet

Procedure:

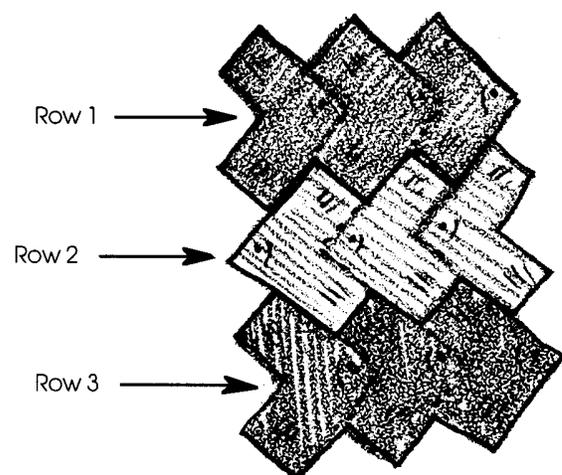
Part 1 - Preparing the Filter

1. Using the hole punch. Punch three holes along the top of the index card. Each hole should be at least half an inch from the top edge of the card. Each hole should be at least half an inch from the other holes.
2. Cut a piece of red transparency paper just large enough to fit over one of the holes. Use scotch tape to tape it in place. Repeat with green and blue transparency paper.



Part 2 - Making the Drawing

1. Use your blue felt marker to **completely** color in one row of fish on the “Fish Tessellation” sheet.
2. Color the second row of fish red and the third row of fish green.
3. Carefully cut out the group of nine fish.



Part 3 - Viewing the Drawing

1. Lay the cut tessellation on the sheet of white construction paper. How many individual fish do you see?

2. Look at the drawing through the red filter.
 - a. Now how many fish do you see?
 - b. How do the red fish look?
 - c. What happened to the blue and green fish?

3. Look at the drawing through the green filter.
 - a. Now how many fish do you see?
 - b. How do the green fish look?
 - c. What happened to the blue and red fish?

4. Finally, look at the drawing through the blue filter.
 - a. Now how many fish do you see?
 - b. How do the blue fish look?
 - c. What happened to the red fish?
 - d. What happened to the green fish?

5. Now, place your tessellation on the black construction paper. Look at it through each of the different colored filters. What happens to the fish?

Fish Tessellation Sheet

