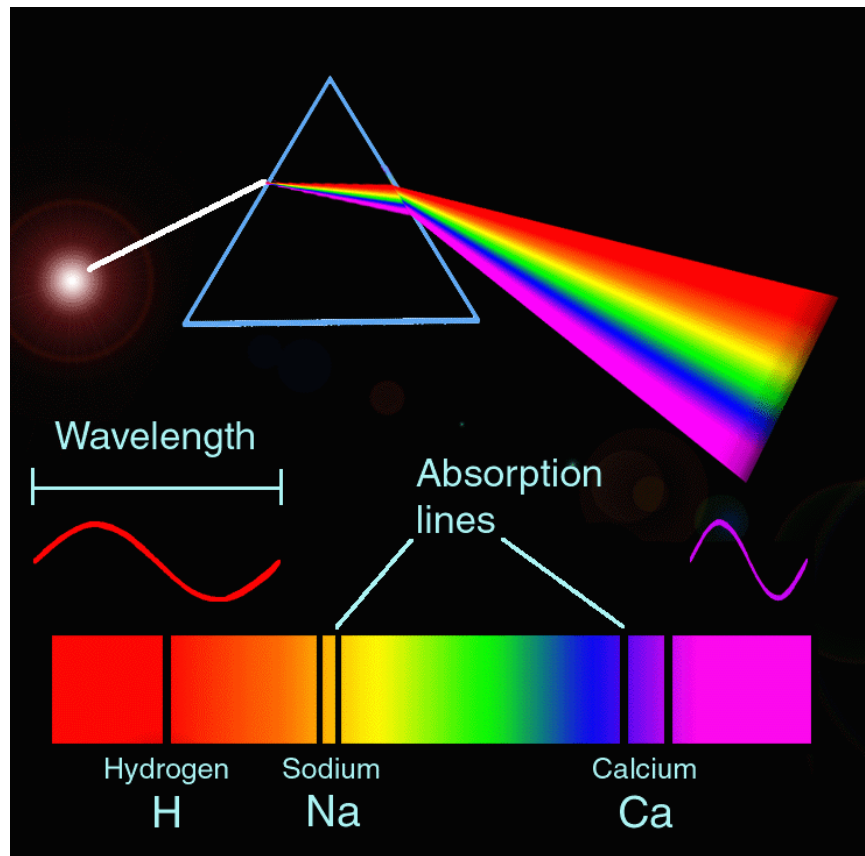


Space Odyssey Online Teacher's Guide

Color Mystery

Previsit Activity for Space Exploration



Courtesy Ian Short

Grades K-3

CDE Standards

Science: 1,2,1

Language Arts: 2,3, and 4

Preparation and Materials

Estimated Preparation Time: 10 minutes

Estimated Activity Time: 30 minutes

Materials

Coffee filters

Crayola markers or other watercolor markers

Water droppers/medicine droppers

Paper cups (one per group of 3-4 students)

Water

Optional Materials

White t-shirts (washed)

Permanent markers of various colors

Rubbing alcohol

Medicine droppers

Coffee cans or other wide mouthed containers

Rubber bands

Iron (optional)

Learning Goals/Objectives

Students will

- Identify the colors that separate from various colors of water-based markers
- Identify primary and intermediate colors
- Identify which primary colors will separate from intermediate colors
- Identify which primary colors can be mixed to make intermediate colors

Connection to *Space Odyssey*

When visiting *Space Odyssey*, you will have the opportunity to view the spectrum of several different gases at the *Gas Tube Spectroscopy* demonstration. This activity provides students with the necessary background information about color to enable them to explore the color compositions of the gases in the demonstration.

Advanced Preparation

1. Fill paper cups with water for each group of students.

2. Talk to students about their upcoming trip to *Space Odyssey*. In one of the demonstrations, Gas Tube Spectroscopy, students will learn about light and how it separates into the colors of the rainbow. In this demonstration, students will learn how scientists use this information to study distant stars.

Classroom Activity

1. Students will investigate what component colors make up the colors in Crayola markers.
2. Each student will need one or two coffee filters and access to several different colors of Crayola markers. (Some colors will illustrate the separation very well while others will not separate.)
3. Have students make a black dot on their coffee filter (about the size of a pea).
4. Ask students what they think will happen when they drop water on the black dot.
5. Have students drop one or two drops of water on the black dot and observe what happens.
6. Ask students what colors they see now.
7. Allow students to experiment with markers of other colors.
8. After students have had time to explore, have a short discussion about what happened while they were experimenting. Ask what colors they saw before and after they dropped the water drops.
9. Allow students to make pictures and designs on a new coffee filter using markers and water drops. Hang the filters on a window in your classroom.

Variations/Extensions

1. Using the same technique with permanent markers and rubbing alcohol, students can make tie-dyed T-shirts. Stretch one layer of the T-shirt over a coffee can and secure with a rubber band. This ensures that the colors will not bleed through both sides of the T-shirt. Have students draw designs on the t-shirt with permanent markers. Using a medicine dropper, drop rubbing alcohol on the designs to separate the colors. Allow alcohol to dry before creating a new design. Ironing the shirt when it is dry will help to set the designs.
2. Extend the discussion to include the color wheel and primary and intermediate colors.

3. Experiment in the opposite direction by mixing colors to see what intermediate colors result.

Resources

These are several excellent books for teaching children about the ways colors work together. All are appropriate for students in kindergarten through third grade.

Fowler, Allen. *All the Colors of the Rainbow*. New York: Children's Press, 1998.

This book is particularly good for use in this activity as it teaches vocabulary similar to that learned in the Gas Tube Spectroscopy exhibit in *Space Odyssey*. In particular, the author discusses how light passes through a prism and is split into the colors of a rainbow.

Heller, Ruth. *Color, Color, Color, Color*. New York: Putnam & Grosset, 1995.

Jonas, Ann. *Color Dance*. New York: Greenwillow Books, 1989.

Leonard, Marcia. *Paintbox Penguins*. Mahwah, N.J.: Troll Associates, 1990.

Lionni, Leo. *Little Blue and Little Yellow*. New York: Mulberry Paperback Books, 1959.

Walsh, Ellen Stoll. *Mouse Paint*. San Francisco: Harcourt & Brace, Co., 1989.

Teaching tip: Ask your students what they think might happen when the mice clean themselves off in the cat's bowl.

Name _____

Color Mystery

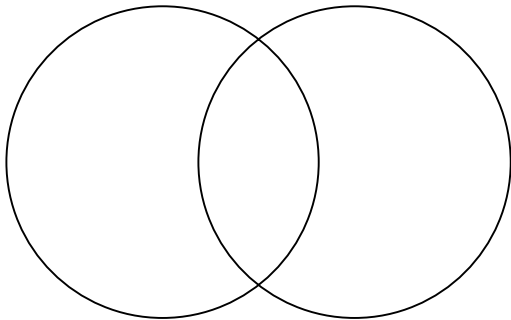
Mark the chart to show the colors you saw after you dropped the water on your marker dots.

Separated Colors

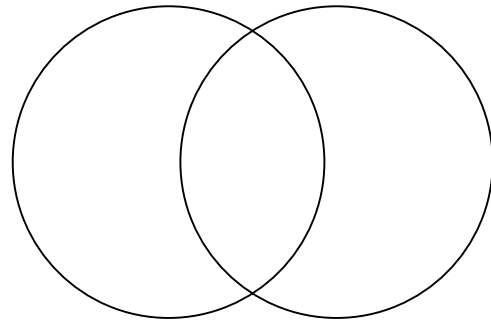
	Red	Orange	Yellow	Green	Blue	Purple
Red						
Orange						
Yellow						
Green						
Blue						
Purple						

Marker Dots

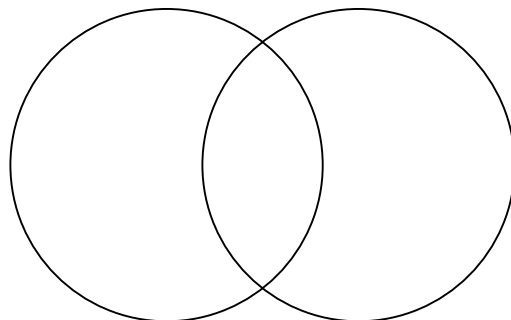
Color the picture to show what happens when you mix primary colors together.



yellow + blue



blue + red



red + yellow