

Section 2

Our Amazing star, the sun

Activity 5: What is a star?

Goal: Raise interest and increase content knowledge about the properties of stars.



Materials: Chart Paper divided in half

Markers

Resource books on stars

**Some we like are:

How far is a star? By Sidney Rosen

Do stars have points? By Melvin and Gilda Berger

Seeing Stars by James Muridan

Black construction paper

White paint in a spray bottle

Description:

1. Hang chart papers and have markers at hand.
2. Recite "Twinkle, Twinkle Little Star" with the students.



Twinkle, twinkle, little star, How I wonder what you are!

Up above the world so high, Like a diamond in the sky.

Twinkle, twinkle, little star, How I wonder what you are!

*Actually titled "The Star," written by Jane Taylor.

3. Ask students what they think the author was thinking about when she wrote the poem. Ask students for their observations about stars. Ask students what they think stars are. Record any questions that arise about stars on the left side of the chart paper.

4. Read one of the books to the students and have them listen for any answers to the questions that were recorded on the chart. Record answers on the right hand side of the chart paper.



Writing Extension:

Have students make their own book about stars. Use black construction paper to make a cover. Spray watered-down white paint onto the construction paper to create a starry background for the cover of the book.

Sensing stars



Activity 6: Sensing Stars

Goal:

Students should learn that stars produce heat and light (energy) by burning. They should realize that the sun is not a large star but that we feel its effects strongly because we are closer to it than we are to other stars.

Materials: 1 large candle (large wick)
2 or 3 tea lights
Matches

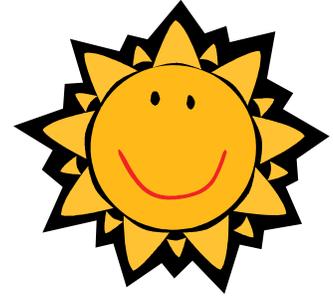


*You will light the candles and students will only be allowed near the candle while you are there.

Description:

1. Place large candle and one or two tea lights in areas around the classroom where the students will not have access (or you can pull the students into a large group away from candles). Save one tea light to use with the students.
2. Ask students to name things they learned about stars. Any answers are acceptable. Some students may remember the following:
Stars are made of gas.
Stars burn gas to produce heat and light (energy).
3. Tell the students they will be modeling stars using candles. Remind students of safety.
4. Turn off the lights. Have the students describe what they see. Light the candle. Now have them describe what they see. Have them describe the light source.
5. Let the students take turns placing their hand close to the candle flame and ask them what they feel (heat). Ask students to explain where the heat is coming from. (The candle is burning and it is hot.)
6. Have students explain how a candle is similar to a star. (Stars are burning and they make light and heat.)
7. Now light the other candles. When you finish, go back to the tea light. Ask one student to place her hand so that she can feel heat from the tea light. Ask her if she can also feel heat from the candles across the classroom (while she is still standing by the tea light). Ask your students why she cannot feel heat from the other candles. Is it because of the size of the candle? Her distance from it? You might have to explain that we can only feel the sun's heat because it is close. The other stars are too far away for us to feel their heat.
8. If you did "Why can't we see stars during the day?" this would be a good time to review that activity. Remind students that the light from the sun is much brighter to us than light from other stars because we are closer to it than to other stars. Ask the students to think about why we need the sun.

Our Sun



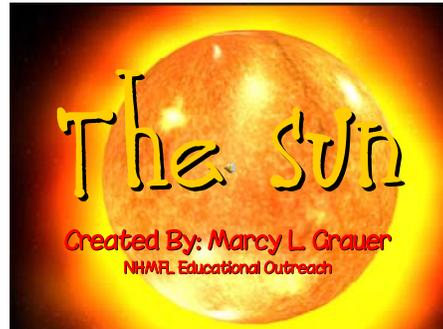
Activity 7: Our Sun

*You may need two days for this activity.

Goal: Students gain content knowledge about the sun.

Materials:

CD: Power Point Presentation: The Sun
Computer
Chart Paper
Markers
Pencils
Crayons
Yellow construction paper Sun for each student (or group)
"Why do we need the sun" worksheet
Optional : Resource Books on the sun (2-3 for each group)



Description:

1. Ask students what they already know/ want to know about the sun. Record their ideas in a KWL chart.
2. Show the CD: "The Sun" to the students.
3. Discuss with students what they learned and add this to the KWL chart.
4. Have students work individually or in a group to choose 4 facts they learned about the sun. You may have them use resource books. They should write these facts on their yellow sun.
5. Have students share their findings as a class.
6. Students may complete the "Why do we need the sun?" worksheet.

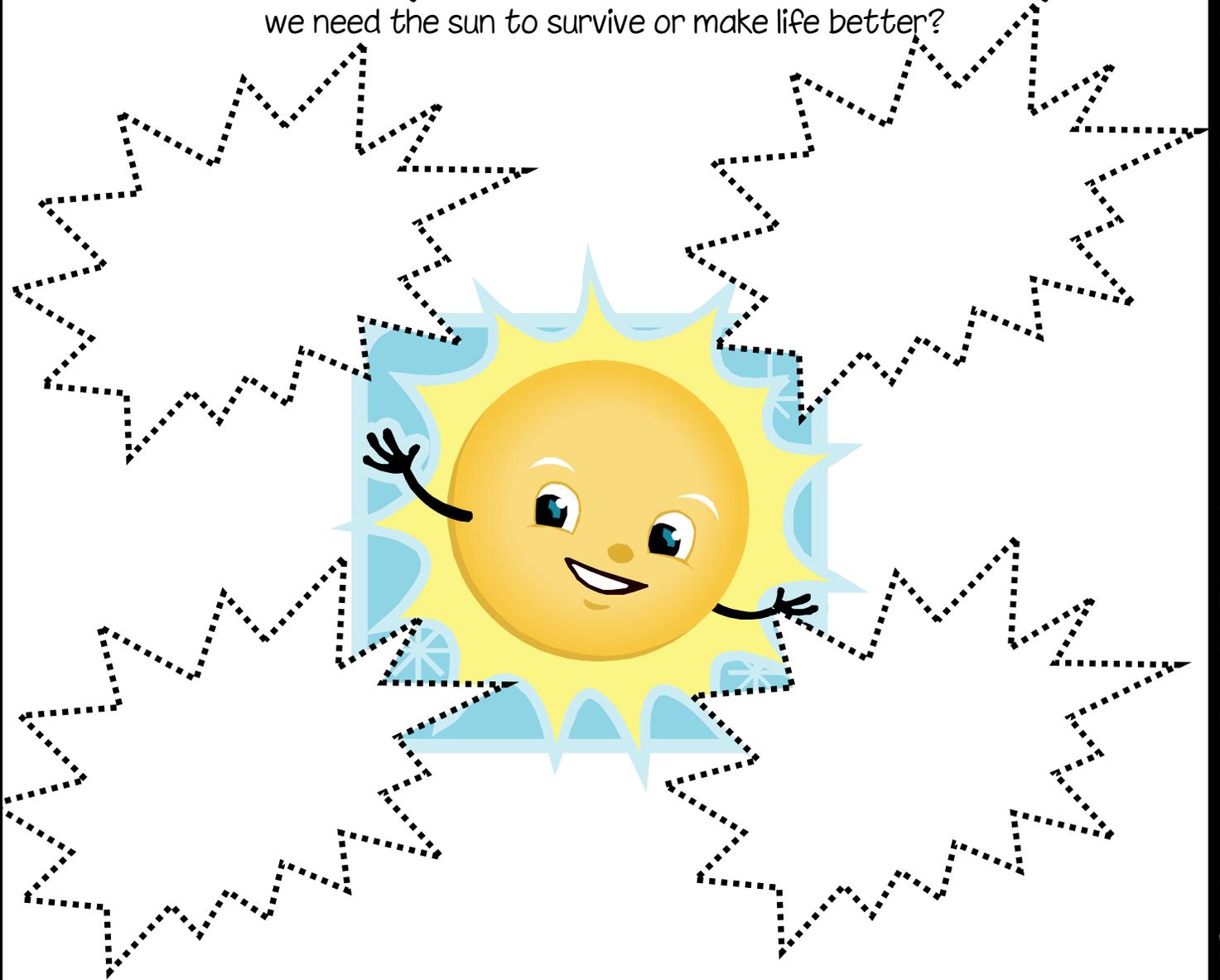


Extension Activity

Work with students to record facts from their groups into a student created power point presentation on the sun.

Why do we need the sun?

Think about what you have learned. What are four reasons why we need the sun to survive or make life better?



What would happen if we didn't have the sun?

Sun's Heat makes a Treat

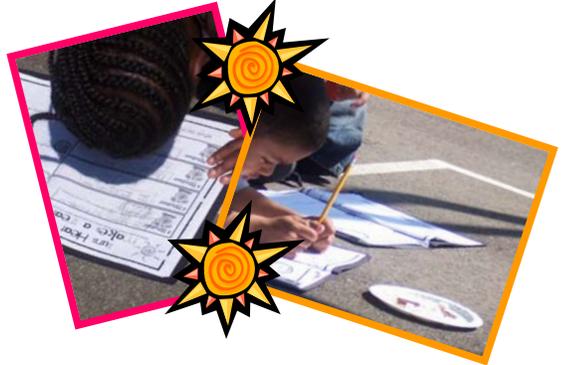
Activity 8: Sun's Heat Makes a Treat

*This activity is done outside, works best during warm months, and should be done in the middle of the day.

Goal: Students will make and record scientific observations about the effects of the sun's heat. They may also graph their observations.

Materials:

- Graham crackers (one square per student)
- Chocolate bars (one square per student)
- Mini-marshmallows (4 per student)
- Muffin cups (one per student)
- Metal trays (to hold all muffin cups)
- Paper
- Pencil
- Watch
- Chart paper



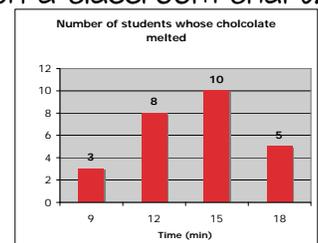
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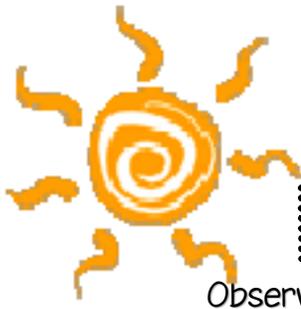
1. Ask the students to describe how it feels when they stand outside on a sunny day. What do they sense? They may mention heat. Tell the students they will observe the effects of the sun's energy and record their observations.
2. Pass out the crackers, chocolate, marshmallows, and muffin cups. Each student should write his/her name on the side of one cup. Have students place a graham cracker, a small square of chocolate and 4 mini marshmallows into their muffin cups. Set the cups on trays and set the trays aside.
3. Explain to the students that the trays will be placed in the sun and the students will observe how their ingredients change. Ask students to predict changes they expect to see. You may want to record these predictions on the board. Students may say the chocolate will melt. Ask them how long they expect to wait before they can see changes in their ingredients. Have them discuss how they would know that the ingredients had changed and how they would record this. Help them come up with a system for recording their observations. Below is an example. Have students prepare their observation sheets.

My Observations	chocolate is warm	chocolate dents when touched	some chocolate looks melted
Time (min)			

4. Take students outside and place trays in the sun. Announce the time and have students begin observations. While students are observing ask the students to discuss what they feel. Light and heat should be two answers. Discuss how we are using the sun's heat to make a treat. The length of the experiment will depend on the temperature outside. You may want to let the students play and check back every 3 (or 5) minutes or so.
5. At the end of the experiment, ask students to report their times on a classroom chart. (Use the format they made, just add a row for each student's times). Did all of them observe changes at the same times? Why or why not? Ask students how their snack changed (melted due to the sun's heat). Compare this with their predictions. Ask students to brainstorm other ways we can use the sun's heat.

*** OPTIONAL : You can help the students create a graph with their data, for example a bar graph showing the number of students whose chocolate melted at each time (see right).





sun's Heat



makes a treat

Observe your treat and draw what you see after each time period.

3 Minutes



6 Minutes



9 Minutes



12 Minutes



What did the sun do to the treat?

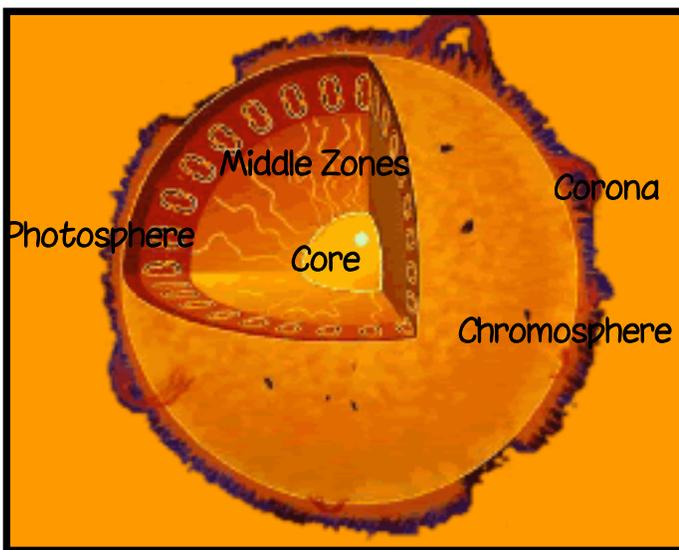
Layers of the Sun

Activity 9: Layers of the Sun

Goal: Students will make a model of the sun that will show the different layers.

Materials:

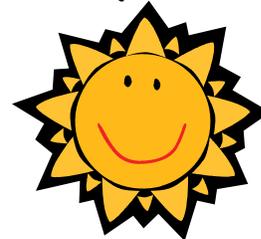
Modeling Clay or Play Dough
(white, yellow, orange, red, pink)
Large, clear heavy duty straws
Science Journal: "Sampling the Sun"
Science Journal: "Parts of the Sun"



Extension

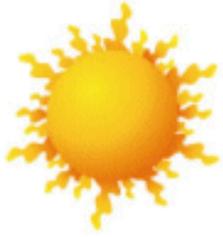
Activity

This activity could be modified by using different flavors and colors of Jello to offer an edible way to learn about the sun and its layered structure.



Description:

1. Ask students to name one thing they remember about the sun. Does it have layers? Can anyone remember the names of the layers?
2. Assign teams and pass out newspaper and clay. You may choose to give students one color at a time.
3. Students should make a small clay ball, about the size of a marble, to represent the core. Next have them add a different color of modeling clay around the ball to form a larger ball about twice the size of the original. Continue this process adding one color after another until all five colors have been used. It is easiest if you assign the order of colors, so that all students have the same colored layers.
4. Pass out straws and explain to the students that they will take core samples of their sun. Students should poke the large straw into the center of their sun and pull it back out. There should be a core sample with all 5 colors of clay inside the straw. Students may need help with this depending on the sturdiness of the straw. The clay models can also be cut in half with a plastic straw to show the different layers.
5. Discuss the concept of layers and review the layers of the sun. Introduce the sun vocabulary (core, middle zone, photosphere, chromosphere, corona) relate the layers in their model with the layers found in the sun.
6. Have the students draw a picture of the layers they see on the worksheet "Sampling the Sun". Encourage them to use the vocabulary to label the different layers of the sun. You may then have them label the correct layers of the sun in "Parts of the Sun".



Parts of the sun



Color and label the parts of the sun

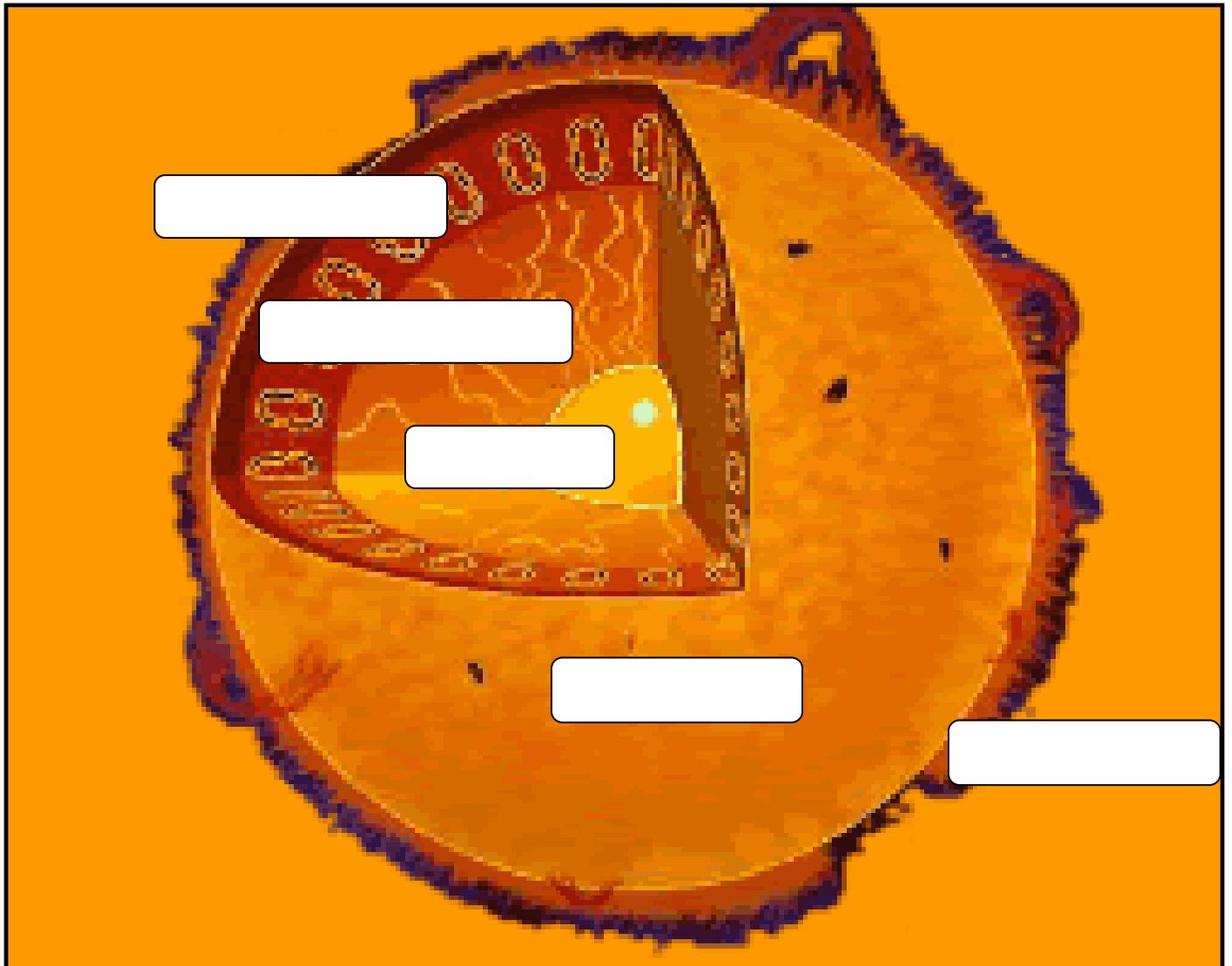
Corona

Chromosphere

Middle Zones

Photosphere

Core



What are other objects that have layers? Name three.

1.-----

2.-----

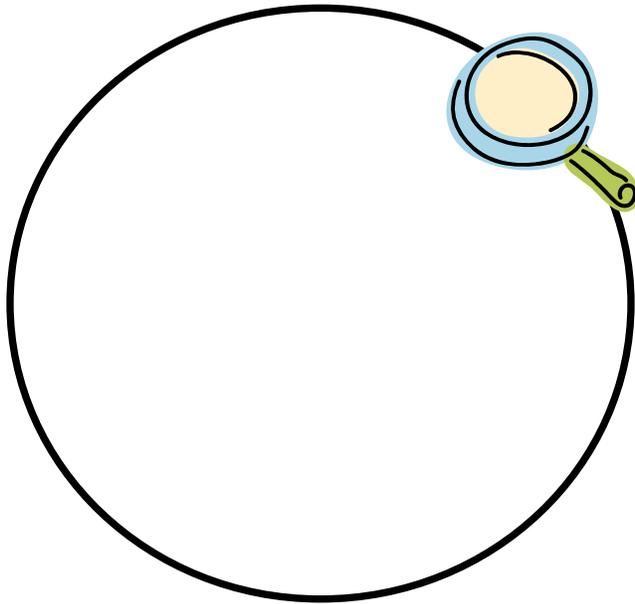
3.-----



Sampling the Sun



Use your straw to take a core sample of your sun.
What do you see?

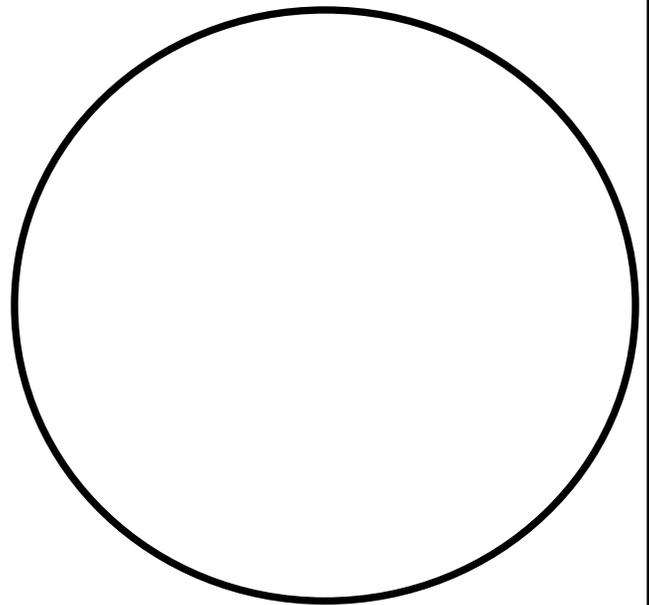


What do you see in your core sample?

Handwriting lines for the core sample observation question.

Draw and label each layer you see.

Handwriting lines for drawing and labeling layers.



What is the color of each layer?

- Layer 1 _____
- Layer 2 _____
- Layer 3 _____
- Layer 4 _____
- Layer 5 _____



ART CONNECTION



Papier Mache

Activity 10: Papier Mache Sun with stars

Goal: This is a fun way to end the sun and stars unit.

Materials: Large punching balloon
Newspaper
Glue
Water
Red, yellow, and orange tissue paper
Aluminum foil muffin cups (various sizes)
Fishing line



Description:

1. Blow up the large punching balloon. Have students use strips of newspaper and a mixture of glue and water to create a papier mache sun. Let dry overnight.
2. When the sun is dry use the same procedure to add red, orange and yellow tissue paper to it. Solar flares can be added by gluing tissue paper to the edges of the sun to represent the 3- dimensional flares.
3. Hang the sun in the center of the classroom with the fishing line. During later activities students will make planets.
4. Use fishing line to hang aluminum foil muffin cups around the edge of the classroom to represent stars.

***Throughout the unit you can add to your hanging solar system