LESSON: All About the Sun...Day, Night and Shadows

INSTRUCTOR: Penny McEntire

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DISTRICT: Nebo

GRADE LEVEL: Kindergarten

CORE CURRICULUM

Science Standard 2: Earth and Space

Objective 2: Observe and describe changes in day and night.

Intended Learning Outcomes:

Indicator 1: Compare and contrast light and dark in a day-night cycle and identify the changes as a pattern.
Indicator 3: Examine what happens when you block the sun's light. Explore shadows and temperature changes.

Lesson Objective: At the end of this lesson, students will be able to contrast day-time and night-time activities and recognize the pattern of a day and night cycle and explore the characteristics of shadows.

Content Connections: Pattern, change, heat, light, temperature, and shadow

INTRODUCTION

Background Information

This lesson gives hands-on instruction for kindergarten students. Students will explore activities they do during the day, and possible nighttime activities. They will then manipulate and sort a variety of daily activity cards. The teacher will help students understand that there is a pattern to each day (day, night, day, night, etc.). The activities are intended to help show the day/night pattern. The teacher will want to present this lesson with a series of activities that build upon each other. This is only one lesson to introduce the concept of day and night; in the "Additional Activities" section, you will find more ways to further enrich student understanding of the pattern, and introduce shadows and their relationship to the sun.

Included in the bibliography are books that are excellent to facilitate the teacher's understanding of the science content.

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INVITATION TO LEARN

Launch (introduction): (10 minutes)
At the carpet, introduce your lesson by questioning students' prior knowledge about day and night and their relationship to the sun and moon.

1. When you play outside in the daytime, is it dark or is it light? (light)
2. Do you need a flashlight to see? (no)
3. Where does the light come from in the daytime? (sun)
4. What gives us light at night? (we have man-made light, and moonlight)

As a whole class, identify things students do during the day, when it is light outside. They may indicate things such as eating, playing, doing chores, shopping, school, watching television, etc. As students identify things, display the picture cards of daytime and nighttime activities (see attached blacklines) in a pocket chart under the appropriate daytime and nighttime headings.

After the teacher discusses the picture cards, she will then follow-up with these questions:

1. Have you ever seen the moon and the stars up in the sky all day?
2. When you go to sleep and wake up at night, do you see the sun?
3. Does it get dark every night?
4. Does it get light every day?

As a whole class, identify things students do during the evening, when it is dark outside. If they turn a light on inside, they can eat, read, watch television, take baths, etc. (You must emphasize that they have to turn a light on; the sun doesn't make light in their house at night.) They sleep when the sun and all other lights are off.

INSTRUCTIONAL PROCEDURES

Explore (Individual and Small Group Work): (10 minutes)
Have students go back to their tables and explore all the picture cards. Each table will have a set of cards for students to manipulate. Students will sort them under the picture headings (see attached blacklines) according to things they can do during the day and things they do at night.

Discuss (Whole Group Discussion): (20 minutes)
1. When students are finished sorting the cards, bring them back to the carpet.

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2. On your whiteboard, you will have a large poster board circle. Half of the poster board circle is yellow (representing day) and the other half is black (representing night). Directions for making the poster board circle and sun and moon arrows are attached in the blacklines.
3. Students will tape the sequence pictures (the same ones they sorted) onto the board along the perimeter of the circle. Daytime pictures go on the yellow half, and nighttime pictures go on the black half.
4. As you discuss things you can do during the day, the sun arrow is shown and moves. The purpose of the black arrow is to hide the sun or moon so it isn't shown during the cycle when it isn't needed.
5. When you get to activities at night, the moon arrow is shown. Adjust the arrows so the moon arrow is showing.
6. Show how it keeps going on and on in a circular pattern. Explain that the pattern is called day and night. (You may have to deliberately show and call attention to the arrows and review what the yellow and black circle halves are for.)
7. Repeat this several times, showing that "On Monday we have day and night, on Tuesday we have day and night," etc.

Solidify (Closure):
Questioning:

1. Is it always light outside?
2. Is it always dark outside? A day must have a light time and a dark time.

Practice (Review): (20 minutes)
Literacy Connection:

Divide students into two different groups. One group will have a large poster paper that is black. The other group will have a yellow one. Using blank 8½"x11" white paper, students will draw one activity they do during the day or night (you will make this assignment according to the color of the paper the students will be working with.) Students will label the picture they drew in a sentence format. For instance, one student drew a bathtub and wrote, "I take my bath at night."

Gather students back together at the carpet and review the activities that their classmates do during the day and night. Display student work and encourage students to observe how their classmates do things that are the same as they do during the day or evening.

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LESSON MATERIALS

- ½ sheet of black and yellow poster board paper
- Clear packaging tape
- 1 large brad
- Copies of moon and sun arrow made on 8½" white cardstock
- 2 pieces of black construction paper cut into 2 identically sized arrows and the sun and moon arrow
- Daytime and nighttime activity cards (enough copies for students to sort in small groups)
- Daytime and nighttime activity cards (to glue/tape on the perimeter of circle)
- Headings for the daytime nighttime activity cards (one set per small group)
- 1 large piece of black butcher paper
- 1 large piece of yellow butcher paper
- Glue/scissors/drawing materials

ASSESSMENT SUGGESTIONS

- Informal assessment will consist of teacher observation of the way the students sort the daytime and nighttime activity cards.
- Informal assessment can be done through questioning and analyzing students' answers.
- Formal assessment will be the students' illustrations and written sentences about the things they do in the day and evening.

POSSIBLE EXTENTIONS/ADAPTATIONS/INTEGRATION

- Advanced learners can write and label their pictures of several activities they perform during the day and night.
- Model expectations and use specific teacher talk for those students needing learning accommodations.

FAMILY CONNECTIONS

Assignments to do with parents:

- Students can discuss their routine at home. What activities do they do in the morning, during the day, and at night? What specific routines do the children do to prepare for the evening, or the day?
- With the help of parents, students can create a "time-log" by illustrating and labeling different activities they do in the morning, after school, and at night (see attached

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blackline).

ADDITIONAL ACTIVITIES

Day and Night Song and Day/Night Pattern Exploration:
Have all the students stand in their spots at the carpet. In front of them will be a posted picture representing the daylight, and behind them will be a posted picture representing nighttime (see attached blacklines). Reflect on the previous day's lesson – how you can do things during the day and different things at night, and how it makes a pattern. Students will take one finger and point to the picture representing sunshine or daytime, then rotate behind them and point to the picture representing nighttime. Remind them that it is a pattern. As you sing the following song, they will point to the sun, and then rotate to show the nighttime as you sing about night. On the "day and night" chorus, they will quickly point to day and then quickly rotate so they are pointing to night. Note: This links directly to the student's ability to follow directions and learn through movement.

(To the tune of "Are You Sleeping")

The sun is shining, the sun is shining. (Point to the sunshine picture.)
It is day, it is day.
The sun is gone and now it's night. (Rotate and point to nighttime picture.)
We can't see things without a light.
CHORUS
Day and night, (Rotate back and forth between pictures.)
Day and night.

When you are finished, take the sun and moon pattern cards (see attached blacklines) and show the "ABAB" pattern in a pocket chart. Show students how it is always in that pattern; it would never be sun, sun, moon, or moon, sun, sun. It is always sun, moon, sun, moon.

Sing the song a second time, and with a pointer point to the pattern cards so the children can see the representation of the day and night pattern.

Shared Reading:
On a large chart paper or an overhead, display the following poem:

When the sun is shining, I do so many things.
I play outside at the park and go high on the swings.
I eat, I drink, I shop, and snuggle while I read.

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It's fun to have the sun, it helps grow the things I need.
But now the night is coming, the sun seems to go and hide.
It's time to bathe and dress for bed, it's getting dark outside.
The sun has moved and now it's dark, my sleepy eyes fall asleep.
Soon morning comes, my room is bright, the sun is back to keep!

Explore the use of compound words by writing compound words that include sun (sunshine, sunlight, sunbeam). Write the word on a sentence strip and show it as a whole word, then cut the word into parts and demonstrate how you have two words. You can explore other compound vocabulary words from this unit, such as daytime, and nighttime.

Exploring Shadows:
For this activity you will need a flashlight and several small objects, (pencil, marker, toy, block, pencil holder, etc.). Put the picture of a sun (see attached blackline) on the flashlight, indicating that the flashlight will act as the sun. Put a large piece of white paper underneath the objects. Have the students circle around so all can see, and shine the flashlight on the objects. Ask the children to notice what happens to the white paper as you shine the flashlight. Do this several times moving the flashlight to different locations. The following questions will help build understanding:

1. What is the black mark on the paper? (shadow)
2. What is a shadow? (The students most likely will not understand that it is the area where the light can't go, but this will serve as a good pre-assessment question.)
3. Can light go through everything? (No – you may want to explore how light can't go through a book, or a coat, a person, etc. so they understand this concept better.)
4. When light can't go through something, we see a shadow on the other side.

Shine the light on the objects again, and trace in the shadows. As you do it, explain that the light can't go through the object, so a shadow is made.

1. Does the shadow look like the object? (Yes, it may be a different size, but it will still have the same basic shape.)
2. Does the shadow look different if the sun (flashlight) is in a different place? (Yes, the shadow moves to a different side of the object.)

Exploring How Shadows Change:
This activity takes place several times during the day. It must be a sunny day, and you must have three different times (approximately 10 minutes each) to take the students outside to mark their shadows.

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Bring children to the carpet. Read *Moonbear's Shadow*, by Frank Asch. Tell the students that you are going to go outside and see how their shadows are the same as Moonbear's.

Take students out to the playground. Have one student stand in a designated spot (you will return to this same spot later, so you may need to mark it.) Have the student put his/her arms out and with sidewalk chalk you trace the shadow. Have students observe where the sun is, but instruct them that it is harmful to look at the sun. Return to the classroom. Return two more times that day, have the same student stand in the same spot and trace the student's shadow again. You may want to use a different color of sidewalk chalk. Return to the classroom for whole group discussion. The following questions should be asked after you are finished tracing the student's shadow three different times.

Questioning:

1. Did the sun stay in the same spot? (no)
2. Were the shadows exactly the same each time? (no)
3. Were the shadows the same size? (no)
4. Were they in the same place? (no)
5. What made the shadow? (sun)
6. How did the sun make a shadow? (Its light can't go through things, so we get a shadow.)
7. Does everything have a shadow? (yes)

Shadow Freeze:

Students will go outside and stand in a long horizontal line so that their shadows are in front of them. When you count to three, the students will raise their arms and dance until you say stop. When you say to stop, the students will freeze and look at their shadows. They will compare to see if their shadow is doing what they are doing. Continue doing this several times.

Shadow Bean Bag Toss:

Students will be paired with another classmate. Each pair will have one bean bag or other small object that can be safely tossed. Students will stand together so that their shadow is in front of them. One student will stand in that spot and the other student will take 10 steps away from his/her partner. This student will take the bean bag and toss it onto his/her partner's shadow. You can give them criteria for the toss such as, "This time, try to get the bean bag onto the shadow's head/ stomach/leg, etc." Repeat this activity several times with each partner.

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Exploring Shadows Outside:
This activity requires each student to have an 8½"x11" piece of white paper. Students will bring their paper outside. When you get outside, you can explore shadows from the buildings, playgrounds, homes, etc., as a whole group. Then each student can do a shadow walk. Have each student take his/her white paper and put it behind objects (flowers, grass, fence posts, playground equipment, etc.) to see what kind of a shadow the object makes.

What Shadow Am I?
Students should be assigned in pairs; each pair will have an 8½"x11" piece of white paper. Each pair of students takes one classroom object. Students use a flashlight (or you can take the paper and object outside), and one student creates a shadow with the flashlight while the other student traces the shadow outline. Students turn their papers over and label the object their shadow was made from. As a whole class, students show their shadow picture to the rest of the class for the class to guess the object that made the shadow.

RESOURCES: BOOKS, MEDIA, ARTICLES, WEB SITES, AND ORGANIZATIONS

BOOKS

Moonbear's Shadow, , by Frank Asch ISBN:10-068-983519-1

Possible books that may be used to enrich student/teacher understanding:
Science Outside, By Susan Canizares, and Betsey Chessen, ISBN 0-439-04604-1
The Sun Is My Favorite Star, by Frank Asch, ISBN 0-439-31231-0
Sun Up, Sun Down, Gail Gibbons, ISBN 978-0-15-282782-3
What Makes Day and Night, by Franklyn M. Branley, ISBN 13: 978-0-644050-8

MEDIA

ARTICLES

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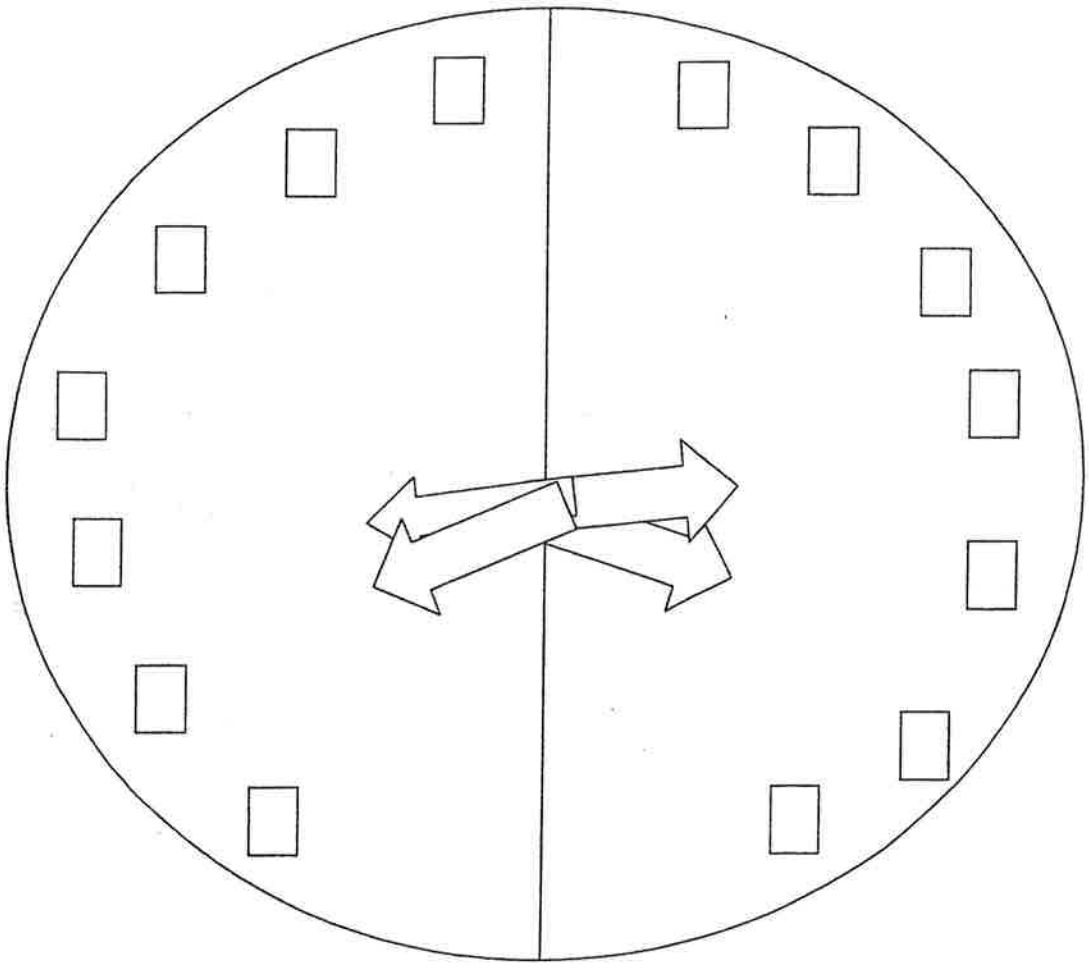
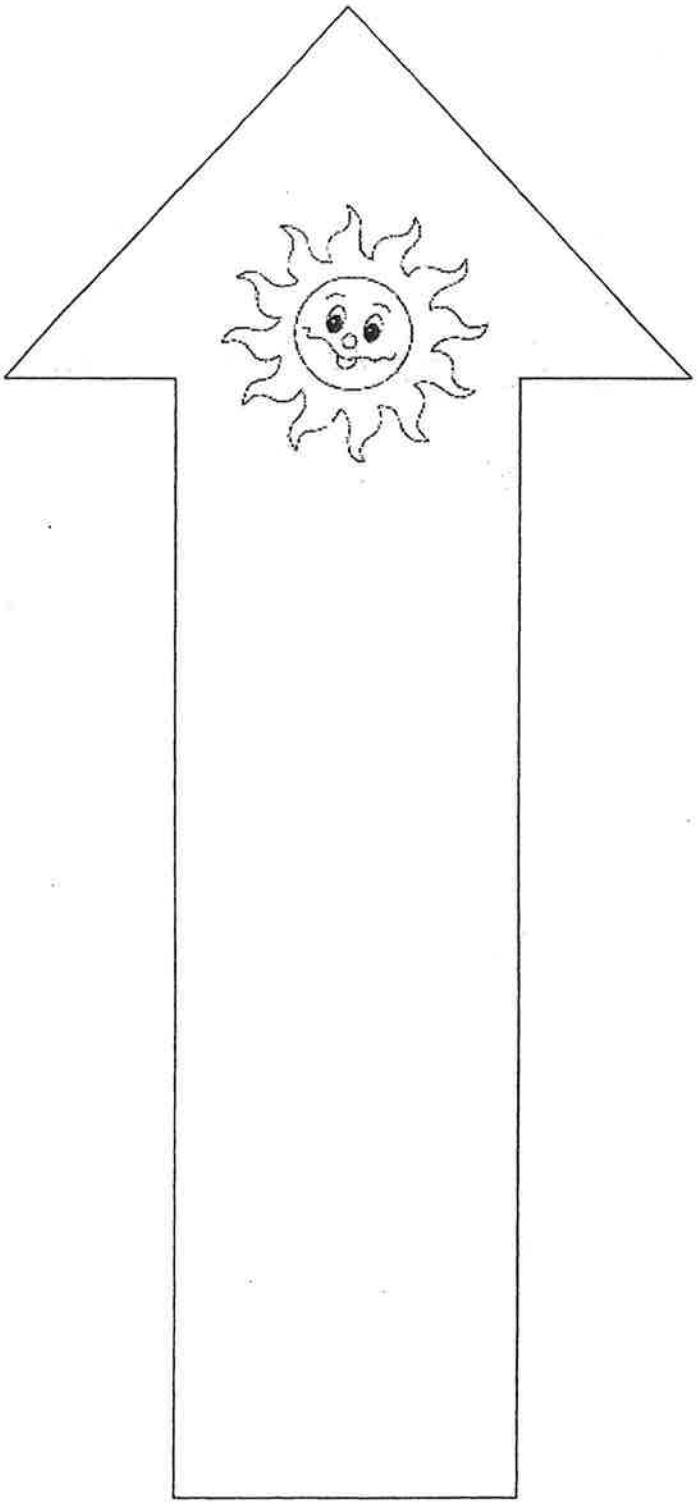
WEB SITES
ORGANIZATIONS

INSTRUCTIONS TO MAKE DAYTIME/NIGHTTIME PATTERN CIRCLE

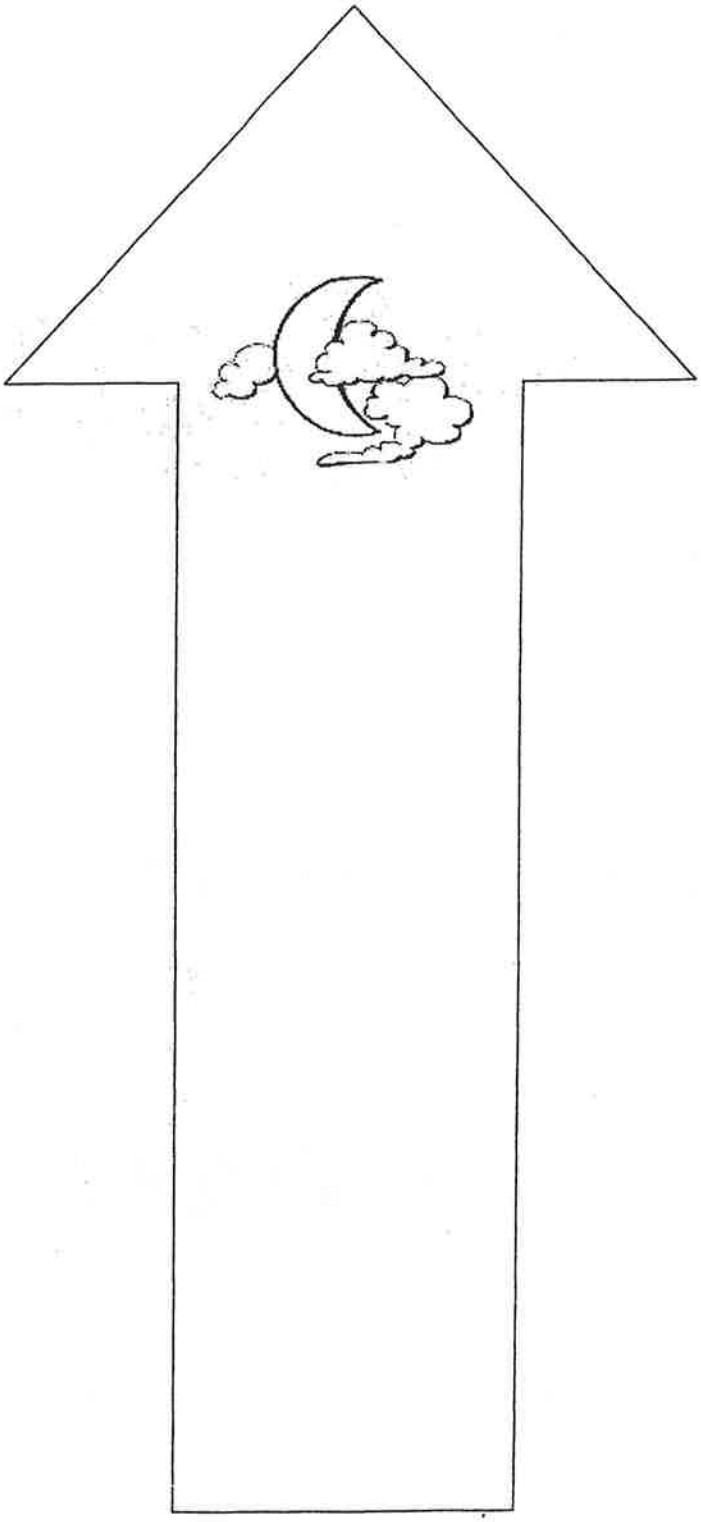
1. Make a large circle (the entire size of a poster board) on yellow and black paper. Cut the circle exactly in half and tape a yellow and a black half together.
2. Make a copy of the sun and moon arrow (attached blackline) on white paper.
3. Make two identical copies of the shape of the arrow with black construction paper.
4. You should have four arrows. Put the arrows in the following order, starting at the top: black arrow, sun arrow, black arrow, moon arrow.
5. Punch a hole at the bottom end of the arrow through all of the arrows (the hole should be centered on all of them).
6. Attach the arrows with a large brad to the center of the circle.
7. Notice from the illustration below how you can rotate the arrows.
8. As you rotate between the day and nighttime activities, you can cover the arrows you don't want showing with the black arrow. This way, when it is daytime (yellow) you only see the sun arrow, and the moon arrow is only shown for nighttime activities. Glue the activity cards along the perimeter of the picture (represented by the squares along the perimeter of the illustration below).



SUN ARROW FOR DAY AND NIGHT PATTERN CIRCLE



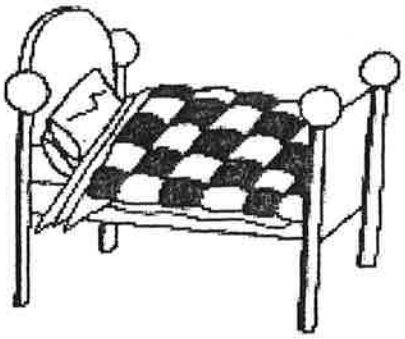
MOON ARROW FOR DAY AND NIGHT PATTERN CIRCLE



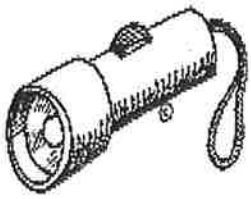
HEADING CARDS FOR SORTING OF DAYTIME AND NIGHTTIME ACTIVITY CARDS

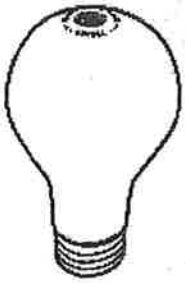
Daytime Activities

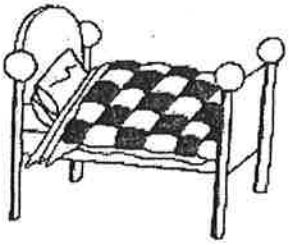
Nighttime Activities

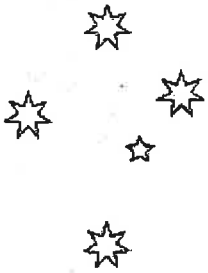


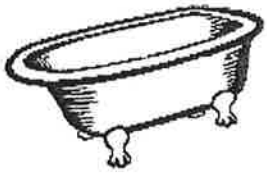
DAYTIME AND NIGHTTIME ACTIVITIES

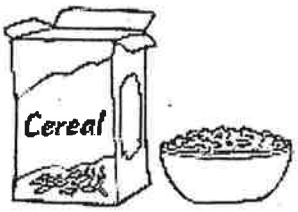


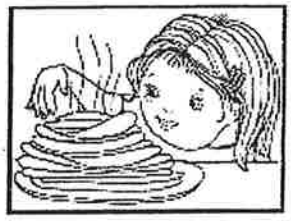




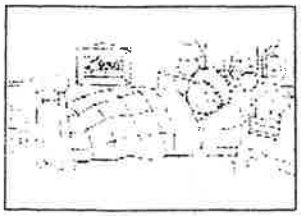




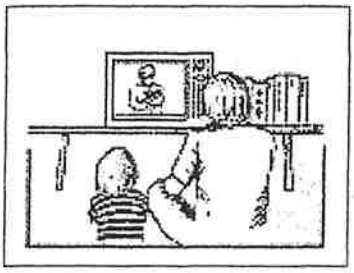




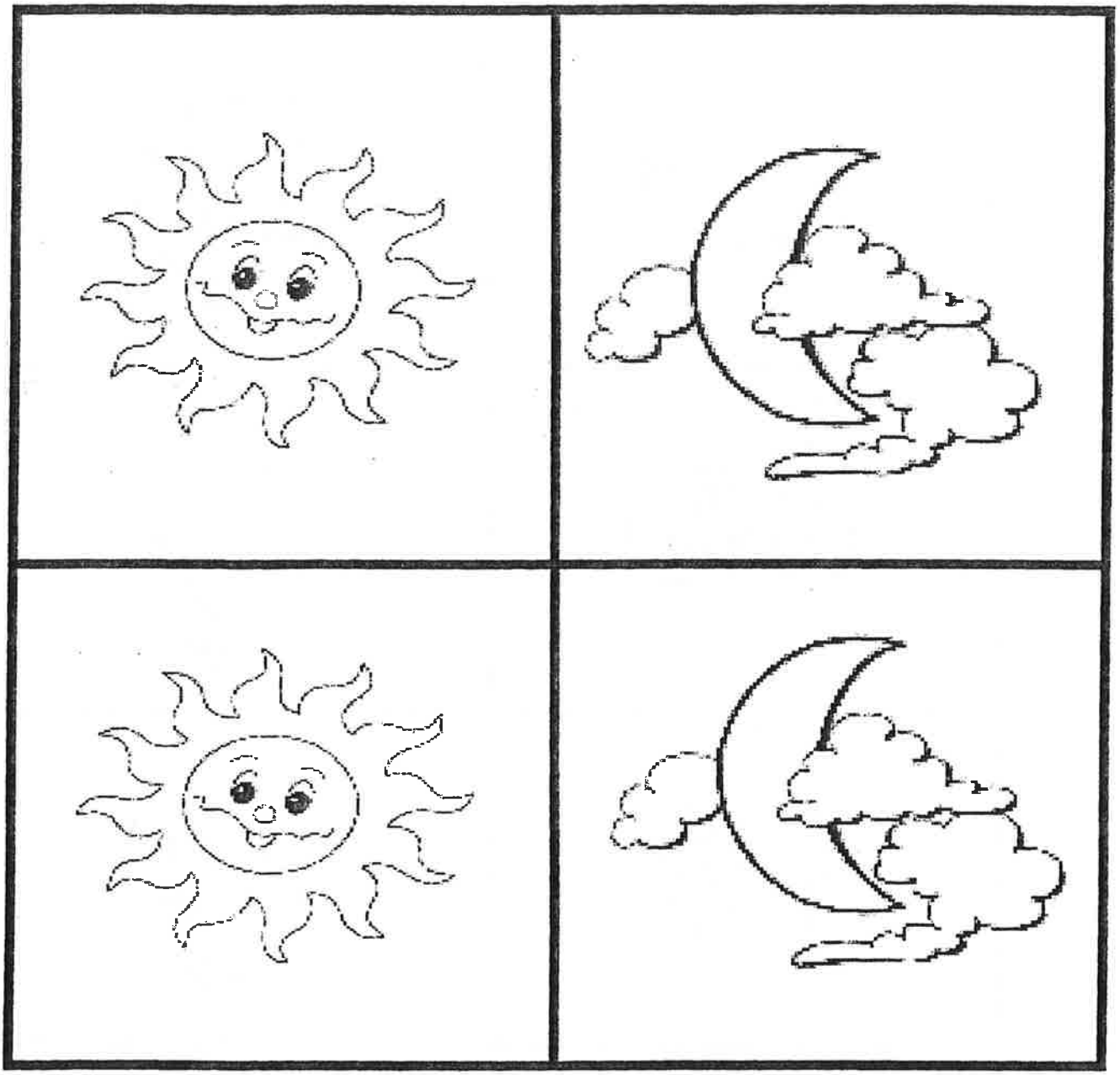
DAYTIME AND NIGHTTIME ACTIVITIES



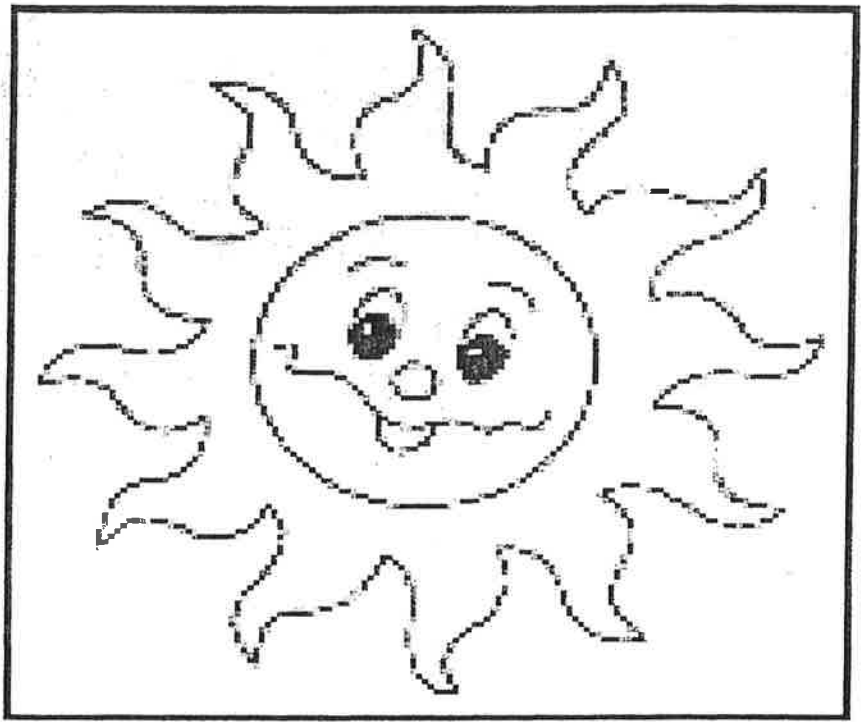
DAYTIME AND NIGHTTIME ACTIVITIES



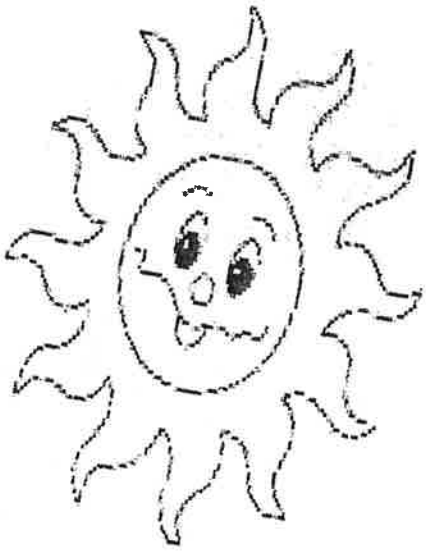
SUN AND MOON PATTERNS FOR "ABAB" PATTERN DEMONSTRATION

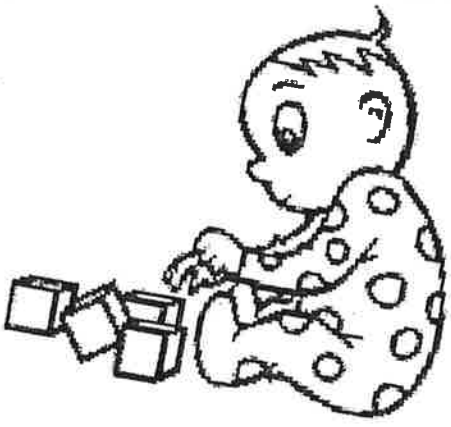


SUN TO TAPE ON FLASHLIGHT FOR SHADOW ACTIVITY

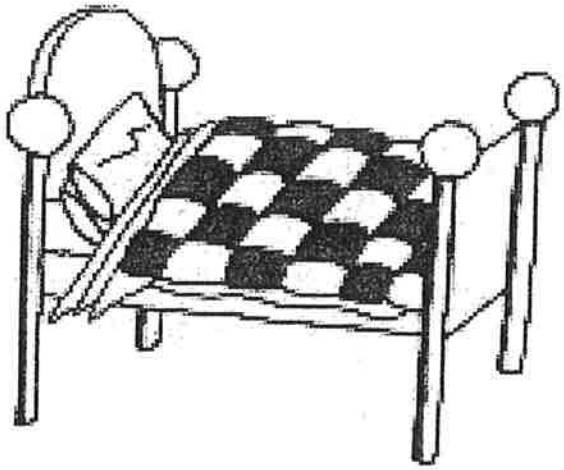


Daytime





Nighttime



Name_____

Things I do in the morning	Things I do after school
Things I do when it is dark	Where I sleep