

Time Will Only Tell

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Overview

Topic: Ways to measure time and graphing. This lesson will introduce primary students to ways of telling time. It is an introductory lesson in teaching students how to tell time using an analog or a digital clock. The students will also graph the different kinds of clocks found in their homes.

Length of Lesson

1 60 minute class period

Instructional Video/Technology

Take a Look 2 #10 Time

Here's How #9, Clocks and Watches

(Extensions) World Wide Web access or access to Internet

(Extensions) *Microsoft Draw*

Learning Objectives

The student will be able to:

- list the uses of time
- name methods of telling time
- construct graphs illustrating types of clocks found in homes
- list parts of an analog clock (face, hands, numbers)
- record, collect, and graph data
- demonstrate that shadows occur when sunlight is blocked by an object

(This lesson addresses Va. SOLs Math K.10, K.17, 1.18, 1.19, and 2.16, Science K.7)

Materials

For each student:

- 2 saltine crackers
- 2 16 oz. washed soda bottles with tops for each child
- masking tape
- sand or any other free flowing material (1/2 c. per student)
- paper plates
- glue
- scissors
- crayons
- pencils
- brass fasteners
- worksheet #1 for Math assessment
- worksheet #2 for Science assessment
- worksheet #3 for graphing activity (math extensions)

For each teacher:

- stopwatch or clock with a second hand
- hammers
- large size nails
- A wide variety of clocks (alarm clocks, cuckoo clocks, hourglasses, grandfather clocks, digital clocks, watches, etc.)

For each small group (2 to 3 students):

- several small screw drivers
- sidewalk chalk
- old broken or unwanted clocks for dissection (1



Thirteen·wnet



clock for each small group)

Pre-Viewing Activities

1. Ask: How long is a minute? Accept several responses. Have students close their eyes. Tell them to raise their hand when they think a minute is up. How did a minute feel to you? Was it longer or shorter than you thought it would be? Discuss results of the experiment.

2. Ask: What are some things that you could do in a minute? Accept several responses. Then ask: Can you eat 2 saltine crackers and completely swallow them in one minute? Record the yes and no answers on the black board. Give each student 2 saltine crackers. Tell students when to start, and time exactly one minute. Tally the yes's and no's.

Focus for Viewing

To give students a specific responsibility while viewing say: Students, you just completed an experiment that let you feel what a minute was like. Today you will be watching two videos. In these videos I want you to be able to tell me some reasons why we need to tell time. I want you to tell me some ways that people told time without clocks. By the end of the lesson, I also want you to know the parts of the face of a clock and the jobs of those parts.

Viewing Activities

1. Focus: Ask: What are some reasons why we need to measure time? List the responses on the board. As you watch this segment about different reasons we need to measure time, raise your hand if you see something other than what we listed. **START Here's How #9** immediately after the applause. **STOP** immediately after the mouse says "I don't need a clock for that." Ask: What did you hear or see different from what is on our list. Say: Clocks come in many shapes and sizes. Tell me about some clocks that you have seen somewhere. Listen to responses. Ask: What did people do to measure time before there were clocks? Discuss responses.

2. Focus: In this next segment, I am going to turn the sound all the way down. You will see some ways people could tell time without using a clock. Watch carefully and when I stop the video we will talk about what we saw. **START Take a Look 2 #10** with **SOUND OFF** immediately after she finishes the test. **STOP** immediately after he says hour-glasses "keep an accurate measure of time". (During the discussion, rewind to the beginning of that segment just played.) What did you see that people long ago used to tell time? How do you think each of these worked?

3. Focus: Let's watch the same segment again. This time we will turn the sound on. Listen for how each of the clocks we discussed works. Let's see if we were correct in our predictions. **START Take a Look 2 #10**. **STOP** again after he says hourglasses "Keep an accurate measure of time". Analyze the children's predictions by discussing the similarities and differences.

4. Show the class examples of hourglasses. Do you think they measure time accurately? Test one by timing it, using a second hand or a stopwatch. Then retest to see if it measured the same amount of time. Say: We are going to make our own hourglasses. Then we will run experiments to see if they measure time accurately.

Note to the Teacher: It may be necessary to have all steps completed ahead of time except for adding the sand and twisting on the tops depending on the age and capabilities of the students. Give each student two identical washed 16 oz soda bottles. (All bottles should be washed and dried with labels removed ahead of time.) Tape the two tops together securely. With a hammer and a nail, make a hole through the two tops. The holes must be even. Fill one bottle with one half cup of sand or salt. Screw the top on the bottle with sand tightly. Then take the empty bottle and screw it onto the other top tightly. Have students turn their hourglasses over and watch the sand go through. Measure the time it took for the sand to go all the way through. Record the data in their journals. Repeat the process and record data beside the first experiment. Analyze results to see if clocks measure an accurate amount of time.

5. Hold up the hourglass model. Ask: Why do you think we don't use these kinds of clocks anymore? Discuss the sundial, candle clock, and water clock. How many of you have more than one clock in your house? Ask: Do they all look the same? Focus: Watch this segment and you will see many different looking clocks. Even though they are different, they all have something that is similar or alike. Be able to tell me what all of these clocks have in common. **START Here's How #9. STILL/ FREEZE FRAME** right on the face of the clock. Ask: Can anyone tell me what all of the clocks have in common? (Answer is hands and numbers.) Call on students to come and point to the hands and numbers. **STOP** the video. Look at some of the clocks we have here on display. Ask: Do they all have hands and numbers too? Say: The hands look different. Ask: What are the differences in the hands? Explain: The shorter hand is called an hour hand. It tells what hour you are into. The longer hand is called the minute hand. It tells how many minutes have passed the hour. (The discussion of the second hand is optional.)

6. Say: Students, we have just learned that there is a minute hand and an hour hand on the face of a clock. There are also numbers that represent the hours of the day. I would like for you to make your own clock face. Look again at all of our clocks. They all have different looks, so I'd like you to make yours with some imagination. Make sure that you write your numbers on the clock starting with twelve at the top and then one and so on. Make sure that your clock has a minute hand that is the longer one and an hour hand, which is the shorter one. Use the clocks on display for models. The teacher should give each student a paper plate.

Post-Viewing Activities

1. Say: Students we have discovered some different types of clocks. Let's look again at the sundial. Focus: As you watch this segment take a close look at the sundial. Be able to describe how it looks when I stop the video. Start **Take a Look 2 #10 STILL/FREEZE FRAME** at the picture of the sundial. Ask: Describe some of the features of this clock. What is one thing that we must have for this

clock to work?

2. Today we are going to make a human sundial.
 - a. Divide students into groups of two.
 - b. Give each student a piece of sidewalk chalk.
 - c. Go outside (on a sunny day) and have one of the pair stand in a designated place.
 - d. Mark where the students are standing with the chalk.
 - e. Draw the student's shadow.
 - f. After 1 hour. Repeat this process with a different color chalk. Return to class.
3. Discuss what the children saw. Draw a diagram on the board of what they saw. Ask: Why was the shadow in a different place? What would happen if we went back outside later on in the day? Will the same thing happen every day? Discuss why or why not?

Assessment

Math Assessment: Using the clock worksheet (included), have the students label the minute hand, hour hand, and numbers. Color could be added to enhance the project.

Science Assessment: It is necessary to complete the Post-Viewing activity. Using the sundial worksheet (included), the student will color in the letter which shows the correct shadow according to the position of the sun.

Action Plan

1. Take students to visit a clock maker or clock repairer or invite him into the classroom
2. Students could get parents to assist them with writing or visiting Timex Corporation to see clock and watch making procedures (through video or actual visit). Call 1-800-448-4639 for information or write to Timex, Customer Service Dept., P.O. Box 2740, Little Rock, AR 72203. The e-mail address is www.timex.com

3. A sundial could be placed in the school yard for students to use to tell time throughout the year.

Extensions

Language Arts: Students could write in their journals describing the different ways people told time. They also could write a class story about a clock that could talk.

Social Sciences: Discover how important historical figures such as George Washington or Thomas Jefferson told time. What kind of clocks did they use? Using a Venn Diagram, compare modern day clocks to clocks used two hundred years ago.

Physical Education: Have timed relay races (running races, popping balloon races, etc.) Record time information and student's name on a small square of paper. Post times on a comparison chart with the headings: 0-10 seconds, 11-20 seconds, 21-30 seconds, etc. Ask: Which category had the most students? Which category had the least?

Math:

- Clock graphing - Show examples of five different clocks. (You could use pictures if necessary) Grandfather's clock, watch, alarm clock, cuckoo clock, and a digital clock. Write the names of the clocks on the board. Ask students to raise their hand if they have that type of clock at their house. Tally how many students have this type of clock. Using the graph sheet (included) make a bar graph of the kinds of clocks found in their homes. Discuss the results. Which clock do we have the most of? Which clock do we have the least of? Which is your favorite kind of clock?
- Clock dissection - Discuss with students that there are a lot of small parts in clocks. Divide students into cooperative groups of two to three students. Give each group a clock to take apart and discover. Once the clocks are apart, ask the students if they could put them back together. Before this activity, make sure the clocks can be taken apart.

Telecommunications: Using the Internet locate websites of clock making companies (Times, Swatch, Rolex, etc.) Divide students into small groups of 2 to 3 students. Let the students gather information about one of the companies and orally report on findings.

Technology: Using *Microsoft Paint* or any other draw program, have students draw an analog clock.

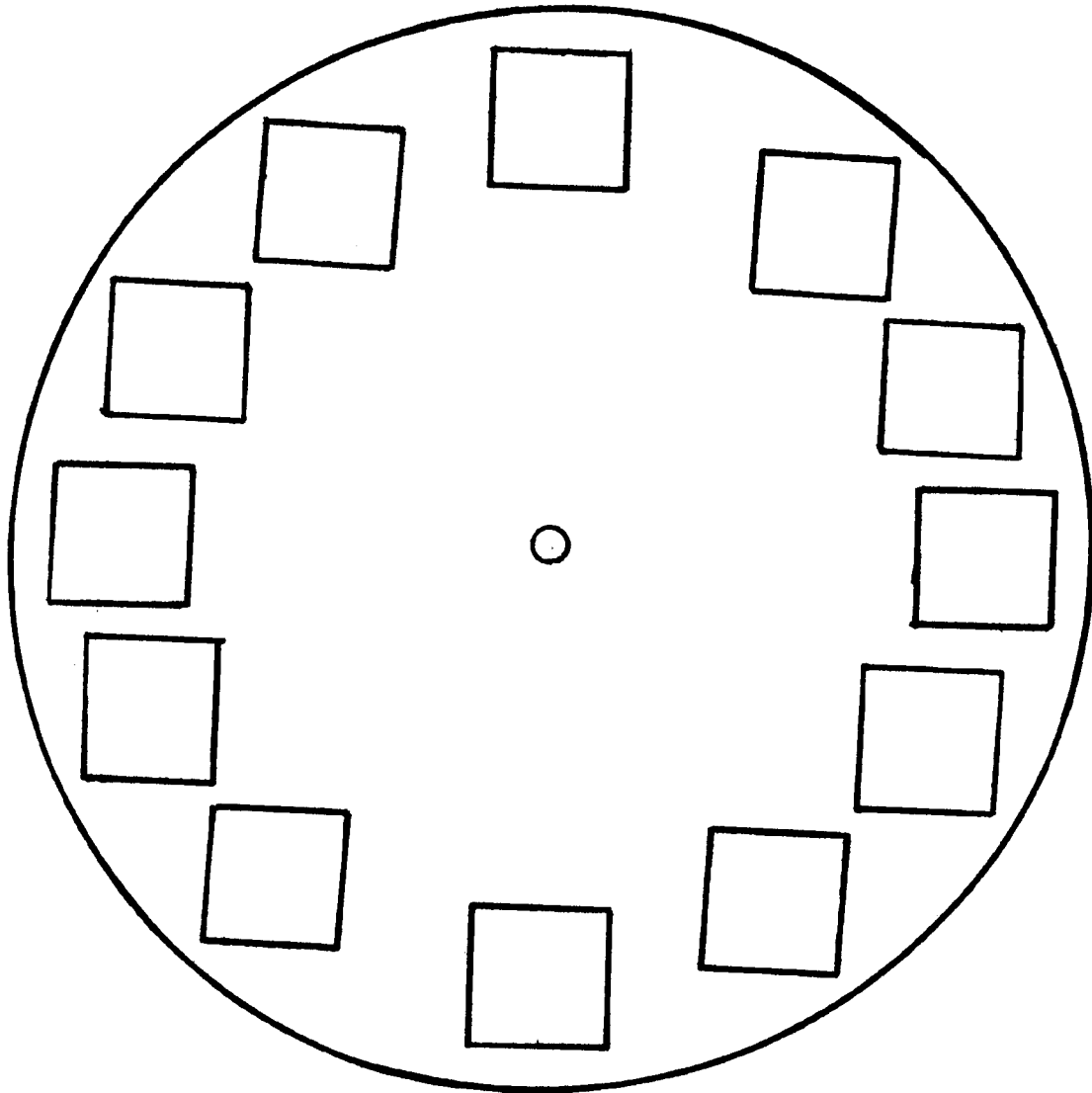
About the Author

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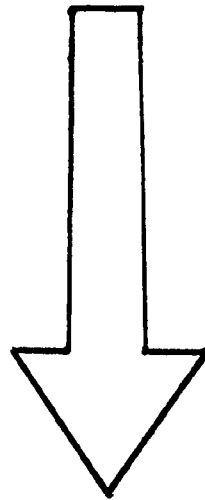
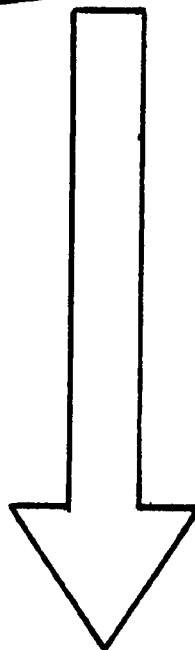
Sharon is a second grade teacher at Victoria Elementary School in Lunenburg County. She has taught school for eight years, and within her county, conducts ITV (Instructional Television) workshops for teachers. Sharon holds a Bachelor of Science in Early Childhood Education for grades K-8. She's also certified to teach reading for grades K-12. Sharon enjoys cooking, reading, church activities, clogging and spending time with her husband Jack and her two year old son.

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Clock Worksheet

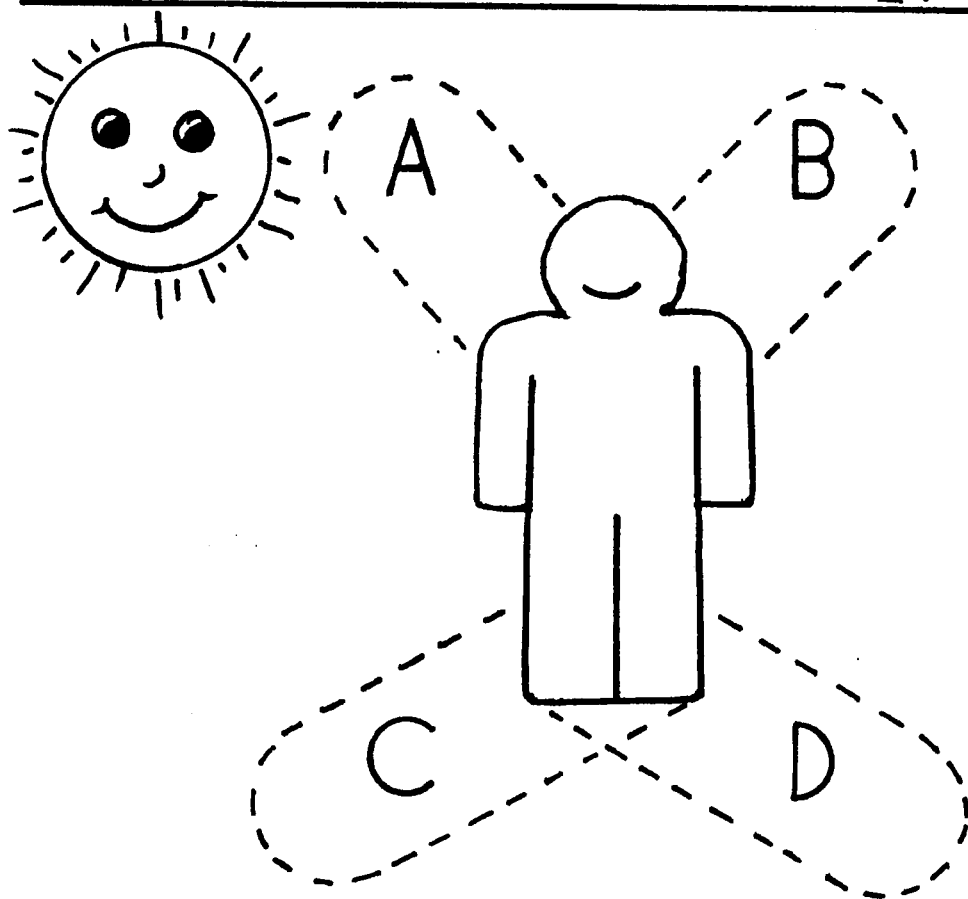
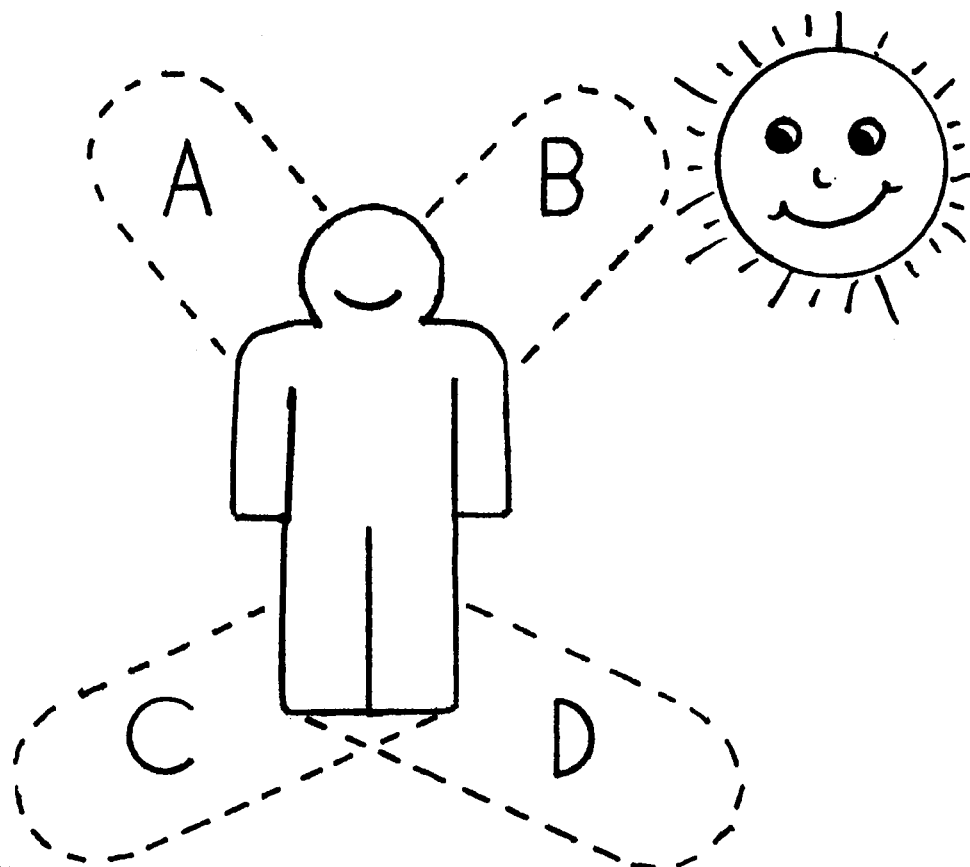


12			
11	8	5	
10	7	4	2
9	6	3	1



Worksheet #2

Color the letter that shows the correct shadow.



Worksheet #3 – Graphing

