



TIME ZONES

DAVID A. ADLER

ILLUSTRATED BY EDWARD MILLER

About the Book

What are time zones and why do they exist? When it's noon where you live, why is it midnight halfway around the world? This entertaining book explains why time zones exist and includes little-known facts and historical lore, an explanation of Daylight Savings Time, and this hands-on activity that can be performed at home or in the classroom.

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FUN PROJECT: Why We Need Time Zones

Here's something you can do to help you understand why when it's noon on one side of the world, it's midnight on the other side.

Using a lamp and a globe in a darkened room, you can see how the turning Earth means it's morning on one side of the world and evening on the other side. If you don't have a globe, use a beach ball.

Turn on the lamp. Place the globe or ball near the lamp. If the lamp is the only source of light in the room, one side of the globe or ball—the side facing the lamp—will be in the light. The other side of the globe or ball will be dark.

Slowly turn the globe or ball. As the lighted side moves out of the light, the other side moves into the light. If you're using a globe, find the Atlantic Ocean. Shine the light directly on it. Since the earth turns in an easterly direction, as the globe turns, the sun first shines directly on the east coast of the United States: the side of the country from Maine to Florida.

Now slowly turn the globe to the right so as it turns, the light moves toward the Pacific Ocean. As you turn the globe, the light that was shining directly on New York City, Philadelphia, and Atlanta is soon shining directly on Chicago, New Orleans, and Houston. Keep slowly turning the globe. Soon the light is directly on Denver, Albuquerque, and Billings. Then it's shining on Phoenix, Las Vegas, and Los Angeles.

If you keep turning the globe, the light will soon be shining on Alaska. Then it will be shining on Hawaii. When it is shining directly on Shanghai, China, the east coast of the United States will be dark. When it's noon in Shanghai, it's midnight in Miami.

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A Second Is a Hiccup

By Hazel Hutchins

English/Language Arts

- Read the book aloud to the class. The first time you read it, just approach it as a fun story with lots of rhythm, and don't make any instructional comments. Once you have read the story to your students, talk with them about the concept of time for a few minutes. Ask them how time can be important in a story. You will receive a variety of comments and opinions, which should help encourage some good discussion about time. Brainstorm with your students the various vocabulary words that could have something to do with the concept of time: second, minute, hour, day, year, summer, etc. Record them on a chart or word wall for your students.
- Read the book again. Have your students help you recite the passage "How long is an hour?" as you read. Repeat several times. Then have students create lists of things they like to do to fill an hour. They may like to play outside, watch a movie, play a game, read a book, bake cookies, draw..... many activities will be listed. Have them think of things that sometimes seem to drag before an hour is up such as soccer practice on a really hot day, sitting quietly in church when you know you have home-made fried chicken waiting to be eaten at home, riding in the car on the way to a very fun vacation. Again, you will receive many different answers and ideas.
- Talk with your students about setting of a story and how it relates to time. Ask students when many fairy tales took place? (A long time ago when there were castles and dragons). Older students can pinpoint the actual dates a little more specifically. When does a story such as Hank the Cowdog or Junie B. Jones take place? Can it be now? Would it make a difference if the story was set ten years ago? (probably not). One hundred years ago? (definitely would make a difference, especially in transportation, clothes, communication, etc.) Talk about how time is important to a story.
- Give your class about ten minutes to write a short story. The subject is of their own choosing. Invite volunteers to share their writing. Talk with them about when they see their story taking place. Could they change the time period without it making a difference in their story? Would it be more fun to set a story in the future? Allow students time to just talk about time and setting.

1.1c – participate in rhymes, songs, conversations, and discussions (1st grade – Bundle 3 of 36)

Math

- Have the class think of other activities that only take one second to accomplish. Record their answers. Allow students time to "test" their responses if appropriate. For instance, does a wave of your hand take one second, or can it last longer? Good discussion can occur with this conversation.
- Have a timer or clock with a minute hand available for this activity. Have students sit perfectly still for one full minute. They cannot move nor talk. How long does that minute seem. Next allow students to talk informally with their friends, moving around the room quietly if they want to. Stop them after one minute. Then ask how long that particular minute felt. Allow students to test various situations and see how long a minute truly is. Take students outside and test how long it takes to run from one end of the playground to another. Does it take a full minute? If not, have students turn around when they reach the edge of the playground and run back the other way. Stop them when one minute is up. Allow students to jump rope for one minute. Does that seem like a long time or a short time?
- Prepare a time line from a piece of bulletin board paper or other paper you have available. The paper should be about 8 inches x 14 feet. You will have to cut and tape, most likely, to prepare your strip of paper. It doesn't need to be perfect. Starting from the left, put numbers 1 – 12 across the paper in a time line.. Have two or three students hold up the time line in front of the class. Ask for comments regarding why you chose to put 12 numbers on the time line. What could it represent? What instrument of telling time is divided into 12 parts? (clock). Have six or seven students hold on to the

time line and then form a circle with it. Help them space the 1 and the 12 at an appropriate distance apart. Ask for a volunteer to be Mr. or Madam Second. Start Mr. Second at the 12 and have him take a very small step around the paper time-line clock as you count seconds. Have Mr. Second walk very slowly around the clock until he once again reaches the 12. Talk with students about how quickly or how slowly the minute it took him to walk around the clock seemed to them.

- Talk about the concept of ten minutes. All your students time to free-read, draw, or do another activity that they enjoy. Stop them after ten minutes. Most will beg to continue because ten minutes feels so short. What if they had to stand in a line at Six Flags or a carnival waiting to get on a wonderful ride? How long does ten minutes seem then. Brainstorm with the class things they do during their day that take about ten minutes. Answers will vary. Getting dressed for school could take about ten minutes. Washing dishes or doing other chores could take about ten minutes. Riding a bike to a friend's house *could* take about ten minutes. Writing spelling words could take about ten minutes. Your students will think of many more. You just want your students to focus in on the concept of time and how it affects their day.
- Have students keep a journal of time. Ask them to divide a journal into 24 hours. They should record what they did for each of those 24 hours. They may have some of them filled with several activities. Many hours will just say "Slept." This activity allows students to think about their own personal time during a day.

1.11 A The student applies mathematics to everyday situations.

1.8 The student understands that time can be measured.

1.12B relate informal language to mathematical languages and symbols

Science

- How can time affect nature? Seasons are periods of time that are very important in nature. Talk with students about months and how many months there are in a year. Talk with them about how many times we see the number 12. There are twelve numbers on a clock because an hour divides evenly into 12 parts. A year has twelve months. How many months are in a season, on the average? Talk with your students about a maple tree? What does the tree look like in spring? Summer? Fall? Winter? Why does the tree need time to change? Have students create a color picture of a tree as seen in each of the four seasons of the year. Students may use crayons, map pencils, or markers, or they may paste colored tissue paper onto their tree branches to depict leaves. www.crayola.com has a sample art lesson for seasons.
- Look at insects. How does an insect change from an egg into a beautiful butterfly? How long does the process take. Students may research the time period from egg to adult in a variety of insects such as a honey bee, a grasshopper, a moth. Is there much variation? This particular concept would also make an excellent individual science fair project. Lots of opportunity for observation!