## Math 5 - Act. 25: Time Marches On!

Summary
After creating a paper clock, students will practice displaying various times.
Group Size
Individual

## Life Skills

Thinking \& Reasoning, Employability
Materials
For each student:

Paper plates
Brad
Clock hands
Colored pencils, markers, or crayons
For teacher:
Overhead clock with hands or Judy clock

- Tuesday
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## Background for Teachers

Students need to have a knowledge of how to tell time and how a clock works, as well as the ability to understand, figure, and demonstrate a knowledge of the amount of time that passes between two times.
Vocabulary:
Elapsed time: The amount of time that passes between two times (e.g., 8:00 to 9:00).
Intended Learning Outcomes
2. Become mathematical problem solvers.
5. Make mathematical connections.

Instructional Procedures
Invitation to Learn
Put the following sample questions on the overhead for the class to ponder and discover:
You have a 10:00 a.m. appointment. It will take you 1/2 hour to get there from your home. What time will you need to leave?
School gets out at 3:30 p.m. It takes you about 15 minutes to get home. You have a dinner appointment at 6:00 p.m. It will take about 45 minutes to get to your dinner appointment on time. What time will you need to leave?
Discuss why it is important to be able to tell time, know how to use a clock, and understand adding and subtracting time.
Instructional Procedures
Make paper plate clocks (see blackline):
Each student will receive one paper plate, two clock hands, and a brad.
Teacher will model on the overhead or the chalkboard how to make a clock.

Draw a big circle on the overhead. Inside the big circle, draw a smaller circle representing the rim of a paper plate, (this circle frame will be the one where the clock numbers are written).
In the circle frame, draw a big (feather-light) circle at the top and one at the bottom (12 and 6 ), then draw one right side and the left side ( 3 and 9 ).
Write 12 in the top circle and 6 in the bottom one. Instruct the students to do the same with theirs.
Write a 3 in the circle on the right and a 9 in the circle on the left. Instruct students to do the same.
Review what the numbers are increased by: Count by 3's, 3, 6, 9, 12. Also discuss multiples of 3 's $(1 \times 3=3,2 \times 3=6,3 \times 3=9$, and $4 \times 3=12$ ).
Ask students what number(s) need to be placed between the 12 and 3. (The answer would be 1 and 2). Model for them how to place them.
Follow the same pattern with the other numbers. (3 and 6, 6 and 9, 9 and 12).
Review what the numbers are now increased by: Count by 1's (1, 2, 3, 4, 5, $6 \ldots$...
Ask how many minutes there are in one hour, how many minutes there are between the 12 and 1 , between the 1 and 2 , and so on. ( 5 minutes) Remind the class that it takes 5 minutes to move from one number on the clock to the next number.

Count by 5 's as a class while pointing to $1 \times 5$ (to show the 5 minutes), then $2 \times 5$ would be $10,3 \times 5$ would be 15 , etc., exploring the 5 times tables.
Remind the class that they cannot go higher than $5 \times 12$ (60) and that there are no more than 60 minutes in one hour. Explore the possibilities of a pattern.
Draw a half-circle next to the right side of the clock. Tell class that this part of the clock is known as after or past.
Draw a half-circle next to the left side of the clock. Tell class that this part of the clock is known as before or to.
Draw a long minute hand on the overhead. Inside it, write "minute" (for the minute hand) and explain that the long word minute = long hand.
Draw a short hand on the overhead. Inside it, write hour (for the hour hand) and explain that the short word hour = short hand.
Instruct students to place their clocks on their desks as you discuss and demonstrate a few different times. Using the clock you made or a Judy clock, put a few different times on your clock and instruct the class to discover the times each (examples: 5:00, 8:30, 6:15, 4:10, etc.).
Practice until you feel comfortable with the class' understanding.
Now ask the class to show you the time you say (examples: 7:00, 2:15, 3:45, 11:55). Practice until you feel comfortable with the class' understanding to the nearest 5 minutes.
Ask what it means to say (2:15 which is shown on your clock) two-fifteen, fifteen after two, or fifteen past two.

Try 1:00. You might hear one or one o' clock.
Try 7:30. You might hear seven-thirty, half past seven, or 30 minutes after seven.
Try 3:45. You might hear three forty-five, a quarter to four, forty-five minutes past three, forty-five minutes after three, or fifteen to four.
For 11:55, you might hear eleven fifty-five, five to twelve, or five to 12:00.
Remind students that all of these are the same. Try a few others.
Remind the class to keep their clocks on their desks as you model for them a couple of problems. Show 1:00 on your clock. Tell them you are now going to add 2 1/2 hours to your clock. Ask them to predict what time they think it will be? With the class watching, move your clock forward $21 / 2$ hours and show the time. Ask them to check and see if their predictions were right. Model a few examples for the class.

Have students practice using their clocks to the nearest five minutes as a class:
Say: "It is 4:00 a.m. now. Show that time on your clock. What time will it be 4 hours from now? Show that time on your clock." Class holds clocks up as they get the correct time. Suppose that it is 3:00. What time will it be in 5 minutes? Wait for students to figure the answer using their clocks and then raise their hands to share answers.
Suppose recess starts at 10:00 a.m. and lasts 15 minutes. What time will you need to come in from recess? Show it on your clocks.
School starts at 5 minutes to 9:00 or 8:55. PE begins 30 minutes later. What time will it be? Students write in their journals listing times of morning activities before school, or a full day's activities.
Curriculum Integration
Math/Science-Extend the teaching and questions to the nearest minute.
Have students estimate how many times they can blink, hop, say school, write name, etc., in one minute. Let them actually try one or more while being timed for the minute.
Use clocks to show fractions: 1/2 of the clock would be how many minutes? $1 / 3$ of the clock would be how many minutes? 1/4? etc.
Use clocks to show acute, obtuse, and right angles.
Compare how many minutes it takes different liquids to boil (water, vinegar, salt water, milk, etc.)

## Extensions

Possible Extensions/Adaptations
Discuss the importance of being to school, meetings, and jobs on time. Also discuss how catching airplanes, buses, etc. depends on knowledge of time and clocks.
On a paper with 24 clocks (12 morning clocks 12 a.m. -11 a.m. and 12 afternoon-evening clocks 12:00 p.m.-11:00 p.m. clocks), students write under the clocks what they would be doing at each time.
Compare and do clock activities with digital clocks and circle clocks.
Decorate the face of the clock. Do not put art in the rim where the numbers are located.
Homework \& Family Connections
Let students take their clocks home, and teach and practice with parents or siblings.

## Assessment Plan

Teacher observes students as he or she says a time and shows time on his or her clock.
Teacher gives real life story problems to class and observes as they show the answers on their clocks.
Students have clocks on a sheet of paper with the time illustrated on them. Have students write the time underneath their clocks (or 10 minutes after each time, or 15 minutes before or after the given times, etc.).

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