Perimeter and Converting Measurement

Summary

The students will be able to solve problems involving measurement.

Main Core Tie

Mathematics Grade 4

Strand: MEASUREMENT AND DATA (4.MD) Standard 4.MD.3

Additional Core Ties

Mathematics Grade 4

Strand: MEASUREMENT AND DATA (4.MD) Standard 4.MD.1

Materials

A ruler that measures inches and centimeters for each student.
Buzzers or bells (set of 68) (optional)
Medals (1st, 2nd and 3rd place) (optional)
Black lines:

1. *Perimeter Practice Sheet* (pdf)
2. *Perimeter Prince/Princess* *(pdf) (3 pages)*
3. *The Great Converter Practice Sheet* (pdf)
4. *The Great Converter* (pdf)
5. *The Fact Spitter* (pdf)

- *Millions to Measure*
(book), by David M. Schwartz; ISBN 043963389

Books:

- *Inchworm and a Half*
, by Elinor J. Pinczes; ISBN 039582849
- *How Big Is It?*
, by Ben Hillman; ISBN 0439918936
- *Millions to Measure*
, by David Schwartz; ISBN 0 43963389
- *How Long or How Wide?*
, by Brian Cleary; ISBN 9780822566946
- *Twelve Snails to One Lizard*
, by Susan Hightower; ISBN 0689804520

Media:

- *How Much Does It Hold?*
Available from Media House Publications, Regina, SK. (Catalogue No. V9820). Suitable for Grades 37.

Background for Teachers

When we measure, there are only two systems that are widely used. The customary, or inchpound, system is used in the United States. The metric system is used in most other countries.
Students should have been taught about measuring perimeter, problem solving in measurement (which consists of converting simple measurements), and facts about measurement.
The lessons below are great review and wrap up activities for perimeter and problem solving in

measurement. These activities are great practice for students to master these measurement skills. Before the lessons and activities are given, students should understand what they will be learning. The enduring understanding is: There are appropriate tools and units to estimate and measure the length, weight, capacity, time, and perimeter of 2D figures. After the lessons and activities, students should be able to answer the following questions:

What are ways we measure?
What kind of objects can you measure with customary and metric measurements of length?
What are ways to measure weight?
How do we measure time?
What is perimeter?
    How do we measure perimeter?
    How do you measure perimeter of 2D objects?
How do we measure capacity and with what tools?
How would your life be different without standard types of measurement?

Intended Learning Outcomes

Develop a positive learning attitude toward mathematics.
Become effective problem solvers by selecting appropriate methods, employing a variety of strategies, and exploring alternative approaches to solve problems.
Communicate mathematical ideas and arguments coherently to peers, teachers, and others using the precise language and notation of mathematics.

Instructional Procedures

Invitation to Learn:
Read and share the book *Millions to Measure*, by David M. Schwartz, and have students make predictions about problems along the way.
Instructional Procedures:
Students should have been taught cups and quarts; length to the inch, ½ inch and ¼ inch: measurement vocabulary; problem solving (converting): and facts about measurement. Before you begin the activities, please go over these skills with your students.
Math Olympics
  - The Perimeter Prince or Princess
        Hand out rulers that have inches and centimeters to each student.
        Divide students into groups of 68.
        Have students talk together in their groups on how they would find the perimeter of a 2D shape.
        Hand out the *practice sheet* for finding the perimeter to each student.
        Have students estimate what they think the perimeter of each shape will be, working together in their groups.
        Have them find the perimeter of each shape by measuring first in inches then in centimeters.
        Continue until each shape has been measured both in inches and centimeters.
        Have groups correct their measurements with each other to see if they have measured correctly.
        Then they can find another group to compare their measurements.
         Once students have practiced and feel comfortable with finding the perimeter in both inches and centimeters, they are then ready for the Olympics to begin. Each group will choose one person to represent them measuring the perimeter of a 2D shape The rest will also be measuring the perimeter, but will not be participating in the contest.

A person from each group will be given a *three sided shape* (equilateral triangle), and when the teacher says, "go" they will measure the perimeter of the three sided shape in inches. Everyone in the classroom will be measuring the same shape.

When they have measured their shape, students will raise their hands. The teacher will check each students measurement to see if it is correct. The first to complete the measurement and have it correct will receive 2 points. Everyone else who measured it correctly will receive 1 point.

If a student's measurement is not correct, the teacher will help his/her make the corrections, and then the student will receive ½ point once they have corrected it.

Students then are given a *four sided shape* (rectangle) with which they will measure this shape in centimeters and repeat the same process. (Everyone else in the class will also be measuring this shape in centimeters.)

Students then are given a *five sided shape* (pentagon) with which they will repeat the same process but, measure in inches. (Everyone else in the class will also be measuring this shape in inches.)

The students will add up their points and receive their awards.

- The Great Converter

Students should have already been taught basic concepts to be able to convert measurement problems.

Divide students into groups of 68.

Go over the basic concepts of measurement (such as 60 minutes in 1 hour, 12 inches in a foot, 3 feet in a yard, 4 cups in a quart, and 16 ounces in a pound).

Hand out the practice sheet for the *Great Converter*. Go over the first two problems of each section together as a class, and then have the students work in their groups to figure out the next two problems.

After each student has had a chance to practice, hand out the *Great Converter sheet* to each student in the class. You can decide whether you want them to work in partners, groups or by themselves.

Have each student do a problem at a time. Have them raise his/her hands when they are done. Once everyone has his/her hand raised, you can give them the answer.

Students who don't have the problem correct can work with another person or group to help them figure out their problem correctly.

Go on to the next question repeating the same steps. Continue until all the problems are completed. As a teacher, you will be able to tell which person, partner or group was able to get the questions done correctly and in a timely manner.

You can give out awards.

- The Fact Spitter

Each student should get out his/her practice sheet from the Great Converter.

Have students find a partner and practice the first question from each section of the converter chart underlining these questions.

Once students have practiced divide the class in half.

Half of the students will sit down across from someone they haven't been practicing with, and the other half of students will stand behind someone who is sitting down.

Bells or buzzers should be put in front of each partner sitting down.

Round 1 begins with teacher reading the first question of that round. The first person that knows the answer will hit the buzzer or bell. Students behind each person sitting down will determine who hit the buzzer first.

The student who hits the buzzer first will turn around and whisper the answer to the person standing behind his/her.

The teacher will announce the answer. If the answer is correct, then the student who hits the buzzer first gets a point.

Continue until all questions in round one are given out. The student with the most correct will win the round.

Students then switch places, with those who were standing up sitting down and those who were sitting down standing behind.

Round 2 will begin with different questions. Students will proceed until winners have been chosen for round 2.

Round 3 are winners from round 1 and 2 facing off with different questions.

Round 4 are winners from round 3 facing off with different questions.

Awards can be given out for the top three winners.

Lesson and Activity Time Schedule

Each lesson is 55 minutes.

Each activity is 30 minutes.

Total lesson and activity time is 90 minutes.

Extensions

There are six total activities in the Math Olympics. Divide students into six different groups and have your own class Olympics.

Put your class into four or five groups, with six people in a group. Each person in each group will decide what Olympic activity he/she would like to compete in.

Have students compete in those activities while the rest of your students practice the activities alongside them.

For advanced learners, you can change the activities to make them more challenging. Have them come up with questions of their own to be asked to their challenger.

Advanced learners enjoy these type of activities. Have them write and design their own Olympics.

Have special needs/English Language Learners work with a partner to help them learn the concepts being taught. You also may want to modify some of the questions for them.

Family Connections:

Parents can have their own Math Olympics in their own home.

Students and parents can make up their own questions and ideas for each of the activities.

Students can bring back any other activities they make up with their families

Assessment Plan

By using informal assessment, you can determine what your students know or don't know through these activities.

Since these are practice activities, students should already have been taught these concepts if they are struggling with these activities you can determine what you as a teacher can do to help them understand.

Students can hand in black lines of the activities so you can assess what they are missing.

Have students write in their journals after each activity to assess themselves in these activities. You can look over their journals.

Authors

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