

LESSON PLAN Earth Day Number Sense

GRADE 2 (AB, BC, MB, NB, NL, NS, NT, NU, ON, PE, SK, YK)
Cycle 1 (QC)

SUBJECT Math

TIME NEEDED 75 minutes (total)

- Motivational Hook (10 minutes)
- Open (10 minutes)
- Body (40 minutes)
- Close (15 minutes)

VOCABULARY

- Recycling
- Reusing
- Waste
- Reduce
- Re-Think



Started in 1994, EcoKids is a free Earth Day Canada environmental education program that offers curriculum-linked materials and activities for Canadian elementary schools to engage in environmental action. For more information visit www.ecokids.ca

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LEARNING OBJECTIVES/OUTCOMES

Students will

- Each student will demonstrate their estimation skills by estimating the number of recyclable objects in each jar;
- Each group of students will place their jar of recyclable objects on the floor and demonstrate how they can group them according to the multiple their group was assigned;
- Students will develop stronger group skills by taking turns, by communicating with each other, by brainstorming, by circulating together and by respecting the opinion and the work of others;
- The actual number of recyclable items will be announced by each team and students will demonstrate how and where to record the totals on their own number line sheet as well as on the large one on the board; and
- The Milk Bag Project, its importance, and how many bags are needed to make a mattress will be discussed.
- Students will open their minds to find ways we can re-think our consumptive practices and be smarter as families so that we don't need to dispose of so much plastic waste in the first place.
- Read, represent, compare and order whole numbers to 100 and place them on a number line.
- Estimate and count forward by 1's, 2's, 5's 10's and 25's to 100 using number lines.
- Learn to quantify relationships by representing, comparing and ordering whole numbers to 100 using a variety of tools.

MATERIALS REQUIRED

- 5 bags/jars of recyclable items (pop can tabs, milk bags, bread tags, round metal juice lids, toilet paper rolls)
- 5 large number lines from 1 to 100 (1st one with increments of 1, 2nd with increments of 2, 3rd with increments of 5, 4th with increments of 10, 5th with increments of 25) to be taped to the blackboard
- 20 sheets with the 5 corresponding number lines on them (for each child to fill in)
- The story of the Milk Bag Project with pictures of the children in Haiti on their new mattresses
- 20 Milk Bag Information Sheets
- 20 “The Happy Earth Day” activities book
- 5 Earth Day stickers
- 4 red and black markers
- Coloured sticky notes for the map

DESCRIPTION OF ACTIVITY

In celebration of Earth Day, students will learn to estimate and count various recyclable objects using several strategies and place these totals on a number line worksheet. Students will also learn how recycling their family’s milk bags will keep the bags out of our landfill AND have a direct impact on the comfort and well-being of children in Haiti and Africa.

This lesson would best be taught in the 2nd term when teachers have had a chance to establish routines in their class and students have had some experience working in groups. Another reason this lesson would best be taught in the 2nd term is that Earth Day falls on April 22nd and ideally this lesson would be presented as part of Earth Day celebrations.

While this is a math lesson it also connects to social studies by raising the students’ awareness of the interconnectivity of all humans as well as establishing a Canada and world connection.

Motivational Hook (10 minutes)

Show 3 slides of garbage (Running the Numbers, Chris Jordan, 2008). Every day millions of people use plastic bags so we are all playing a part in filling the landfill. There is a way we can help to keep some of these bags out of the landfill AND help children who are less fortunate than us at the same time.

Open (10 minutes)

Over the past month our class has been collecting bread tags, pop can tabs, metal juice lids, milk bags and toilet paper rolls. Review the 4 Rs (reduce, reuse, recycle and re-think) and the “Simple actions, Big impact – Everyone can make a difference” slogan from Earth Day Canada. Brainstorm why they are important. Think-pair-share questions “What do students know about counting a large number of items? What are some of the challenges? What would make it easier? Tell them you will be asking them what they learned at the end of the activity.

Body (40 minutes)

- Show the students each jar/bag of recyclable items and distribute a sheet with 5 corresponding number lines to each student. The teacher will model from a master number line on the board.
- Ask students to estimate the number of items in each container. Let each child have a guess. On the blackboard, model and think out loud how and where you would place a number on a number line. Have someone from each group come up to the blackboard and write the lowest and the highest estimate guessed for each item on its corresponding number line in black marker.
- Ask the students about different ways to count the items in an easy way. Discuss different options.

- Model the activity for the students by taking the bag of toilet paper rolls, spreading them out into groups of 1, counting them and then recording the total number on the number line entitled "Toilet Paper" in red marker. It is important that the teacher think out loud and show the sequencing of activities.
- Assign each group a multiple to sort their items (group 1 will sort by 2's, group 2 will sort by 5's, group 3 will sort by 10s and group 4 will sort by 25's). They will then be given a jar/bag of recyclable items to first group (using their group's assigned multiple) and then to count.
- Give students 10 minutes to get organized and set up their items in the 4 corners of the room.
- Circulate throughout the class providing support, facilitating, answering questions and monitoring progress.
- When each group has finished they will write the total number of items they have counted on their own number line and then rotate clockwise with their group to count the items arranged by the other groups and place the sum on the corresponding number line. Ring the bell to let students know when it is time to rotate to the next group.
- When all groups have finished circulating the room and observing the other group's sorting/counting process, let one group at a time report their sum to you and let another person from each group write it on the number line in red.
- Observe how close or how far off the estimates were to the actual number by comparing the red number and the black number on each number line. Which group's sum was closest to their estimate? Which group's was furthest?
- Give students 5 minutes to clean-up (announce that the 1st group finished and seated will get Earth Day stickers). Recyclable items go back in the jar/container, containers to the front of the class, markers returned to the teacher, Milk Bag information package in their agendas to take home.

Close (15 minutes)

- Sit in the rocking chair and have students gather around you on the carpet.
- Ask students to answer the "think-pair-share" question. How did they feel during this activity and which methods of counting did they find the most useful and easy for counting? Why was the number line useful? What other everyday uses are there for sorting items to make counting easier? (e.g., money in their piggy bank, Halloween candy, shells at the beach).

Introduce the Milk Bag Project:

- An important real-life project which involves counting hundreds of recycled bags so they can be crocheted into mattresses and sent to Haiti and Africa instead of ending up in our landfill.
- Pick 3 students to come up to the world map and help them place a bright sticky note on Ottawa, Haiti, and Ethiopia – discuss/brainstorm how fortunate we are to have warm comfortable, bug-free, mould-free beds.
- Reinforce the importance of those who have so much helping those who are less fortunate.
- Have the students guess how many milk bags it takes to make 1 mattress (between 300 and 500).
- How many bags do we have? (90) We still need almost 200 more to make 1 mattress.
- Show the pictures of the children in Haiti with their new sleeping mats.
- While it is wonderful that some of our plastic bags will be used to crochet mattresses, what about the other millions of bags which are being put in the landfill. Brainstorm with students as to how we can re-think our consumptive practices so that we don't need to dispose of so much plastic waste in the first place. (buying milk in recyclable milk cartons instead of bags, drinking water with dinner 2 nights a week rather than milk, not pouring too much milk on our cereal in the morning so that half of it doesn't end up being thrown out).
- Ask the children to go home tonight and share with their families what they have learned today about counting, recycling and the Milk Bag story. Ask them to discuss ways that they can be smarter as a family when it comes to using less plastic milk bags.
- Over the next 2 days, anyone who brings in family suggestions for ways to dispose of less plastic will receive an Earth Day ribbon or something else.

- Send the children home with a Milk Bag Project Information Sheet and encourage them to keep bringing in used milk bags.
 - Every week the newly donated bags will be counted and the class will figure out, using a number line to 200 and an additional number line to 100 to see how many more are needed until 300 is finally reached.
 - The next step in the curriculum will have students learning (and then demonstrating) how to count forward on number lines starting from multiples of 1, 2, 5, 10 (e.g., count to 5's from 15).
 - Make a special "Earth Day" booklet with all the suggestions students and their families come up with for using less plastic. Once the booklet is finished, read it out loud to the class.
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ASSESSMENT

The teacher will provide a balanced assessment in that it will include his/her observations of oral, kinesthetic, participation as well as written tasks. The assessment will be flexible in that the student will be given several opportunities to demonstrate their knowledge. When assessing, the teacher will ask; Were they able to demonstrate their understanding of counting strategies? On their worksheets, were they able to represent, compare and order numbers to 100? Were they able to place them properly on the number line? Did they demonstrate cooperative behaviour in their group? Were they respectful to other members of the group and to the opinions of others? If a student has not clearly demonstrated their knowledge, the teacher may conference with them to assess them one-on-one and watch them sort, count, and order numbers on the number line.

PRINT AND WEB SITE REFERENCES

- ConnectEd, Lesson Plans, 2009
- Supply School, Lesson Plans, www.supplyschool.com
- "Running the Numbers", Chris Jordan, 2008, www.chrisjordan.com
- Information Sheet and Photos, Milk Bag Project, North Burlington Baptist Church, www.nbbc.ca