

Groovy Grouping

Summary

These activities are designed to help students see how grouping objects into tens -- when possible -- does bring organization to amounts of objects to be counted. These activities are also meant to introduce students to the various ways a number may be written (e.g. standard form and expanded form).

Main Core Tie

Mathematics Grade 1

[Strand: NUMBER AND OPERATIONS IN BASE TEN \(1.NBT\) Standard 1.NBT.2](#)

Additional Core Ties

Mathematics Grade 1

[Strand: NUMBER AND OPERATIONS IN BASE TEN \(1.NBT\) Standard 1.NBT.3](#)

Materials

Jumbo Gumbo

100 Unifix® cubes per group

- [Baggie Bonanza](#)

Three-section plastic plates

Jumbo Gumballs

Dry-erase markers/ eraser

Ten-section tackle box

Baggie Bonanza

Gallon sized plastic bags

- *Baggie Bonanza Letter*

- [Baggie Bonanza](#)

100 Unifix® cubes per group

Three-section plastic plates

Plastic sandwich bags

Dry-erase markers/ erasers

4 ten-section tackle boxes

Ten plastic sandwich bags per group

Digit Dash

Dessert plates (11 of red, yellow, and green)

Digits 0 -- 9 written on each color

One green plate labeled "ones"

One yellow plate labeled "tens"

One red plate labeled "hundreds"

Dry erase boards, markers, and erasers per student

100 Unifix® cubes per student that does not receive a plate

Serviceable Sweets

Bulk sized bag of Tootsie Rolls

Cart

Plastic gloves (optional)

Writing paper/journal

- *Ones Department*

- Ones Department sign
- 2 ten-section tackle boxes
- [Ones Department Record Sheet](#)
- *Tens Department*
- Tens Department sign
- Plastic sandwich bags
- Plastic tote
- [Tens Department Record Sheet](#)
- *Hundreds Department*
- Hundreds Department sign
- Paper lunch sacks
- Serviceable Sweets Delivery Labels
- [Hundreds Department Record Sheet](#)
- Stickers

Trading Tootsies

- Music
- Chart paper for recording totals
- Tackle boxes with one to nine Tootsie Rolls for half the class
- one to nine sandwich bags with ten Tootsie Rolls for half the class

Additional Resources

Books

- *3 Little Firefighters*
, by Stuart J. Murphy; ISBN 0-06-000120-8
- *The M&M's Addition Book*
, by Barbara Barbieri McGrath; ISBN 0-439-80362-4
- *Ten Black Dots*
, by Donald Crews; ISBN 0-688-13574-9
- *A Place for Zero*
, by Angelina Sparagna LoPresti; ISBN 1-57091-196-7
- *Earth Day Hooray*
, by Stuart J. Murphy; ISBN 0-06-000129-1
- *A Fair Bear Share*
, by Stuart J. Murphy; ISBN 0-06-446714-7
- *Anno's Magic Seeds*
, by Mitsumasa Anno; ISBN 0-698-11618-6
- *The Blast Off Kid*
, by Laura Driscoll; ISBN 1-57565-130-0

Background for Teachers

The system of numbers we use is a base ten system. Numbers are organized into groups of ten. Ten ones can be exchanged for one ten and vice versa. In subsequent grades, 10 tens can be exchanged for 100, etc. These activities are designed to help students see how grouping objects into tens--when possible--does bring organization to amounts of objects to be counted. These activities are also meant to introduce students to the various ways a number may be written (e.g. standard form and expanded form).

Before doing this activity students need to possess a good understanding of what ten is and looks like. Whether you use a ten frame, Unifix® cubes or base ten blocks, students need to know what represents one ten without needing to count.

Intended Learning Outcomes

5. Understand and use basic concepts and skills.

Instructional Procedures

Invitation to Learn

Begin by reading *The M&Ms Addition Book*. Hold up a gallon sized bag with about 50 gumballs and tell the students that you have in this bag a certain number of gumballs. You would like to share these gumballs with them but you are not sure if there are enough for everyone. Maybe, you might even have enough for everyone to have two. Have the class estimate the number of gumballs in the bag.

Instructional Procedures

Jumbo Gumbo

Bring the class to a circle in the front of the room.

Instruct students to think of ways the gumballs can be counted.

Have students put their knees together with a partner and discuss ideas.

After about a minute ask the students to turn back to the circle and discuss ideas. If the students do not come up with the idea of sorting by tens, guide them in that direction by asking questions. How can the gumballs be sorted to make them easy to count? What is the easiest number to count by?

Show students the tackle box and ask how many gumballs can fit in the tackle box if you put one gumball in each section?

Tell the students that each time a tackle box is filled, the 10 gumballs need to be put into a plastic sandwich bag so you will know that there are ten gumballs in the bag without needing to count.

Remind students of the amount of gumballs they estimated. Decide as a group how many plastic sandwich bags will be needed if their estimate is correct.

Put out that many sandwich bags.

Fill the tackle box with one group of ten and transfer the gumballs into a sandwich bag.

Repeat until there are less than ten left.

Gumballs that can't be put into a group of ten will be left in the tackle box.

After the gumballs are sorted into groups of tens ask students how many groups of ten were made?

Count by tens to get a total for the groups of ten.

Have the students count the leftover gumballs. Explain that to find the total number of gumballs, the total for the groups of ten needs to be combined with the leftovers.

Ask the students to share the method they used to find out how many gumballs they have altogether?

Say the total for the groups of ten and then just say the leftovers.

Put the ten's total number in your head and count by ones from there.

Explain that you would like each group to make the total number of gumballs with Unifix® cubes.

Demonstrate that by using a 3-section plastic plate, stacks of ten Unifix® cubes can be put in the big section of the plate and leftovers placed unconnected in the small section. Use a dryerase marker to write the total in the last section.

Allow groups to work together to show the total amount of gumballs with cubes.

Demonstrate how to fill out the [Baggie Bonanza worksheet](#).

Give each student a gumball.

Warning to teachers: gumballs can be a choking hazard. Monitor students carefully.

Baggie Bonanza

This is a take home activity that will be completed in class.

Send home the bag the week before, which will be filled by the parents and returned. In the bag is a note to parents explaining the guidelines for filling the bag (amount, size, and deadline for bag return).

Baggie Bonanza Parent Letter

Dear Parents,

Next week we will be learning about place value in math. In order to do this in a fun way I am sending home this large plastic bag for you to fill. One day next week the group that your child is in will take the items you put in the bag and sort them into groups of tens and ones. Please do not put more than 100 of the same item in the bag. Items that are a square inch or smaller work best (marbles, Starbursts, buttons, paperclips, etc.). We need a variety of numbers so any amount between 20 and 99 would be the best. You will get the items back after we sort them (unless you send a wrapped treat that can be shared with the class). Thanks for all your support and all your hard work with your children.

Respectfully,

Have students wash their hands.

Split the class into groups of five or six. Each group will get one bag to sort into groups of tens and ones using the tackle box and plastic bags.

Then each group will use Unifix® cubes to show the total number of objects in the bag.

Students will put stacks of ten Unifix® cubes in the large section of the plate, leftovers in one of the small sections, and write the total in the other small section.

Students will then record the daily sort on the [Baggie Bonanza worksheet](#) or in a math journal.

Digit Dash

Give each student a dry-erase board, marker and eraser.

Set the red "hundreds" plate, the yellow "tens" plate, and the green "ones" plate in the top row of a pocket chart.

Pass out the yellow and green plates with the digits 0-9. Give one plate to each student.

Pass out the red plate with the digit one to a student.

For students that do not get a digit plate set up a building station. If you have five students that do not have plates, then you need five building stations. A building station can be an area on the floor, a desk, etc. Each building station needs 100 Unifix® cubes, a three-section plate, and a dry-erase marker.

Call out a number between zero and one hundred. Students with the digits that make up the number in the right color will quickly take their plate and put it in the pocket chart under that correct place value.

Once the plates are in the pocket chart give students the command to go.

The builders will build that number as fast as they can with Unifix® cube while the rest of the class writes the number in expanded form on their dry erase boards.

Example: Teacher calls out the number 43. The student with the yellow number four plate will run up and place the plate in the pocket chart under the yellow "tens" plate. Likewise for the student with the green number three plate. When the teacher gives the command to go, the builders quickly get four stacks of tens and three ones. The rest of the class is writing $40 + 3 = 43$ or 4 tens and 3 ones on their dry erase boards.

After each number has been made with plates, Unifix® cubes, and written in expanded form, the builders will pick a student with a plate to trade places with.

Serviceable Sweets

Ask students what they think would be a fun job to have. Allow students some time to talk about some fun job possibilities. After students give responses, tell students that when you were their age you used to dream you worked in a candy factory and you stood in candy up to your knees

every day.

Explain that today the room is going to be a candy factory and each student has a job in the factory. Hold up a bulk sized bag of Tootsie Rolls and tell the students that in your candy factory the actual candy is made and wrapped by robots. The name of the factory is Serviceable Sweets--the candy factory that cares. Robots are very good at making candy but we need people to pack the candy in amounts that make them ready to be shipped.

Arrange room to be shipping sections of the candy factory. Six desks make up each shipping section. These are: "Ones Department" "Tens Department" "Hundreds Department"

Place materials at each department in a shipping section.

Explain that there are three departments in each shipping section of the factory: ones department, tens department, and hundreds department.

Two people work in each department.

Explain the jobs for each department.

Ones Department: one worker puts a Tootsie Roll in each section of the tackle box, closes the lid, and slides the tackle to the tens department desk. The other worker puts a tally in the [Ones Department Record Sheet](#). After one tackle box is filled the two workers trade jobs.

Tens department: One worker takes the tackle box, opens the lid, dumps the Tootsie Rolls into a sandwich bag, zips the bag shut, places the bag in the tote and returns the tackle box to the ones department. The other worker records a ten in the first box in the tens department records sheet. After the Tootsie Rolls have been put in a baggy the workers switch jobs. When the [Tens Department Records Sheet](#) has 10 tens, the tote with the ten bags is delivered to the hundreds department.

Hundreds Department: when the hundreds department receives a tote they need to double check the tens department. One worker will take the bags out of the tote while the other worker writes counting by ten numbers for each bag on the [Hundreds Department Record Sheet](#). If there are not ten bags in the tote then the tote must be sent back to the tens department to be recounted. (Talk about quality control and how this would slow down production, the factory would loose money, workers would have to stay at work longer, and the factory would have to charge more for their candy.) If the tens department was right then the hundreds department workers put the ten plastic bags in a paper sack, fold it over, and use stickers to keep it shut. A delivery label needs to be placed on the sack and then taken to the shipping manager, the teacher, who will place the bag in a box to be delivered to another class as an act of kindness. The Hundreds Department has some time before they receive their first shipment to stick the labels on to the sack with stickers.

Model.

Give each ones department their portion of Tootsie Rolls to be packaged for shipping.

Explain that when you ding the bell the workday begins and they will keep working until the bell dings for them to take a break. If they finish early, they will report to the shipping manager, the teacher.

Explain that each section is done when the ones department is out of work.

If there are not more questions ding the bell.

Walk around the room checking to see that they are doing things correctly.

When each section is done have each group decide how many Tootsie Rolls they have left that didn't make it to the hundreds department. The leftovers can be used for the "Trading Tootsies" activity.

Clean up and have the students write about their experience working at Serviceable Sweets in their journal.

Trading Tootsies

Trading Tootsies Recording Chart

10's	20's	30's	40's	50's	60's	70's	80's	90's	100

Give half the class a ten-section tackle box with a number of Tootsie Rolls ranging from zero to nine.

Give the other half of the class a random number of sandwich bags filled with ten Tootsie Rolls. They can get a number of sandwich bags from one to nine.

Explain that when the music starts, students trade what they have with anyone in the room.

When the music stops students pair up with someone with the opposite packaging.

Students with sandwich bags need a partner with a tackle box.

Partners need to combine what they each have to figure out the Tootsie Roll total.

Partners write their total on the Tootsie Roll chart and sit down.

When all totals are recorded, discuss what number is the biggest. Explain that whatever number has the most tens (or the most ones if the number of tens is the same) is the biggest.

Start the music again for another round of Trading Tootsies.

Extensions

Curriculum Extensions/Adaptations/ Integration

For the activity Baggie Bonanza students could estimate the amount of objects in the bag each day.

For the activity Baggie Bonanza students could compare their group's total with another group's to see what group had the greatest/least amount.

Many of these activities are easy to integrate into writing activities. Students could describe their part in the activity, make predictions, and write about the outcomes.

Probability can be part of the activity Trading Tootsies. Ask the class if they think the same number could be made more than once. After the activity look for any repeat numbers and circle them. Decide if there is a high or low probability that a number will be repeated.

For the activity Jumbo Gumbo, read the book *3 Little Firefighters* as an invitation to learn to activate their knowledge about sorting.

The activity Digit Dash can be turned into a race between the builders and the writers. Give the writers a five-count head start.

For the activity Digit Dash, before the teacher says "go," he/she can change the number and challenge the class by saying, "oh I really wanted a number ten more/less or one more/less than this number."

Family Connections

For the activity Baggie Bonanza send home a bag of objects for the students to sort with their family.

Assessment Plan

The Baggie Bonanza has a worksheet that is to be filled out each day. This worksheet is an excellent form of assessment.

Most of these activities are hands on activities, which require the teacher to roam about the room and observe students as they work. A simple table with each students name and a space for observations could be created and carried around on a clipboard. As the teacher moves from student to student simple observations could be recorded. The observations could be used to create groups for differentiation.

Students could be required to record their thoughts and findings in their journals. Reviewing their journal entries is an effective assessment strategy.

Bibliography

Research Basis

Armstrong, T. (1994). *Multiple intelligences in the Classroom*. pp.65-85. Thousand Oaks, CA. Corwin Press

There should be materials in the classroom that provide opportunities for students to manipulate, build, or encounter other hands-on experiences.

Marazano, R.J., Pickering, D.J., & Pollock, J.E. (2001). Classroom Instruction that works. *Research and theory related to cooperative learning*, pg. 85-88. Alexandria, VA. McRel

This book supports many different teaching methods that are successful in today's classroom.

Cooperative Learning, hands on activities, and multiple intelligences are among the things covered in this book.

Authors

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