

Unequal Groups vs. Equal Groups

Summary

In this lesson students will be looking at story problems and then analyzing whether the story is talking about equal groups or unequal groups. Students will need to be able to look at a visual representation of equal groups and write about what they see.

Main Core Tie

Mathematics Grade 2

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(2.OA\) Standard 2.OA.4](#)

Additional Core Ties

Mathematics Grade 2

[Strand: OPERATIONS AND ALGEBRAIC THINKING \(2.OA\) Standard 2.OA.3](#)

Materials

Unifix cubes (20)

- *12 Ways to Get to 11*
, by Eve Merriam

One chenille stem per student

Eleven colored beads for each student

12 x 18 art paper

Additional Resources

Books

- *Things That Come In Groups*
, by Tierney, Cornelia, Carman, Mary Berle and Akers, Joan. ISBN 0-201-37822-1
- *Each Orange Had 8 Slices*
, by Giganti, Paul Jr. ISBN 0-688-13985-X 12
- *Ways to Get to 11*
, by Eve Merriam ISBN 0-689-80892-5

Background for Teachers

Students are often taught the difference between addition and multiplication is the symbol (+, x) between the addends or the factors. In this lesson students will be looking at story problems and then analyzing whether the story is talking about equal groups or unequal groups. Students will need to be able to look at a visual representation of equal groups and write about what they see.

Intended Learning Outcomes

1. Become mathematical problem solvers.
2. Make mathematical connections.

Instructional Procedures

Invitation to Learn

Pass out chenille stems and beads. Students need to put 11 beads on their chenille stem. After the beads are on the chenille stem, bend the ends up slightly (make a right angle) to prevent the beads from coming off.

As the teacher reads *12 Ways to Get to 11*, by Eve Merriam, the students listen to the words and

move their beads from one end of the chenille stem to the other, based on the numbers that the book provides.

After reading the story, see if they can ever slide the beads over in an equal group. Share solutions or strategies and have students discuss their reasoning.

Instructional Procedure

Students will continue to use their chenille stem, however, give each student another bead. Ask the class to then see if they can slide the beads over in equal groups and how many kinds of equal groups can they make with twelve beads?

List on the board or overhead what kind of equal groups they come up with: 2×6 , 6×2 , 3×4 etc.

Prepare your students to work as a team. Pass out one 8 12" x 11" sheet of paper per group, folded into six parts. Each team needs to brainstorm things that come in groups of two, groups of three, groups of four, groups of five and groups of six.

When the brainstorming has concluded, share ideas as a large group.

Then have students write in their math journal their favorite number between two and seven and then choose their favorite items from brainstorming sheets.

Students will begin a rough draft for making a picture of equal groups based on the number they chose and the items they liked (e.g., six skateboards with four wheels).

The teacher will model how to write a story from the ideas and numbers they have chosen.

Use the beginnings of sentences from the story *12 Ways to Get to 11* to model how to start a sentence for their mathematical problem.

Part 2

Students will then transfer this story onto a 12" x 18" piece of art paper (folded in half). They need to illustrate it and label it with the correct math sentence. Have students use only half of the paper.

On the opposite side students will use the same two factors only in the opposite order, creating a new or slightly new picture.

Extensions

Curriculum Extensions/Adaptations/ Integration

During the assessment with the students building equal groups with manipulatives have students move the equal groups close together to show an array. Use the vocabulary words, vertical and horizontal, to reinforce the meaning of these words while looking at the arrays.

Students should begin to recognize that some arrays are square and some are rectangles.

Family Connections

Have students bring an equal group of something from home (e.g., egg cartons, juice box packs etc.).

These items can be labeled with multiplication sentence or repeated addition sentence.

Assessment Plan

Students can write other multiplication sentences in their journal and then write the matching repeated addition sentence.

In small groups, give each student a different math sentences card, like 6×2 or 5×3 (make sure each student at the table has a different one, then have the students make that representation of equal groups out of unifix cubes or some kind of manipulative.

Bibliography

Research Basis

Krpan, Cathy Marks, 2001. *The write math writing in the math class*, Dale Seymour Publications, pg.

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"Students need a solid grasp of mathematical concepts in order to function successfully in an ever-changing world. To facilitate this, educators must provide opportunities for students to deepen their understanding of mathematics. We can accomplish this by engaging students in exploring mathematical ideas and concepts through writing. When students write about mathematics, they think about abstract ideas in a more meaningful way and make connections between what they already know and what they are learning."

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