

Place Value Lesson Study

1. Title of research lesson: Place Value

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3. Objectives:

Content Goals of the Lesson:

Understand place value of whole numbers less than 1,000

Recognize the relationship between the ones, tens, and hundreds digits

Recognize and demonstrate the equivalence of one 100 to ten 10s and of one 10 to ten 1s

Ability to partition large numbers into parts and represent them with a number sentence and/or drawing

Broader Content Goals for the Unit:

Group ones, tens, and hundreds

Count out tens and hundreds accurately

Make a connection between models to number sentence

Use numbers flexibly

Transfer

Goals for Mathematical Practice:

Make sense of problems and persevering in solving them

Reason abstractly and quantitatively

Construct viable arguments and critique the reasoning of others

Model with mathematics

Use appropriate tools strategically

Attend to precision

Look for and make use of structure

Long-term Student Development Goals:

Students will work cooperatively with others

Students will engage in the problem

Students will hold a rich discussion

Establish and maintain friendships

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4. Standards

Common Core Standards, Understands place value

2.NBT.1; 2.NBT.2; 2.NBT.3; 2.NBT.4

5. Research base:

Developing Essential Understanding of Number and Numeration Pre-K-Grade 2 (NCTM)

The Concept and Teaching of Place-Value by Richard Garlikov

Trailblazers, Unit 4 “Place Value Concepts”

Investigations, Unit 1 “Trading Stickers Combining Coins”

Michelle Parks

Lorna Vazquez

Kate Masarik

Chris Hlas

6. Materials needed:

2D representations of Tootsies, Baggies, and Boxes (Katie)

3 sheets of Tootsies per group

2 sheets of Baggies per group

1 sheet of Boxes per group

A collection of extra representations for all groups to use

Post-It Paper (8-10 sheets for each lesson) (Stacey)

Projector

Boxes (Katie)

Baggies (Stacey)

Tootsie Rolls (Stacey)

Digital file for introducing Chocolate Company (Carina)

Hair nets (Carina)

Name tags (Laura)

Markers (Carina)

Tape (Carina)

Glue (Carina)

Observation Form (Katie)

Clipboards (Carina)

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7. Instructional sequence

Learning activities & Key questions (with timing)	Expected student responses, questions, misconceptions	Teacher's support (follow-up questions/actions)	Formative assessments
<p>Introduce the Chocolate Company, packaging terminology, and working in a group</p> <p>What does good teamwork look like in the work place?</p>	<p>Can we eat the candy?</p> <p>Basic logistic questions about the company</p> <p>Students will generate a list of qualities of good teamwork. (Teacher will record answers on board.)</p>	<p>Teacher shows the powerpoint to introduce the terminology</p> <p>Teacher shows the actual manipulatives that the students will be using (Tootsie Rolls, Baggies, Boxes).</p> <p>Teacher shows the 2D pictures that represent the manipulatives.</p>	<p>Observation</p>
<p>Have kids fill an order, create a picture of their order using 2D pictures, and then write a number sentence to match. Order = 137</p>	<p>What is a number sentence?</p> <p>All groups might show the same number sentence.</p> <p>What do you mean by "do it another way"?</p>	<p>Model writing a number sentence.</p> <p>Can you package it a different way?</p> <p>Can you make a new number sentence to match it?</p> <p>Can you explain your picture?</p>	<p>Observation</p> <p>2D representation of the packaging</p> <p>Number Sentence</p>
<p>Discuss the different packaging options they came up with, show the pictures that represent the orders, and write the number sentences on the board.</p>	<p>All groups might show the same 1-2 number sentences.</p>	<p>Teacher writes the number sentences on the board.</p> <p>Are there any other ways to show 137?</p> <p>Your number sentences look different...Do they represent the same number?</p>	<p>Observation</p> <p>2D representation of the packaging</p> <p>Number Sentence</p>

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Give each group a new 2-digit number (less than 50) and have them find as many ways as possible to package the order.
28, 32, 45, 47

Kids might not connect the manipulatives to the 2D representation (due to proportionality).
Kids might not connect the task of packaging Tootsies to Base 10.

Did you find all the ways?
How do you know you found all the ways?
Can you make any trades?
Go back to manipulatives-
Can you group them in a new way?

Observation

Problem/Assessment- Give kids cards that have tens and ones. Each card has a partner card (shown in different ways). Kids need to find the other card that has the same amount as their card. Turn it over and write the number.

Kids will need think time to determine their number.

Extension: Put yourself in a number line from least to greatest.

8. Additional information:
ones, tens, hundreds, number sentence, least, greatest, number representation