

Core Content

Cluster Title: Work with equal groups of objects to gain foundations for multiplication.

Standard 3: Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by twos; write an equation to express an even number as a sum of two equal addends.

MASTERY Patterns of Reasoning:

Conceptual:

Students will understand that an even number can be separated into two equal groups without any left over.

Students will understand that an odd number cannot be separated into two equal groups without having a leftover.

Students will understand that the number in the ones place shows whether a number is odd or even.

Students will understand that a group of tens will always be even.

Students will understand that an equation with two equal addends will have an even sum.

Procedural:

Students can identify an odd number by pairing objects and having one left over.

Students can identify an even number by pairing objects and having none left over.

Students can solve problems with two equal addends.

Students can count by twos.

Representational:

Students can draw pictures or arrange counters to show even and odd numbers.

Students can search for and highlight patterns on a hundreds chart.

Students can write equations showing double facts (e.g., $2 + 2 = 4$; $5 + 5 = 10$).

Supports for Teachers

Critical Background Knowledge	
<p>Conceptual: Students will understand that “even” means two groups having the same number in each group. Students will understand what it means to put objects in pairs. Students will understand how to use numbers and symbols to make an equation.</p> <p>Procedural: Students can use objects to represent a number. Students can divide the objects into two groups. Students can determine whether the groups have an equal or unequal number of objects.</p> <p>Representational: Students can draw a picture to show equal groups. Students can write an addition equation.</p>	
Academic Vocabulary and Notation	
<p>odd, even, equal, equation, unequal, pair, group, sum, addend.</p>	
Instructional Strategies Used	Resources Used
<p>Explore even and odd numbers with concrete objects. (buttons, blocks, etc.). Progress to showing even and odd numbers using pictures and words (e.g., arrays and written descriptions). Students should be expected to share how they know that the sum is odd or even.</p> <p>Teach the “Doubles Rap” to help the students learn the doubles problems. Recognize that the sum of each equation is an even number and is the sum of two equal addends.</p> <p>Even and Odd Game Show—Write even and odd numbers on index cards. Cover them with a point value. Have two</p>	<p>Cristaldi, Katheryn. <i>Even Steven & Odd Todd</i>. Cartwheel Books, 1996.</p> <p>The Doubles Rap: http://www.smbd.org/uploaded/files/Fine_Arts/Doubles_Rap.doc</p> <p>Aboff, Marcie. <i>If You Were an Even Number</i>. Picture Window Books, 2008.</p> <p>Aboff, Marcie. <i>If You Were an Odd Number</i>. Picture Window Books, 2008.</p>

students come up. One student chooses a point value. The teacher shows the students the number. The first student to answer “Odd or Even” gets the point for his or her team.

Give students a group of objects. Have them divide the objects into pairs. Identify whether they have an even or odd number.

Give the students a number line to 20. Color the odd numbers green and the even numbers blue. Give each student a group of cubes. Have them pair the cubes and determine whether they have an odd or even number.

Read *The Missing Mitten* by Stuart J. Murphy. Give each student a page with pictures of mittens on it. Have the students draw a string between two mittens to make pairs. Determine whether there is an even or odd amount of mittens. Put the students in pairs. Have them roll two dice. If both numbers are even or odd, player 1 gets a point. If one number is even and one number is odd, player 2 gets a point.

Determine whether the date is odd or even on the calendar.

<http://www.brainpopjr.com/math/numbersense/evenandodd/grownups.weml>

Odd and Even Songs:

<http://www.thevirtualvine.com/images/math/odd&evensong.pdf>

Murphy, Stuart J. *Missing Mittens*. Turtleback, 2001.

Murphy, Stuart J. *Double the Ducks*. HarperCollins, 2002.

Assessment Tasks Used**Skill-Based Task:**

Pair the mittens. Determine whether there is an odd or even amount of mittens. If it is even, write the doubles problem for the mittens.

**Problem Task:**

Jenna, Hannah, Jessica, Patty, and Lil eat lunch together at the same table. Are there an odd or an even number of girls at the table? Show your thinking with words, pictures or numbers.

Note: For both types of assessment, students should be required to explain how they know the sum is odd or even.