

Even and Odd Numbers Mini-Lesson

Summary

Students explore the concept of odd and even numbers, and what happens when combining them with addition, subtraction and multiplication.

Group Size: Suitable for a group of 2-6 students **Length:** approximately 30 minutes

Lesson Preparation

- A box of counters – use two colours for the demonstration, and give each student two colours (approximately 15 of each colour)
- Print *Student Handout* ([download](#)) – one colour copy for each student + one teacher copy
- *Blank A4 paper* – one copy for each student

Optional:

- Print *Teacher Notes* ([download](#)) – one colour copy
- *Coloured pencils* – one colour for each student

Learning Intentions

This activity helps students to:

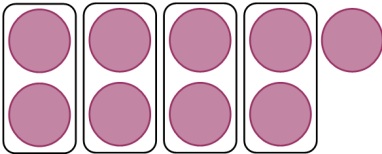
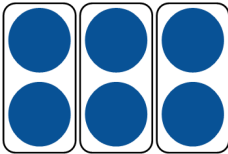
- understand that numbers are even if they can be grouped into pairs and otherwise are odd
- understand operations (addition, subtraction, multiplication) with odd and even numbers

Curriculum Links

- Understanding and identifying even and odd numbers (ACMNA051)
- Adding, subtracting and multiplying odd and even numbers (ACMNA071)

After the Lesson

After the lesson, students can follow up with a similar activity, but using division.

Time	What the teacher is doing	What students are doing
5 min	<p>Introduction: Explain to students that they will be exploring some special features of odd and even numbers. Ask students, “<i>What makes a number even? Odd?</i>” There are two ways to identify odd/even numbers:</p> <ol style="list-style-type: none"> Counters can be used to show odd/even: <i>when removing counters in pairs, if at the end there is a remainder (of 1) the number is odd; otherwise it is even.</i> <p style="text-align: center;">9 is odd: </p> <p style="text-align: center;">6 is even: </p> <p>[Note: what is 0? It is <u>not</u> odd- there is no remainder after sharing 0 into pairs]</p> <ol style="list-style-type: none"> Get students to identify what numbers an even number always ends in [i.e. 0, 2, 4, 6 or 8] and an odd number always ends in [i.e. 1, 3, 5, 7 or 9]. 	<p>Individually: Complete the subtraction table (<i>Student Handout</i>)</p> <p>Whole group: Contribute ideas about odds and evens</p>
10 min	<p>Demonstration: Explain to students that some interesting patterns can be noticed when you <i>add</i> odd and even numbers. Use the <i>Student Handout</i> to demonstrate:</p> <ol style="list-style-type: none"> ‘Odd + Odd = Even’: Show students what the sums [e.g. 3 + 5] look like when lined up in pairs. Students might recognise that in a sum, the remainders from two odd numbers pair up. This makes the answer always even. Other three types of addition [i.e. ‘Even + Even’, ‘Odd + Even’, ‘Even + Odd’]: invite individual students to use counters to demonstrate the examples on the sheet. Ask students questions to check for understanding [e.g. <i>Is 3 + 12 even/odd? How do you know? What do you notice about the pairs of counters/remainers?</i>]. 	<p>Whole group: Watch teacher demonstration of ‘Odd + Odd’ Share ideas with the group about other types of addition and complete blanks on ‘Addition’ page of <i>Student Handout</i>.</p>
10 min	<p>Direct students: Students will now work through ‘<i>Subtraction with odd and even numbers</i>’ on the handout, using counters. For each of the four types of subtraction, students create examples of their own. On the handout, they draw in the diagrams of counters and write number sentences.</p> <p>Prompt student thinking: As students work, ask scaffolding questions, e.g.:</p> <ul style="list-style-type: none"> What do you notice about all of the answers when you subtract an even number from an odd number? Can you explain this using counters? How do you know that an odd number minus an odd number is always even? Can you find any examples where this doesn’t work? <p>For students who complete the subtractions, give them a blank sheet of paper to complete the same exercise but for multiplication. Scaffolding questions include:</p> <ul style="list-style-type: none"> Can you use counters to explain if your answer will be odd/even when you multiply: two odd numbers? two even numbers? an odd and an even number? (Test some ideas, e.g. try 7×3, 5×5, 9×1 and see what happens.) 	<p>Individually / In pairs: Complete the section of the sheet for subtraction using counters. On a blank sheet of paper, students can complete the same exercise but for multiplication.</p>
2 min	<p>Discussion: Ask students questions about what they have learned, such as:</p> <ul style="list-style-type: none"> What sort of number do we get whenever we subtract two odd numbers? two even numbers? an odd and an even number? How could you use what you now know about odd and even numbers to check whether a subtraction is correct? [e.g. <i>Is $52 - 18 = 33$ possible?</i>] 	<p>Whole group: Share ideas and solutions</p>