Counting Around the Class

Materials: None for basic activity
- Chart paper, overhead, document camera (optional)

Materials needed if the teacher decides to record multiples, making multiples visible to students.

Directions:
- Choose a number to count by. Students count around the class by a single digit number to provide practice with multiplication and related division facts.
- Predict the target number. Before the count starts, students try to estimate the ending number of the count (the number the last person in the class will say). Refer to this number as the target number.
- Count around the class by the selected number. If students count by 3s, the first student says "3", the next student says "6", and so on.
- When students are familiar with this activity, begin pausing during the count and asking, "How many people have counted so far? How do you know?" Example: When counting around by 3s, after a student says 24, the teacher asks, "How many people have counted so far?" Students will have to think about the factor x 3 which equals 24. Students begin to think about the relationship between a factor and its multiples.

Exploring Patterns: Another aspect of this activity is providing opportunities for students to explore the patterns of multiples once they have been recorded. Sometimes the teacher may record the multiples as students say them, both to emphasize the patterns and to support students who are having difficulty keeping track of where they are.

Once the counting is complete ask, "What do you notice about the pattern of 15? Why do you think the ones place in the multiples alternates between 5 and 0? What do you notice about the 10's place? How many multiples are in each group of 100?"

Use questions to push students to think beyond simply just noticing patterns to discussing the mathematics behind the patterns. For example: Do students notice the structure of 15 as 10 + 5 which results in the alternating 5 and 0 in the 10's place? Ask: How are the multiples changing? (With each new multiple you are adding a 10 plus half of a 10.)

Counting Around the Class (continued)

Students practice counting by different numbers and reasoning about relationships among factors and their multiples. Ask students to count around the class by 3s, record. After counting around the class by 3s, ask students to count around the class by 6s. Ask students to estimate the ending number or target number of the count (the number the last person in the class will say).
- Teacher records multiples of 3 when students are counting around the class.
  Teacher also records multiples of 6 when students are counting around the class.
  - Ask students to compare the multiples of 3 and 6. (Students should notice that every other multiple of 3 is also a multiple of 6.) The sum of the digits of products for 3 and 6 is another pattern for students to investigate 3 x 9 = 27 and 2 + 7 = 9. 6 X 4 = 24 and 2 + 4 = 6 (pattern repeats 3, 6, 9, 3, 6, 9)
  - Elicit students' ideas for why this is true. Is this true with larger multiples of 3 and 6? Check using a calculator.
  - Do students realize that 6 is the double of 3?

Whispering Version: This version may support students in seeing multiplication as equal "groups ".
1. Choose a number (factor) to count by: Example 5
2. In this version, students always count around the class
   or circle by ONES.
3. Only multiples of the "selected number" are said aloud. Other numbers are whispered.
4. If students are counting by fives, students count 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, etc. (only multiples of 5 are said aloud, other numbers are whispered)
5. The teacher may pause at a certain point, such as after 15 and ask, "How many students have counted so far? "(15 students)
6. Ask all students who said a number out loud to stand.
   Ask, "Why are only 3 students standing?"
   Elicit the connection of 3 groups of 5 students to 15.

Extension:
7. Count around the class by 5s as many times as needed to reach 100 or greater. Teacher records multiples of 5.
8. Next do the same for 10. This time only the students who say multiples of 10 should say the number aloud.
10. Teacher again records the multiples of 10 as they are stated aloud.
11. Students compare and discuss patterns of the multiples of 5 and multiples of 10.

Counting Around the Class (continued)

Other Counting Ideas:

- When learning about money, students might count by values of coins such as quarters. These tend to be landmark numbers for students. Example, count by 5, 10, 25, 50, 100.
- Counting around the class by landmark numbers support students in building understandings of our base ten system of numeration. Ask students to count by different landmark numbers, beginning with 10 and with multiples of 10; 100 and with multiples of 100; 1000 and with multiples of 1000.
- What number or numbers could we count by so someone would say 50? What number or numbers for 72? for 100? for 500?
- Start with a given number and count backwards. Select numbers with patterns such as 500 and count backwards by 25.

Making Connections:

   Teacher should record for each count. Example: by 3s, 30s, 300
- Count around the Class by 3's. 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39
- What would we get if we counted by 30?
   30, 60, 90, 120, 150, 180, 240, 270, 30
- What would we get if we counted by 300
   300, 600, 900, 1200, 1500, 1800, 2100,

Assessment:
- What multiples do individual students know?
- Are students able to understand the relationship between skip counting and multiplication?
- Are students able to identify patterns found in multiples of numbers?
- Are students able to see relationships between factors and multiples?
- Are students able to see relationships when comparing multiples of given numbers?
- Are students able to see the relationship of multiplication and division?
- Are students able to count both forward and backward?
- Are students able to count larger numbers?