

# Circles and Stars

Circles and Stars is a math game often used to introduce the concept of multiplication to grades 2 and 3 students, with a focus on equal grouping.

**Original sources:** multiple publications by Marilyn Burns

## **Materials needed:**

- 1) one regular or ten-sided (0-9) die (singular version of dice)
- 2) paper and pencil

Students can play by themselves, in pairs or in small groups.

## **Instructions:**

- 1) Roll the die and read the number.
- 2) Draw that number of circles.
- 3) Roll the die again and read the number.
- 4) Draw that number of stars in each circle.
- 5) Record a multiplication equation to represent the number of circles (first factor) x the number of stars (second factor) = total number of stars (product).
- 6) Play for ten rounds and then add up the products of all ten equations to get a total.

\*If playing in pairs in small groups, students take turns rolling the dice, using the numbers that they each roll to record their circles and stars and equation. Compare totals at the end. If students want to have a "winner" choose between the lowest or highest total as being the winning total before you start playing.

\*Students can also be asked to record an addition equation to highlight the connection between addition and multiplication.

During or after a game, the teacher can ask questions to promote thinking, computational fluency and flexibility and reflection such as:

- a. How does knowing about addition help you think about multiplication?
- b. What is the connection between multiplication and division?
- c. What is the lowest product you can roll? What is the highest? (this depends on the type of dice you use)
- d. What other concrete or visual models (ie towers or trains of Unifix cubes or arrays) help you to think about multiplication?
- e. When do we see things in equal groups in our daily lives?

### **BC Mathematics Curricular Content and Competencies:**

- computational fluency develops from a strong sense of number
- introduction to multiplication concepts
- multiplication facts to 100
- relationship between multiplication and division
- develop mental math strategies
- visualize to explore mathematical concepts
- develop, demonstrate and apply mathematical understanding through play
- use mathematical vocabulary and language
- explain and justify mathematical ideas and decisions
- represent mathematical ideas in concrete, pictorial and symbolic forms
- connect mathematical concepts to each other

### **Different ways to play:**

Consider how this game can be used to also explore division concepts. Roll two dice and multiply the numbers (factors). Use pictures and equations to represent the two division equations that can be created. Have students use materials to divide the quantity into equal groups, practicing both sharing and grouping forms of division.