

Let It Roll!

The purpose of this activity is for children to add and subtract in different ways. Children will create a board game. They will use two dice to come up with numbers to add or subtract. Challenge cards can be used to encourage children to use different strategies and materials. After solving the addition or subtraction problem, children can move their game piece forward the number of spaces determined by the sum or difference they compute.

Key Concepts

- Add numbers in different ways.
- Subtract numbers in different ways.

Materials and Setup

- Large sheets of paper (for example, 11×17) or copies of the “Let It Roll Gameboard” (included below)
- Two dice
- An “Operations Spinner” (included below)
- Two to four game pieces (for example, different colored erasers)
- “Strategy Cards” (optional; included below)
- Whiteboard (optional)
- Base ten blocks (optional)
- Counting chips or other manipulatives children might use to count (optional)



20 minutes



Small groups, pairs

Large indoor/outdoor space, on the floor, or small group table

Activity Instructions

Optional: Invite children to make their own gameboards and game pieces. You might provide children with the “Let It Roll Gameboard” that children can then customize. Consider using clay or play dough for children to make their game pieces. Encourage children to make their game pieces and gameboards meaningful to them. For example, children might create a gameboard or game pieces that reflect their interests, cultures, or lived experiences (for example, gameboards might be designed to represent a favorite sport or activity, a cultural celebration, or a recent experience such as a camping trip).

How to Play

1. After children have created their gameboards and game pieces, teach children how to play the game.
2. Children might play the game individually or in groups of two to four.
3. The object of the game is to move your piece from Start to Finish.
4. Provide concrete objects and writing materials for children to use to support their adding and subtracting (for example, whiteboard and markers, counting chips, base ten blocks, and ten frames).
5. Players will take turns.
6. The first player will roll both dice. They will get two numbers (for example, 2 and 4).
7. Next, the player will spin the “Operations Spinner” to determine which operation they will use with the numbers—addition or subtraction.
8. Then, the player will solve the problem using the strategy of their choice. For example, if I roll a 2 and a 4, and the spinner lands on “+,” I will add $2 + 4$. The answer is 6. I will move my game piece forward 6 spaces.

Variations in How to Play

- Focus on only one operation. You might consider removing the “Operations Spinner” from the game. Instead, you can encourage children to only add or only subtract.
- Use the “Strategy Cards” to encourage children to explore different strategies when solving addition and subtraction problems. After rolling the dice and spinning the spinner, the player will draw a strategy card from the stack and use the strategy described on the card to solve the problem. For example, if they draw the ten frame card, they will use ten frames to model the problem. The player then places the strategy card back in the stack.

- Create custom dice to encourage children to add and subtract with larger numbers. For example, create your own dice using cardstock. Or use large foam dice with pockets that allow you to change the numbers on the different faces.
- Encourage all players to solve the problem, regardless of whose turn it is. Players can then compare their answers and discuss the different strategies they used.
- If children work better in collaborative, as opposed to competitive, contexts, provide only one game piece. The objective of the collaborative game is to work together to move the game piece to the end of the board.

Below are some questions you might ask children as they participate in this game:

- How might we figure out the difference between/the sum of . . . ?
- Tell me more about the strategy you used.
- You moved _____ spaces. Can you explain why you moved _____ spaces?
- What is another way we might figure out . . . ?

Using M⁵ to Support Children to Add and Subtract

This section offers ways to use the M5 Early Math Approach to support children to add and subtract as they play.

Mutual Learning

- This experience is flexible and provides opportunities to integrate topics that are meaningful to children in your learning setting. Learn about children's interests, cultures, and lived experiences. You might encourage children to create story problems that are meaningful to them using the numbers from the dice. For example,
 - ◇ If children are interested in soccer, support them to make a story about scoring goals (such as, "I scored 3 goals on Friday and 2 goals on Saturday. How many goals did I score in all?")
- While children play the game, notice what strategies they use to add and subtract. Offer support that is specific to the strategy a child is using. For example,
 - ◇ If children are using base ten blocks, encourage children to decompose numbers into tens and ones.
- Notice the language children use while playing the game. Encourage multilingual learners to use their home language and/or English. Children may need different levels of support in each of their languages.

Meaningful Math Investigations

- Encourage children to add and subtract to solve problems. For example,
 - ◇ While children add or subtract, use open-ended questions to support children to problem-solve. For example, “How might you use the base ten blocks to decompose the numbers before adding them?” or “How might we use different materials to check our answers?”

Materials and Learning Environment

- Provide concrete objects and writing materials for children to use to support their adding and subtracting while playing the game (for example, whiteboard and markers, counting chips, base ten blocks, ten frames).

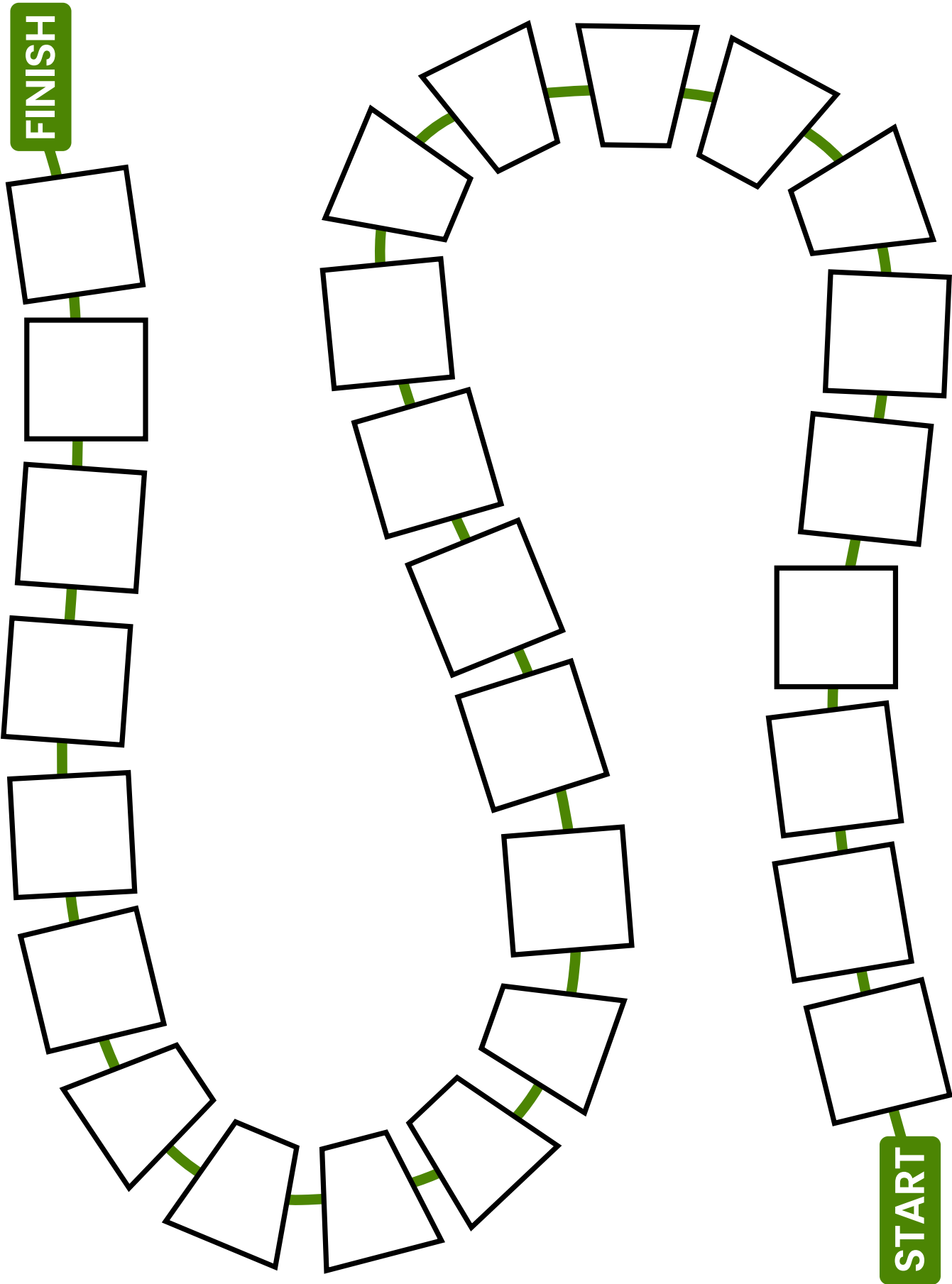
Math Vocabulary and Discourse

- Encourage children to use math vocabulary related to addition and subtraction during gameplay. For example,
 - ◇ sum, difference, add, subtract, take away, total
- Consider providing language frames, in a children’s language of choice, to help them describe their strategy for adding and subtracting using math vocabulary.
 - ◇ For example, “I subtracted _____ from _____. The difference was _____, so I moved _____ spaces.”
- Support children to engage in math discourse by explaining their approach to solving the addition or subtraction problem to a partner. For example,
 - ◇ “After you solve the problem, explain to your teammates how you arrived at your answer.”

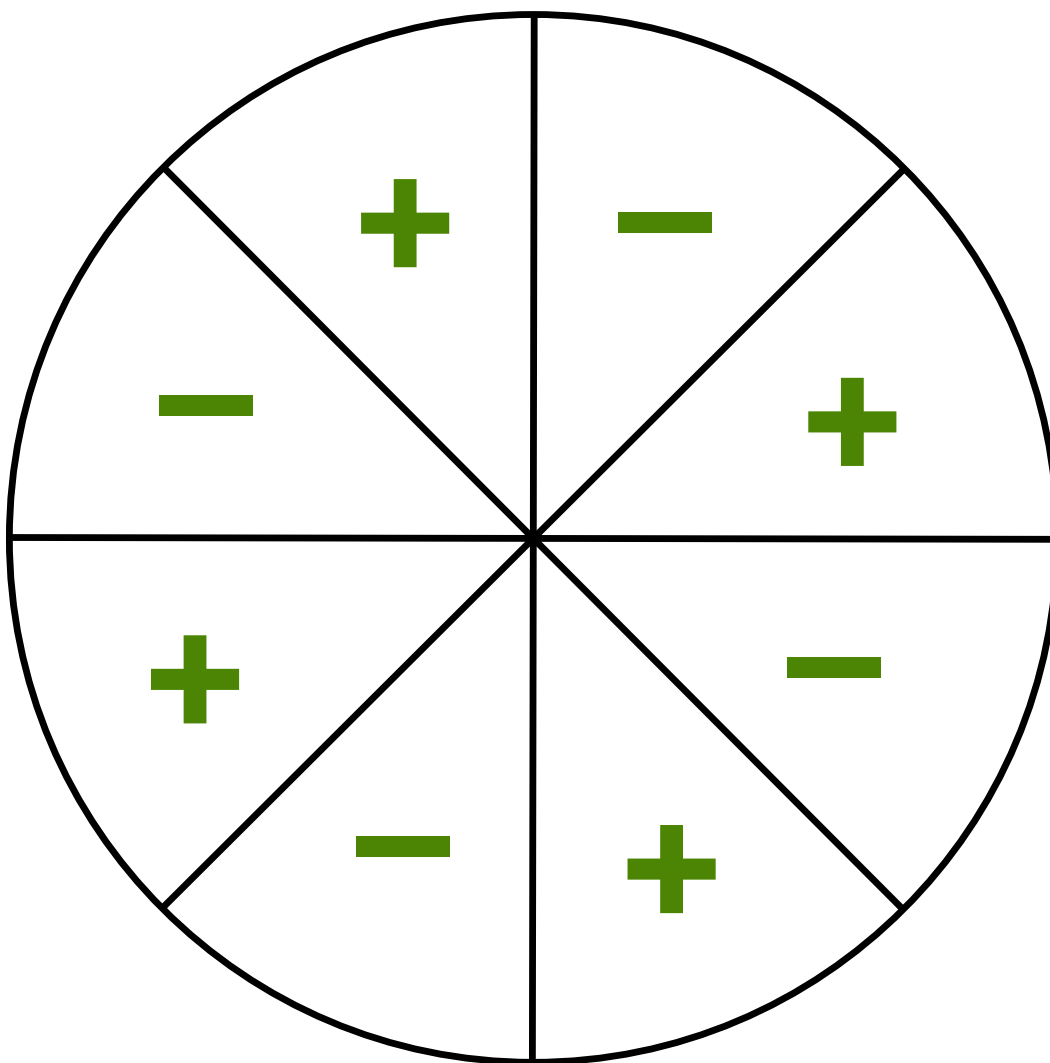
Multiple Representations

- Offer other activities where children can add and subtract in playful ways.
 - ◇ Create a life-sized gameboard in the classroom or outside space using sheets of construction paper or painter’s tape to create spaces on the gameboard. Children can use their bodies instead of game pieces to move forward on the gameboard.
 - ◇ Instead of using dice, you might use a beach ball with different numbers written on it. When children catch the ball, they add or subtract the numbers that their thumbs land on.
 - ◇ Use the “Strategy Cards” to encourage children to explore multiple ways to represent addition and subtraction problems.

Gameboard Template

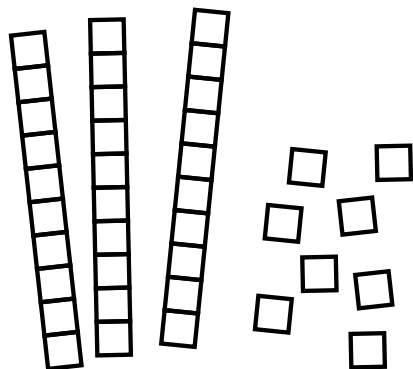


Operations Spinner

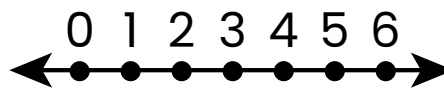


Print the spinner on card stock. Cut out the spinner. Use a brad and a paperclip to create the spinner. The brad will go into the center and the paper clip will spin around the brad.

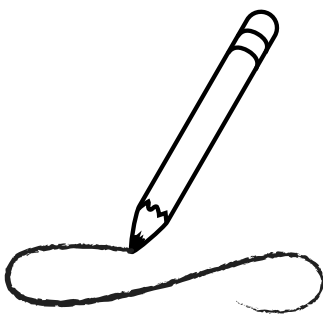
Strategy Cards



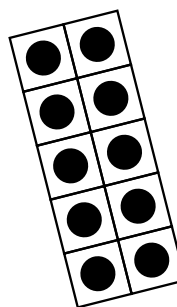
Base Ten Blocks



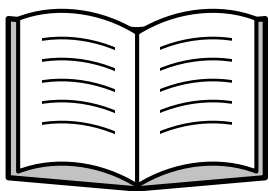
Number Line



Draw a Picture



Ten Frames



**Make a
Story Problem**



Your Choice

Print and cut out the "Strategy Cards."