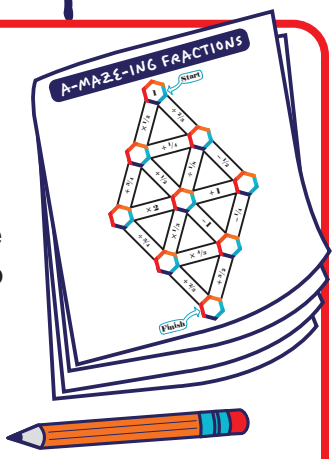
# A-MAZE-ING FRACTIONS

## Everything You Need to Play

### Materials




**Maze Board**

- 1 maze board per student(s)—students can work on the maze individually, with a partner or in a small group.
- Using a paper copy of the board is fine, but you may also want to make a laminated copy for multiple uses—a sheet protector is an easy way to accomplish this!

**Writing Utensils**

- 1 per student(s)—regular pencils or dry erase markers if using laminated boards.

**Scratch Paper**

- Depending on students' ability, scratch paper might be handy for perfoming the calculations along the way.

### Rules

This activity allows students to explore what happens when you add, subtract, multiply or divide fractions greater than and less than 1. Does the value increase or decrease? Operations with fractions are often hard for students to conceptualize. Using this maze board and the four basic arithmetic operations, students can begin to uncover that secrets of fractions by finding a path that results in the least value or the greatest value. They can try alternative operations, numbers and paths. They will see what makes the value grow and what makes it shrink.

- Distribute a copy of a maze board to each student (pair or group). There are three different maze board options included with this activity as well as a blank board if you would like to create your own.
- To start, begin at the value in the top most hexagon on the board. This hexagon is labeled "start" and for mazes #1, #2 and #3 will be a value of 1. Give students a goal of either reaching the largest possible value by the end of the maze or the smallest possible value.
- To navigate the maze, students move downward along the diagonal paths and left-to-right or right-to-left along the horizontal paths. Students cannot retrace any paths they have already used and cannot move upward along the diagonals.
- Using a pencil (or dry erase marker if using a laminated handout), students should trace their path through the maze. In each hexagon they reach, they should write the resulting value after performing the operation on the path they just traced.
- Have students write the values as common fractions and/or mixed numbers and encourage them to perform their operations without the aid of a calculator—although this decision is up to the club leader.
- Check the students' final answers to the maze to see if they found the largest or smallest possible solution. Have them try again if they didn't get it the first time or have them solve another maze! Solutions are shown on the next page of instructions. (Figures 1–6)

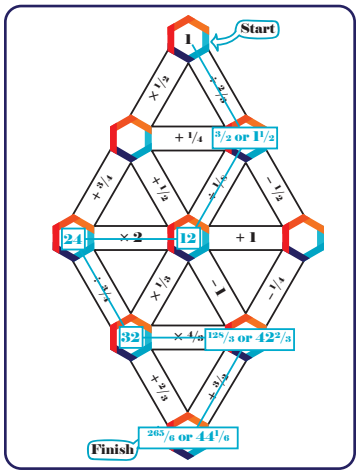



Figure 1: Maze #1 Largest Value Solution

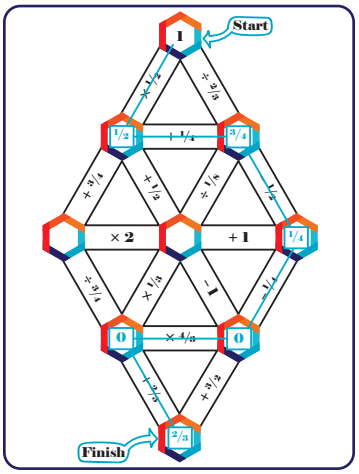



Figure 2: Maze #1 Smallest Value Solution

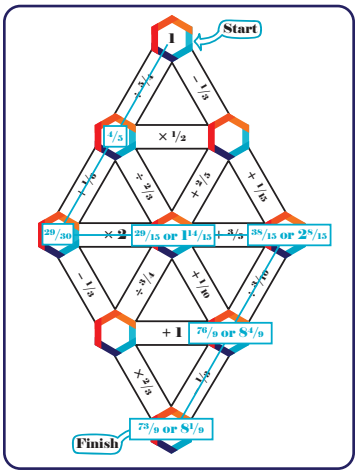



Figure 3: Maze #2 Largest Value Solution

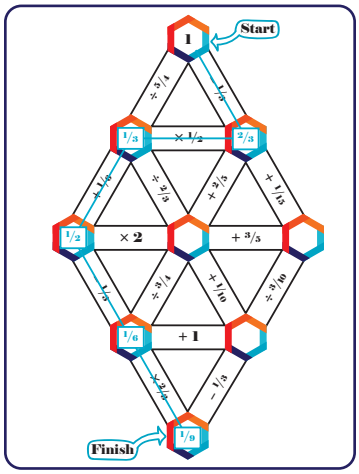



Figure 4: Maze #2 Smallest Value Solution

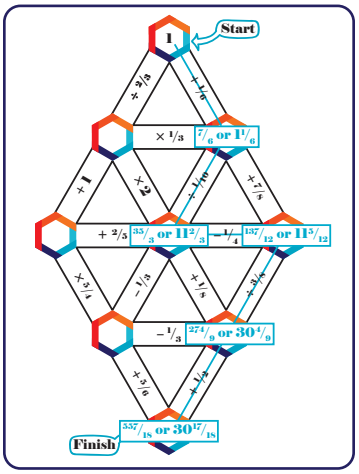



Figure 5: Maze #3 Largest Value Solution

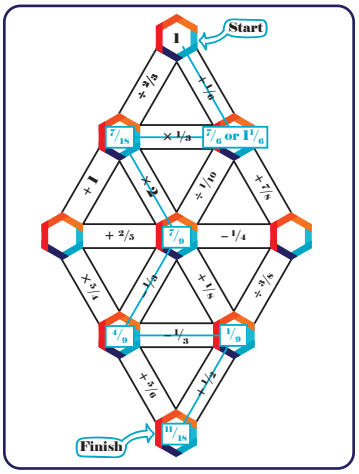



Figure 6: Maze #3 Smallest Value Solution

## Differentiation, Scaling & Extensions

### Change the Difficulty Level

Depending on the skill level of your club, these mazes might need adjustment to be more or less challenging. This is why we included a template maze. Create your own to differentiate for your students' needs. Here are a few ideas for how to accomplish this:

- To make it easier, create new mazes with only one arithmetic operation or with whole numbers. Focus in on a more specific area students need to practice.
- To make it harder, create a maze that mixes decimals and fractions, add in negative numbers, incorporate operations with exponents, etc.

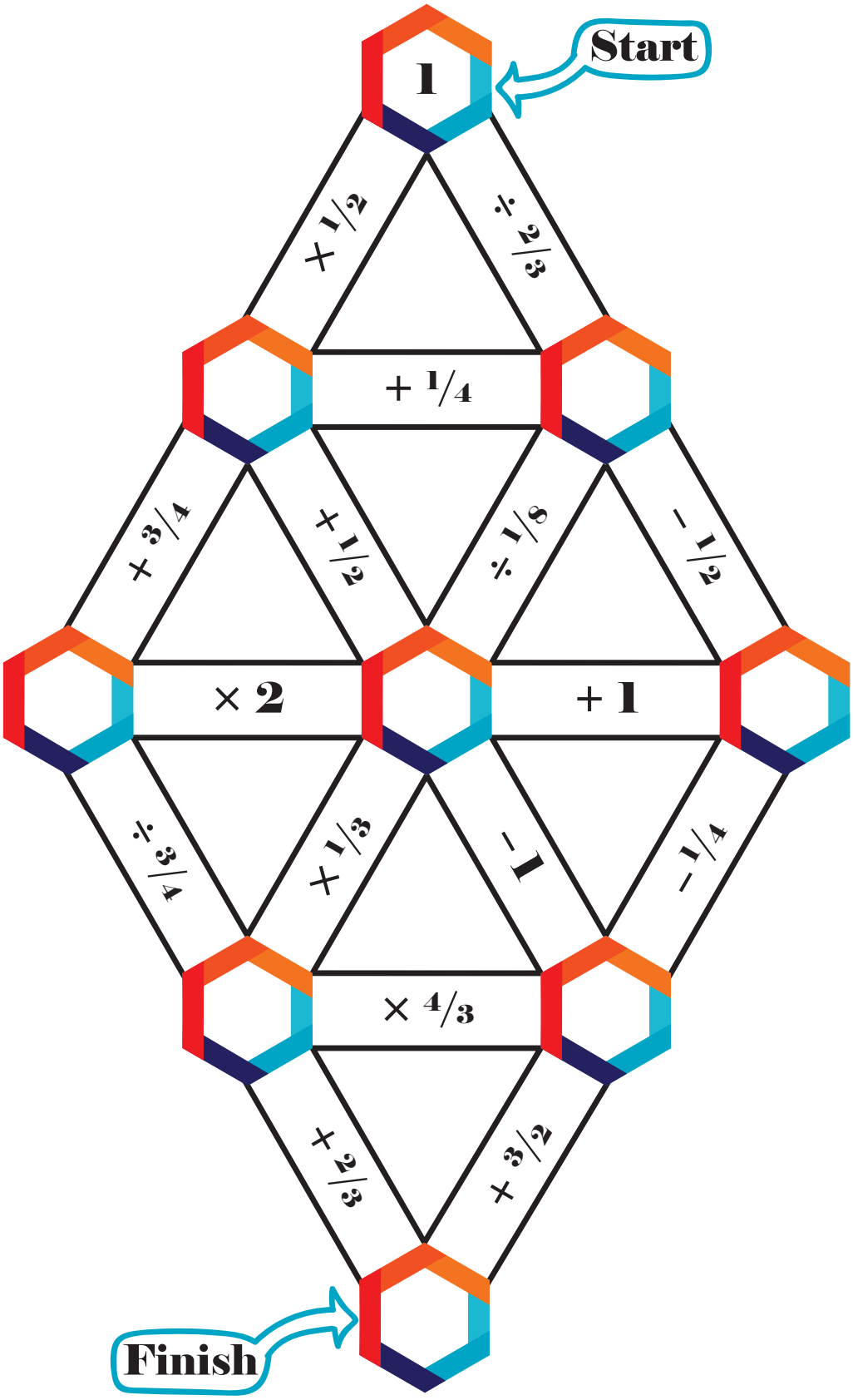
### Extension Ideas

Once you have gone through the mazes, there are some easy ways to change things up and extend this activity's use! Here are a few ideas to keep it interesting with your club:

- Play to obtain different values—such as closest to 1 or closest to 2. That way, the same maze board can be used over and over again!
- Change the rules—for example, by allowing path moves to go up!
- Make this an outside activity! Draw a large maze with sidewalk chalk outside on the blacktop. Students can solve the maze there and write out their work in chalk!

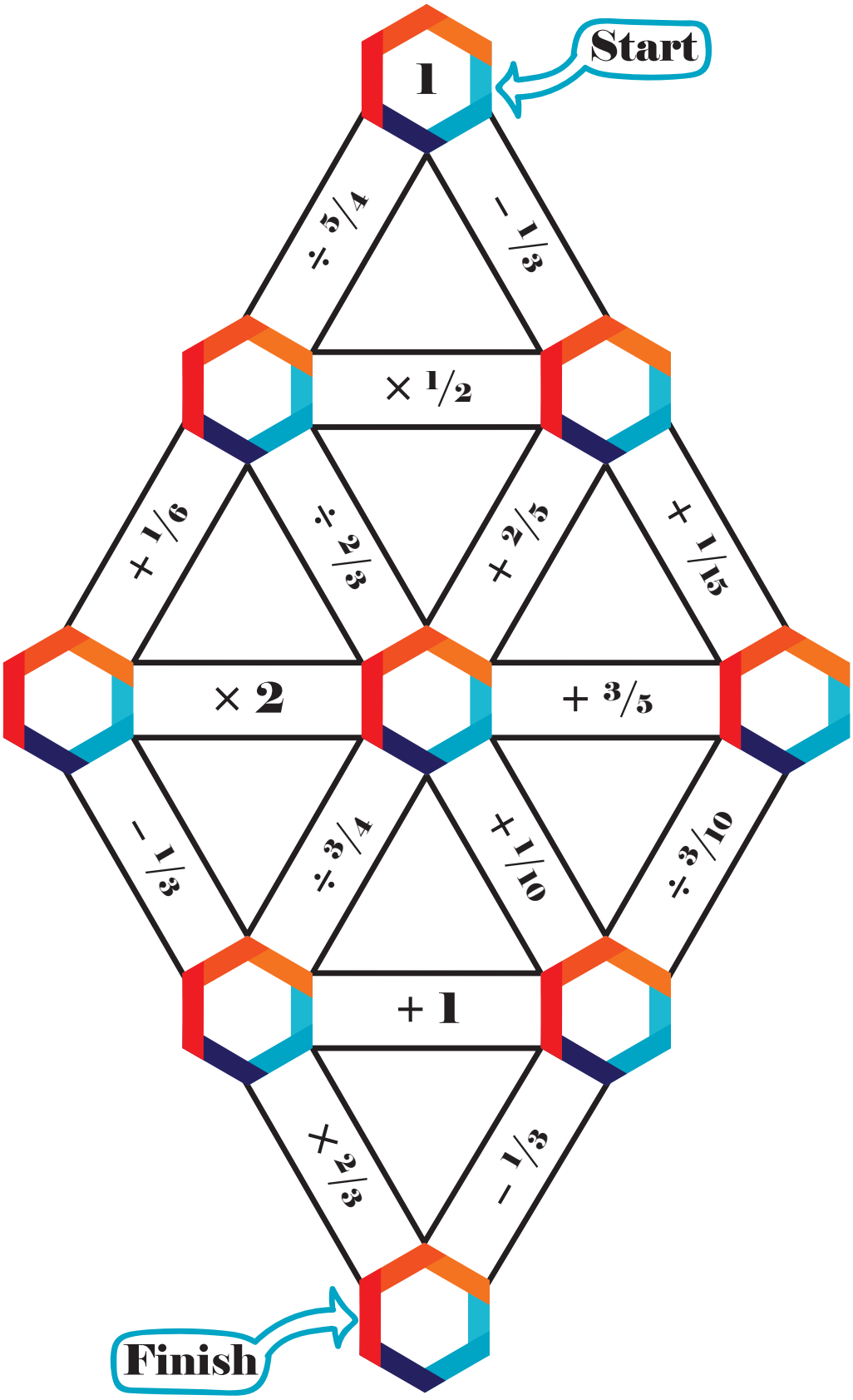
# A-MAZE-ING FRACTIONS

#1



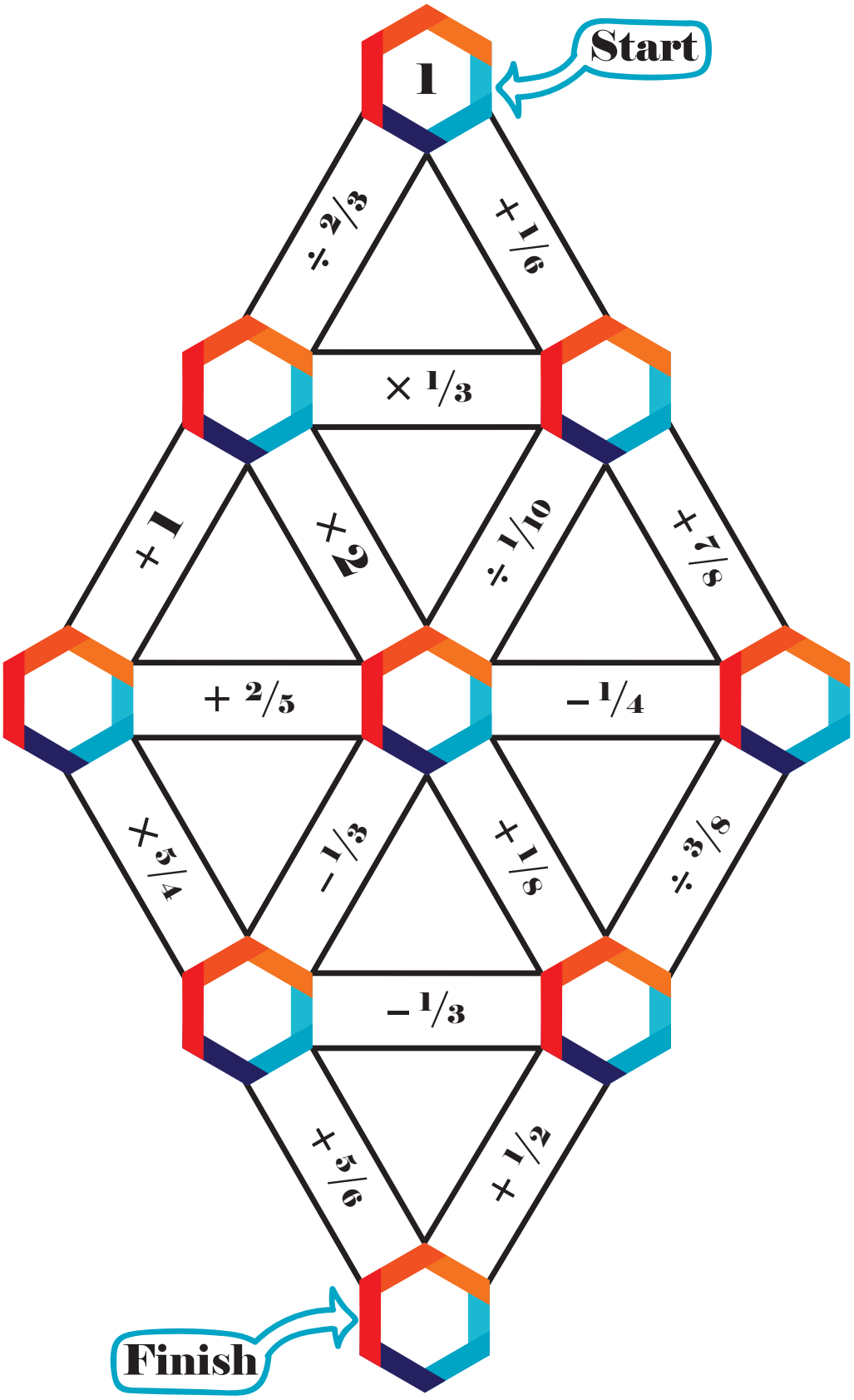
# A-MAZE-ING FRACTIONS

#2



# A-MAZE-ING FRACTIONS

#3



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