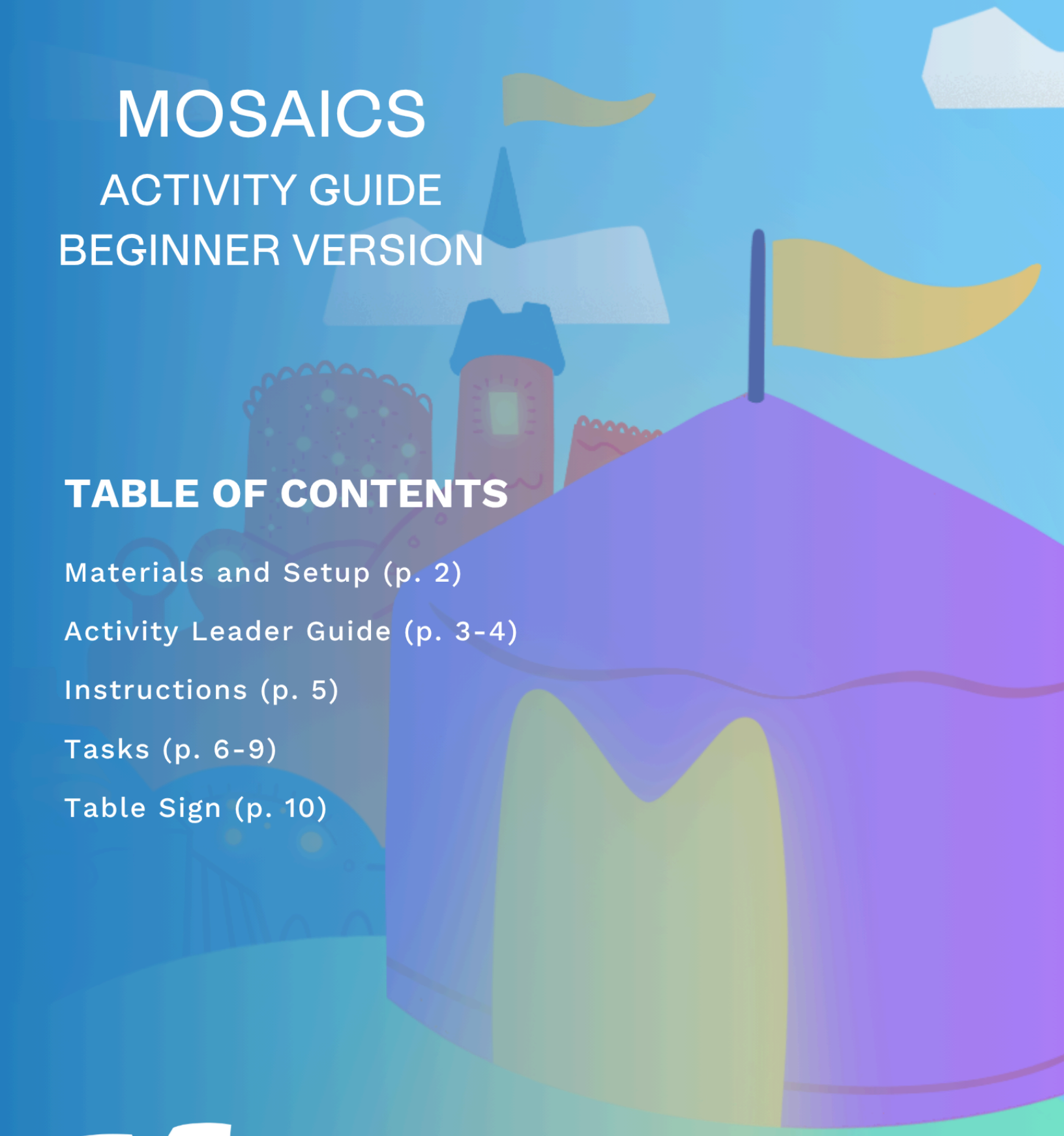
MOSAICS

ACTIVITY GUIDE
BEGINNER VERSION



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Materials and Setup

Per table (assuming 5 students per table), you will need:

Per Table	Material Preparation	
5 sets of 18 colored square tiles	In each set, you will need about 6 each of blue, green, and yellow.	
3 copies of Instructions	1 page each	p. 5
5 copies of Tasks	4 pages each *can be printed double-sided*	p. 6-9
1 copy of Table Sign	1 page *print on cardstock for sturdiness*	p. 10

Per Table	Purchasing Materials		
5 sets of tiles (each set has 6 of each color)	pack of 400 for $24.45		
13 plastic sheet protectors	pack of 100 for $7.67	pack of 500 for $26.99	These are recommended in order to protect the documents that students will be handling.

What does “beginner version” mean?

This version of Mosaics was created with PreK - 2nd grade students in mind.
However, “beginner” does not mean “easy,” and this version of Mosaics can be an effective way to engage students of any age who:

- Have strong math anxieties
- Don’t feel confident with math or math puzzles
- Have learning differences
- Want a gentler start to the activity

Older students and parents at our events often engage with this beginner version and move on to the regular version when they feel ready.

Objective

Create a mosaic for each puzzle using blue, green, and yellow squares.

Rule:
1. The top of each puzzle page tells you how many of each color to use.
2. Above each puzzle, there are one or two extra rules.

Materials

Each Mosaics table should be prepped for 5 stations.
Each station needs:
1. About 6 each of blue, green, and yellow square tiles.
2. Mosaics instructions.
3. Mosaics tasks.

How to Play

Introduce the activity without overexplaining it and without telling what strategies students might want to use. As much as possible, avoid giving away answers. Students should be encouraged to explore, experiment, and learn from their mistakes.

1. Model the first puzzle using the tiles to explain.
2. Ask the student to solve the first puzzle with you.
3. Have the student explore the next puzzles, using the tiles to solve.
4. Make clear that the second page of puzzles uses new rules.

Standards

1. Make sense of problems and persevere in solving them. CCSS.MP1
2. Construct viable arguments and critique the reasoning of others. CCSS.MP3
3. Model with mathematics. CCSS.MP4
4. Attend to precision. CCSS.MP6

Asking Good Questions

1. Ask questions about confidence.
    a. When a student asks you “Is this right?”, instead of saying “yes” or “no” right away, ask them how confident they are in their answer. Here are some examples:
        i. “Maybe. What do you think? How confident are you?”
        ii. “On a scale of 1-5, how confident are you in your answer?”
    b. If a student is not confident in their answer, follow up by asking “What would help you feel more confident in your answer?” or “Why do you not feel confident?” This helps you determine how best to help the student through their explorations.

2. Ask students about choices.
    a. When a student is stuck or shows you a wrong answer, instead of jumping in and showing the student the correct answer, start by asking about the choices that the student made along the way. Here are some suggested steps to follow:
        i. Start from the beginning.
        ii. Ask students to show you what they’ve tried so far.
        iii. When the student gets to a point where they have different choices, ask the student “What other choices can you make here?”
        iv. Have the student make a different choice and try to solve the puzzle. This helps the student see that they have the power to make different choices during an activity, and they’ll start to do this on their own in the future.
        v. If you’re familiar with the puzzle or a particular solution, stop the student only when a different choice will help them get to the solution. This will help them feel successful faster without you giving away too much of the answer.

3. Ask students about strategies.
    a. If a student is getting into the activity and has been doing it for a while, ask the student if there are any strategies they’ve come up with to help them solve the puzzle or win the game.
    b. Follow up by asking if they think their strategies will work for all puzzles and/or larger puzzles, more complex puzzles, etc. Have the student explore more complex puzzles to test out their strategies.
    c. This is a great way to encourage a student to dive deeper into an activity and to start looking for patterns, structure, and proofs.

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BEGINNER

Mosaics Instructions (Beginner Version)

Rules:

1. Cover each square with a colored tile.
2. The top of each page tells you how many of each color to use.
3. Above each puzzle, there are one or two extra rules. Here are some examples:

Example 1

Every yellow needs to touch a yellow.

Example 2

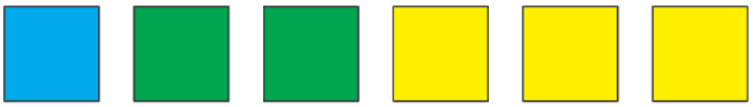
Yellows cannot touch.

Example 3

Every green needs to touch a blue, and every blue needs to touch a green.

Mosaics

Use **1 blue**, **2 greens**, and **3 yellows**.



BEGINNER

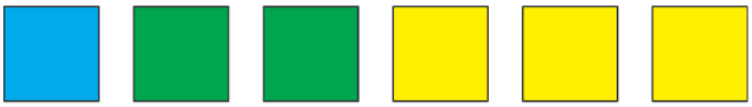
Puzzle 1

Puzzle 2

Puzzle 3

Mosaics

Use **1 blue**, **2 greens**, and **3 yellows**.



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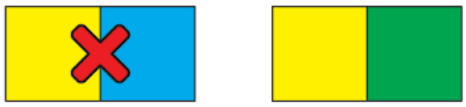
Puzzle 4

Puzzle 5



Puzzle 6

Mosaics

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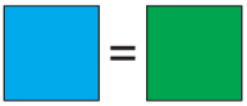
Use **the same number** of blues and greens.



You can use as many yellows as you want.

Puzzle 7

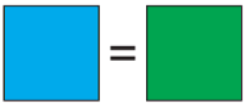
Puzzle 8

Puzzle 9

Mosaics

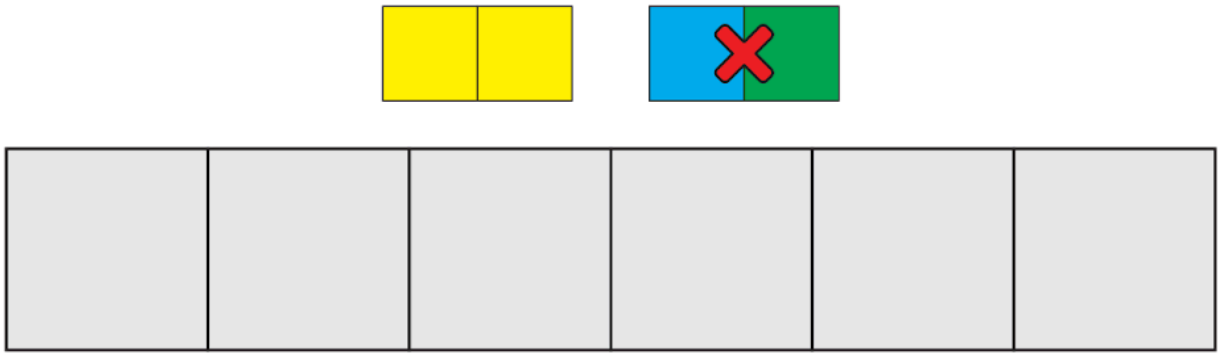
BEGINNER

Use **the same number** of blues and greens.

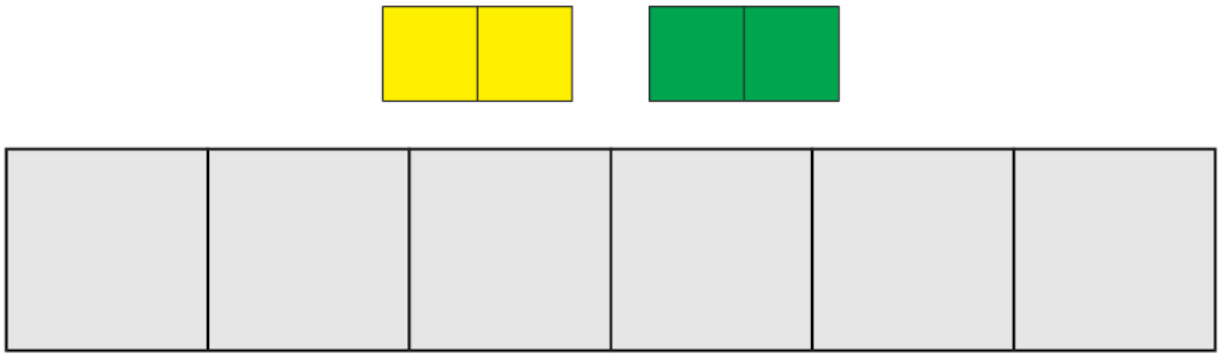


You can use as many yellows as you want.

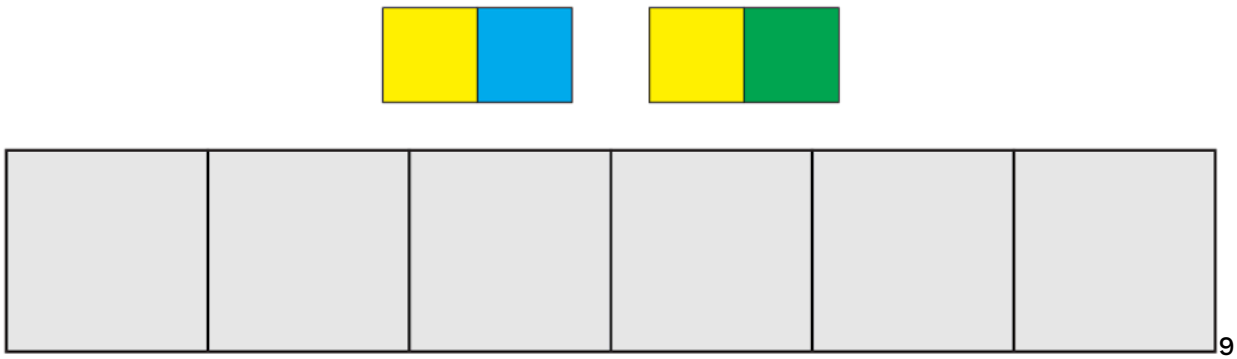
Puzzle 10



Puzzle 11



Puzzle 12



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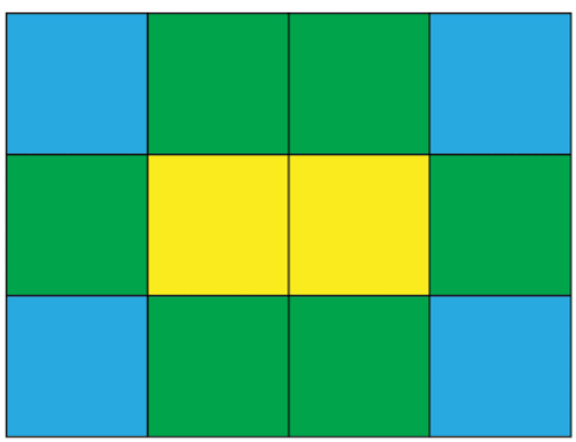

Play for free at jrmf.org/puzzle/mosaics

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