

# DOMINO DISSECTION FESTIVAL GUIDE

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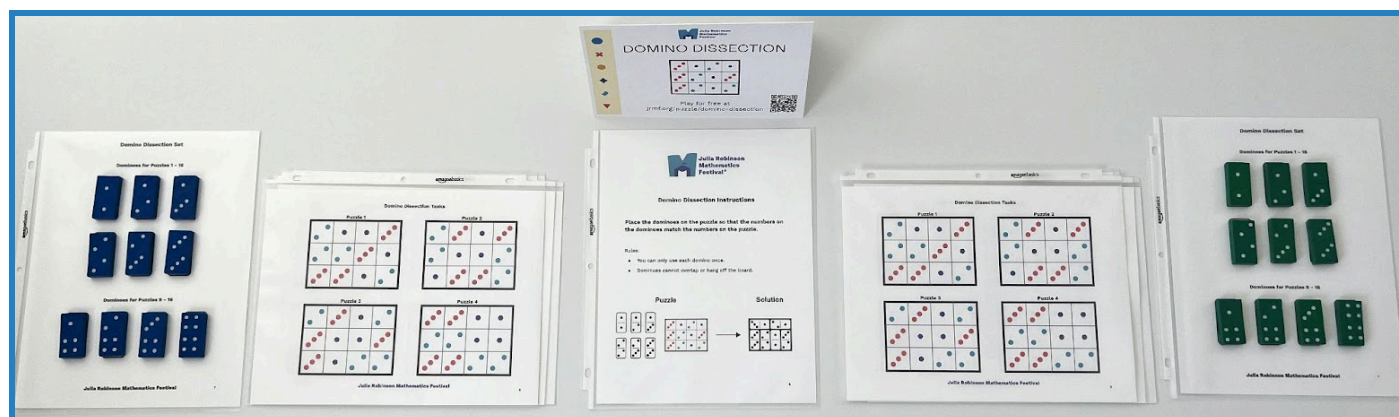
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Mathematics  
Festival**

## Materials and Setup

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

Per Table	Material Preparation	
5 sets of Dominoes	Standard 28 tile set with tiles from 0 to 4.	
3 copies of Instructions	1-page sheet	p. 6
5 copies of Domino Set Sheet	1-page sheet	p. 7
5 copies of Tasks	2-page sheet <i>can be printed double-sided</i>	p. 8-13
1 copy of Table Sign	1-page sheet <i>print on cardstock for sturdiness</i>	p. 14

Per Table	Purchasing Materials		
5 standard domino sets	<a href="#">6 domino sets</a> for \$29.99		
13 plastic sheet protectors	<a href="#">pack of 100</a> for \$7.67	<a href="#">pack of 500</a> for \$26.99	These are recommended in order to protect the documents that students will be handling.





## Objective

Place the dominoes on the puzzle so that the numbers on the dominoes match the numbers on the puzzle.

Rules:

1. You may only use each domino once.
2. Dominoes may not overlap or hang off the board.

## Materials

Each Domino Dissection table should be prepped for 5 stations.

Each station needs:

1. Standard domino set.
2. Domino Dissection instructions.
3. Domino Dissection set sheet
4. Domino Dissection tasks.

## How to Play

**We strongly encourage you to explore the activity yourself ahead of time.**

You can try our digital version here: [jrmf.org/puzzle/domino-dissection](http://jrmf.org/puzzle/domino-dissection)

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. Ask the student to place all ten dominoes on the first sheet (Domino Set Sheet).
2. Then use the first puzzle to demonstrate the rules by placing some of the dominoes on the puzzle.
3. Ask the student to try finishing placing the rest of the dominoes on the puzzle.
4. Have the student explore the next puzzles, using the dominoes to solve. Point out that for the second page of puzzles, they'll need dominoes with four pips too.

## 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.
4. Activity specific questions.
  - a. What’s a good first domino to place? Which of these puzzles have no easy first domino to place and how can you get started on those puzzles?
  - b. The spots where a domino shouldn’t be placed can be just as important as the spots where you know one must be placed! How can you keep track of these bad spots when you find them?

## Answers

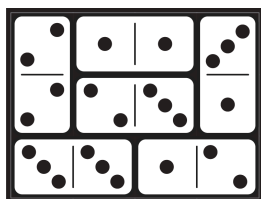
### General Answers:

There are several useful strategies that you might notice and/or encourage. In general, with logic puzzles like this, the goal should be to never make a guess; every move should have a good explanation.

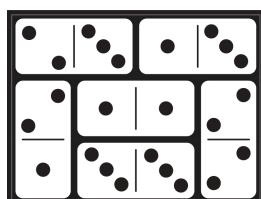
1. Since every domino has to be used exactly once, first look for spots where some dominoes *have* to go.
  - For example, in the demo puzzle on the instruction page, there is only one place the double 1 (or double 2) can go, but there are two places the double 3 could go. Start by placing the double 1 and double 2.
2. If placing a domino results in a single, isolated square, you'll know that domino can't be placed there.
  - For example, in the demo puzzle, after placing the double 1 vertically in the second column, you can't place the 1-3 vertically in the first column. Otherwise, you would have one isolated square in the bottom left-hand corner.

### Puzzle Solutions:

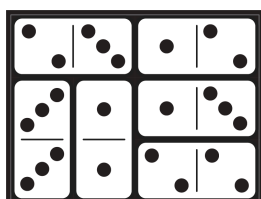
Puzzle 1



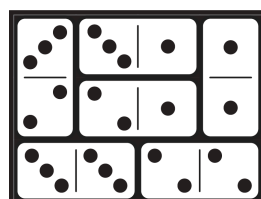
Puzzle 2



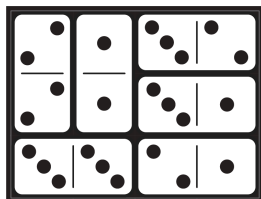
Puzzle 3



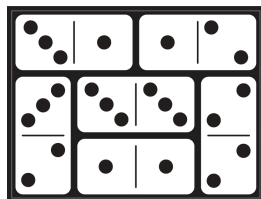
Puzzle 4



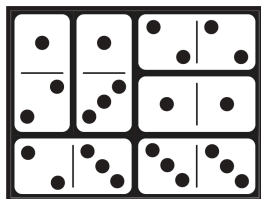
Puzzle 5



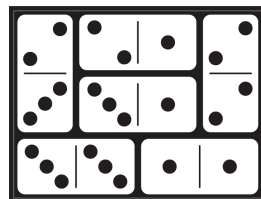
Puzzle 6



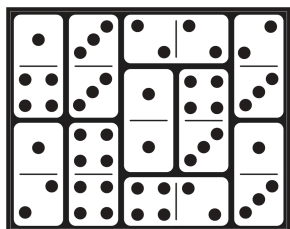
Puzzle 7



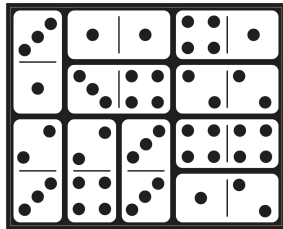
Puzzle 8



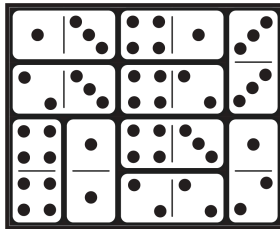
Puzzle 9



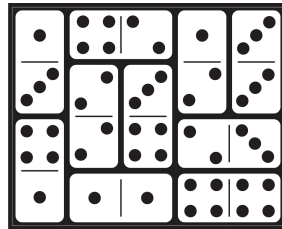
Puzzle 10



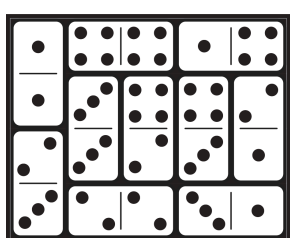
Puzzle 11



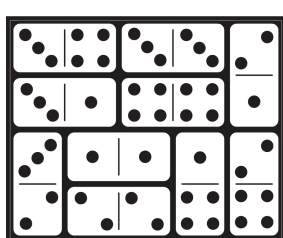
Puzzle 12



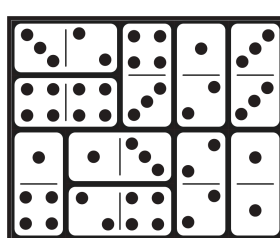
Puzzle 13



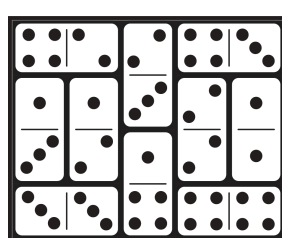
Puzzle 14



Puzzle 15



Puzzle 16



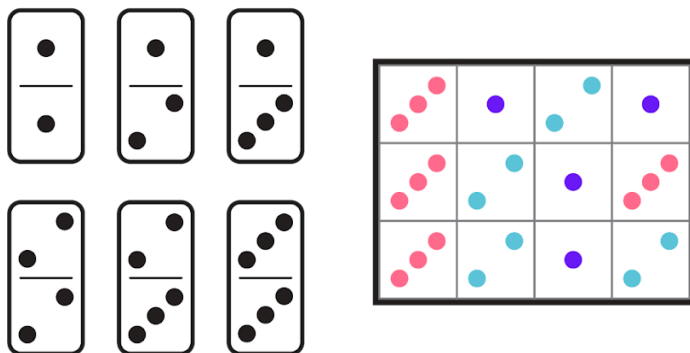
## Domino Dissection Instructions

**Place the dominoes on the puzzle so that the numbers on the dominoes match the numbers on the puzzle.**

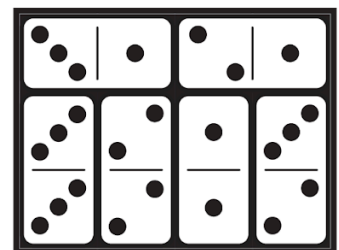
Rules:

- You can only use each domino once.
- Dominoes cannot overlap or hang off the board.

**Puzzle**

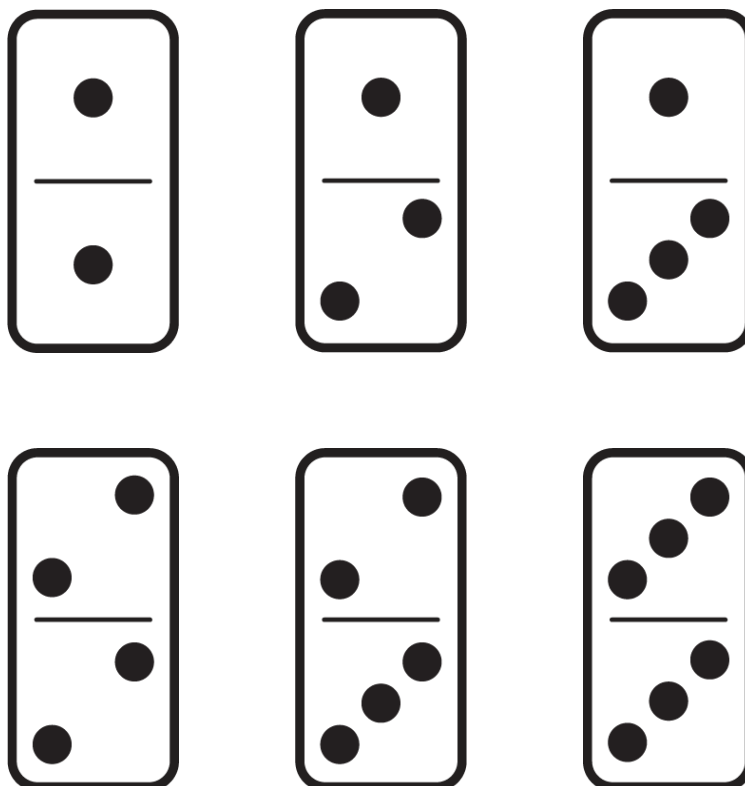


**Solution**

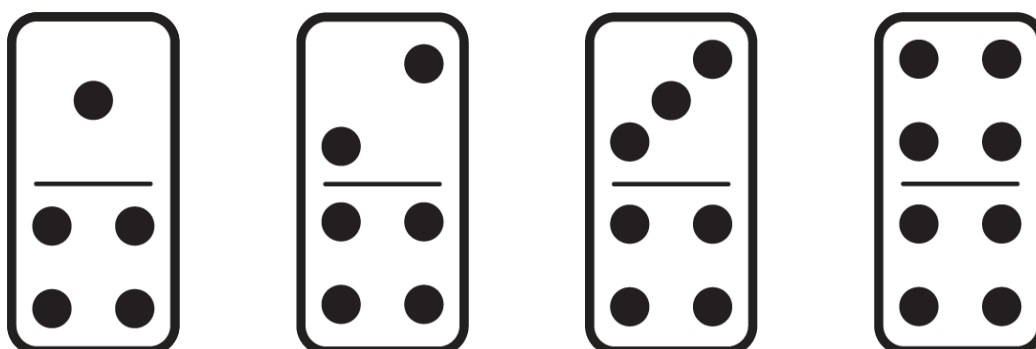


# Domino Dissection Set

## Dominoes for Puzzles 1 - 16

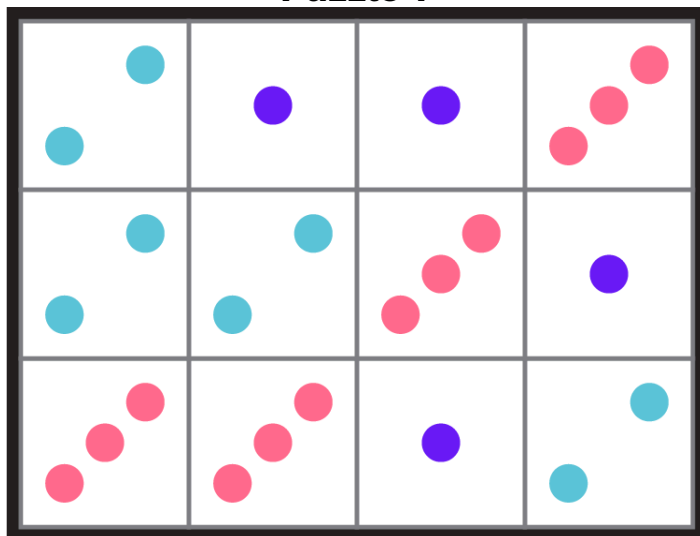


## Dominoes for Puzzles 9 - 16

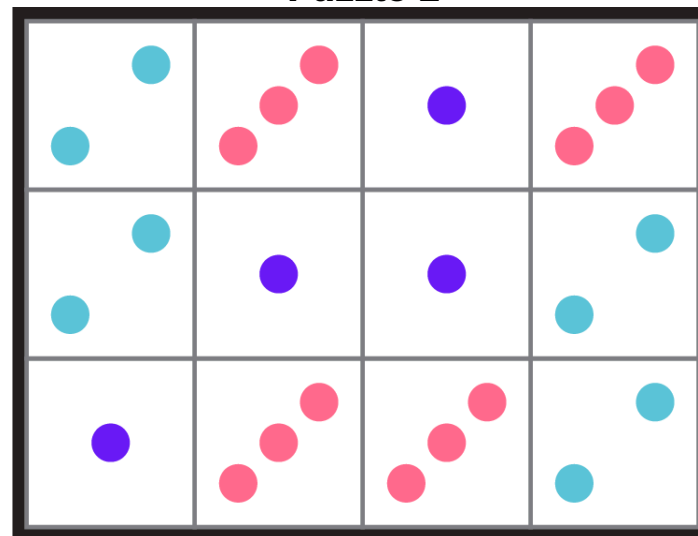


## Domino Dissection Tasks

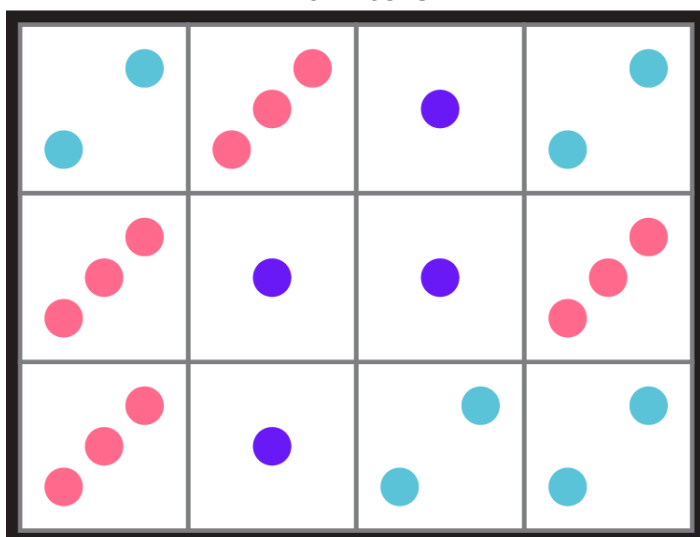
**Puzzle 1**



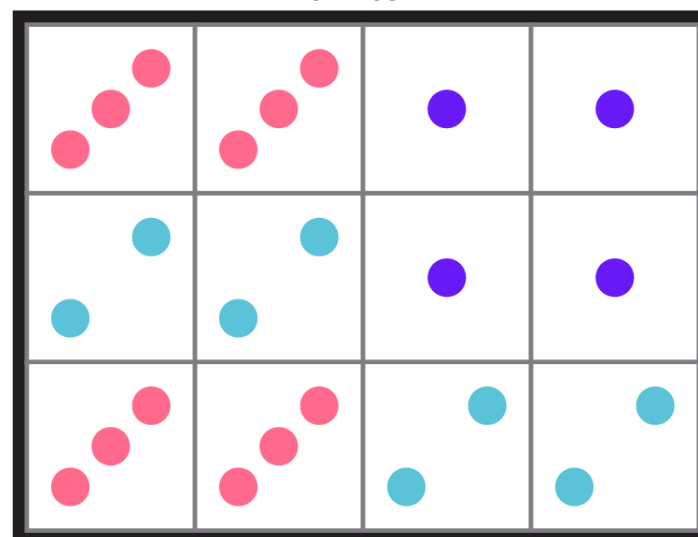
**Puzzle 2**



**Puzzle 3**



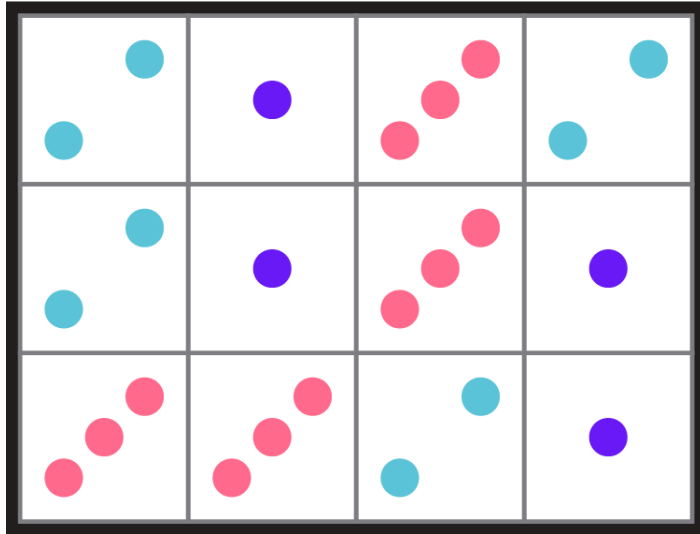
**Puzzle 4**



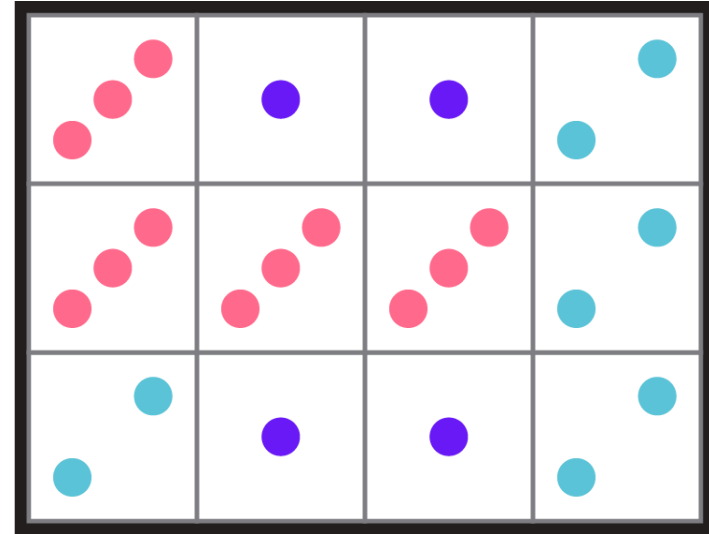


## Domino Dissection Tasks

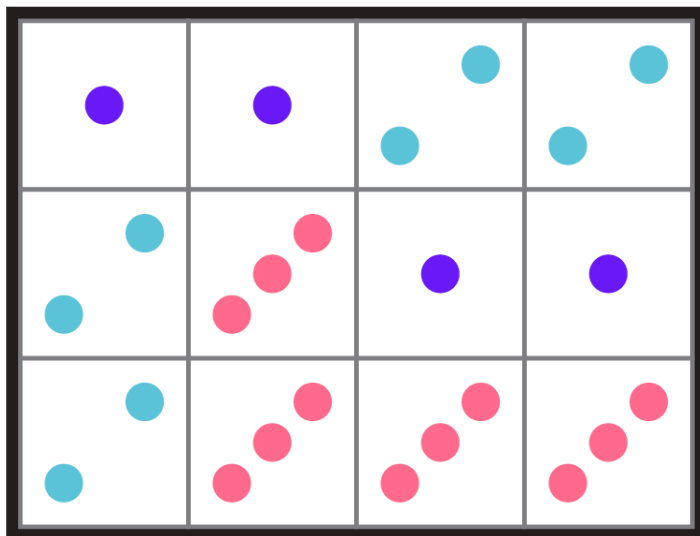
**Puzzle 5**



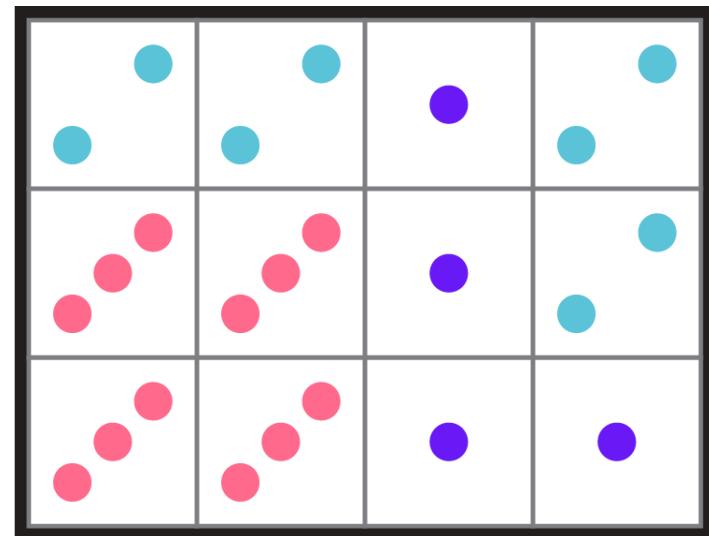
**Puzzle 6**



**Puzzle 7**

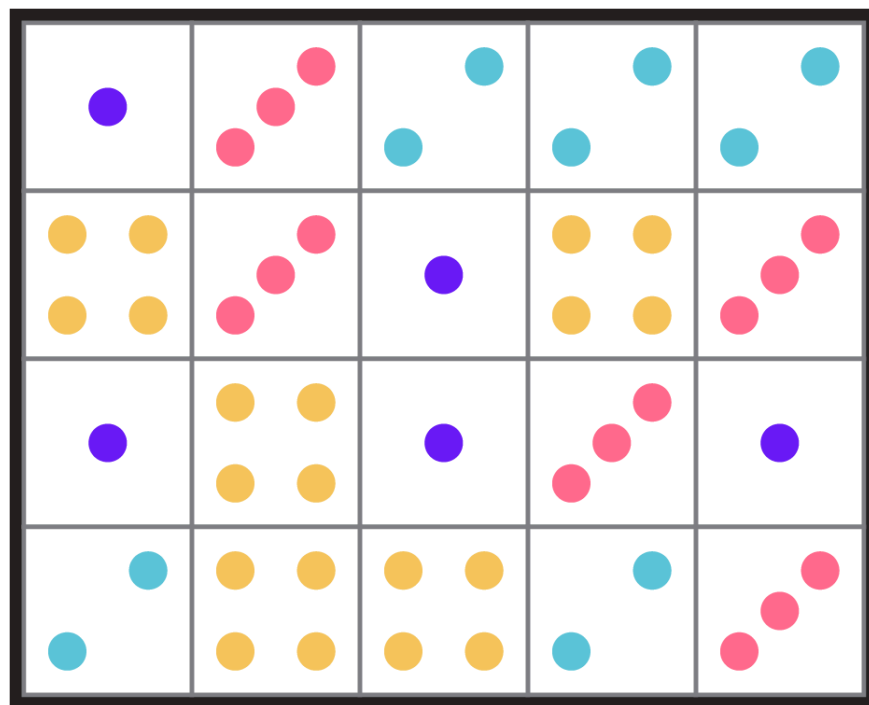


**Puzzle 8**

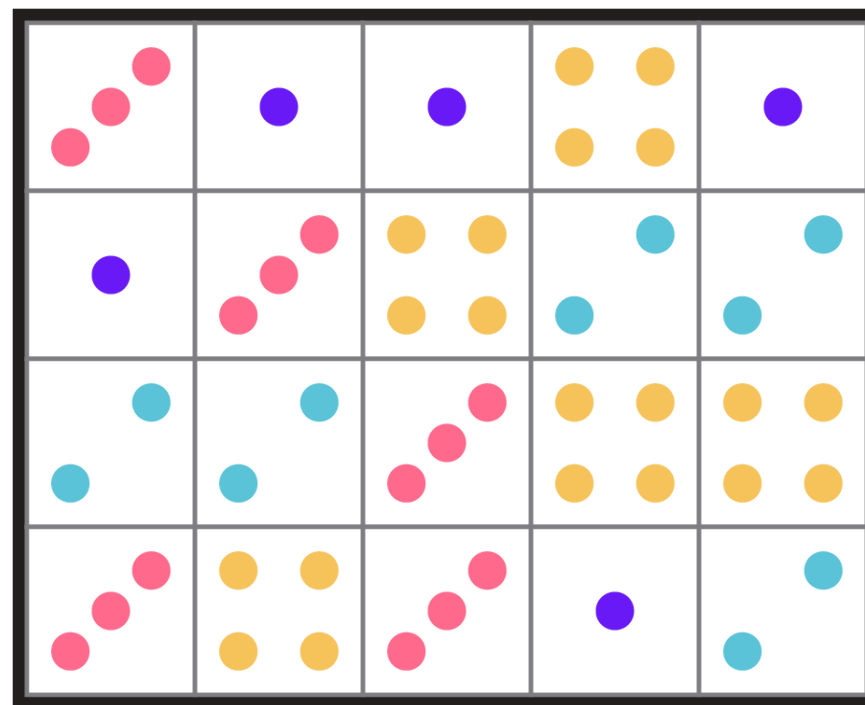


## Domino Dissection Tasks

**Puzzle 9**

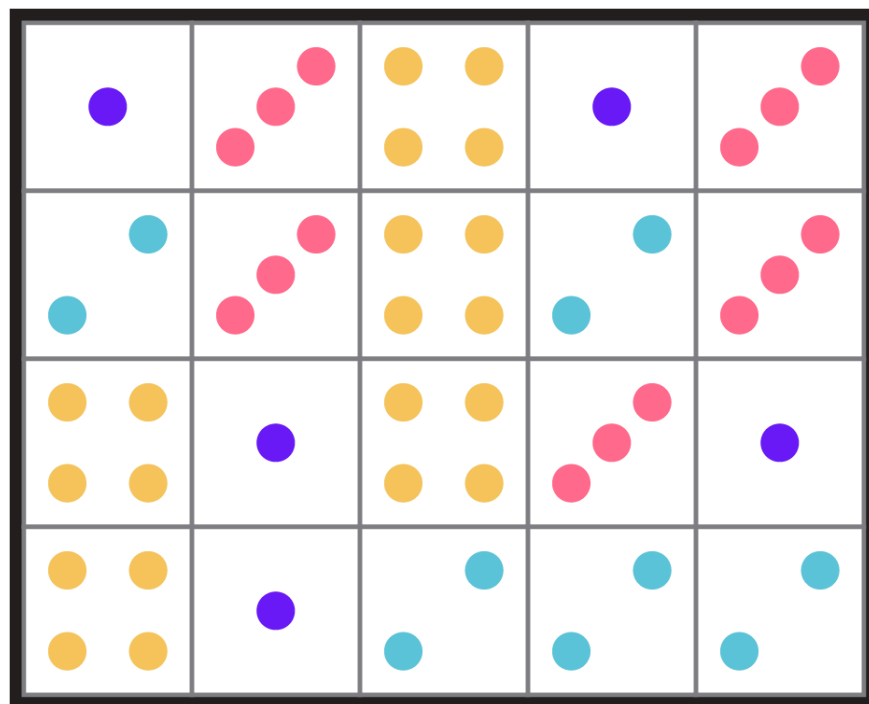


**Puzzle 10**

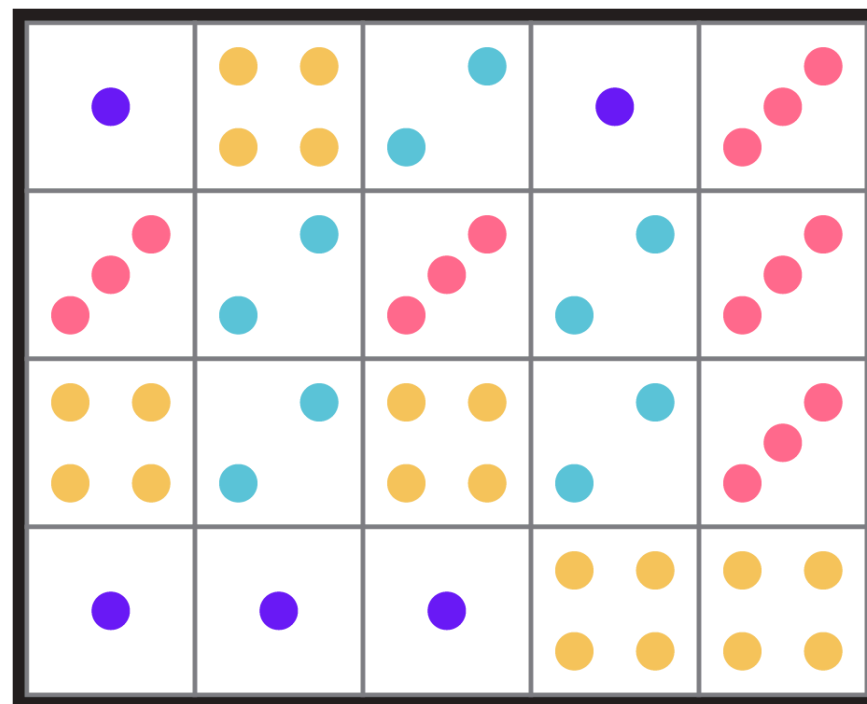


## Domino Dissection Tasks

**Puzzle 11**

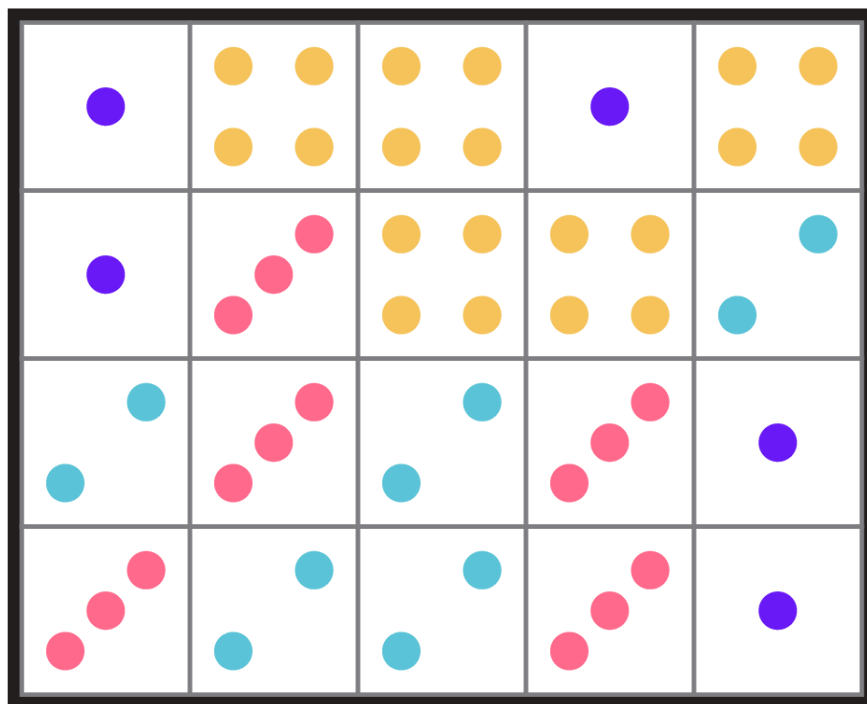


**Puzzle 12**

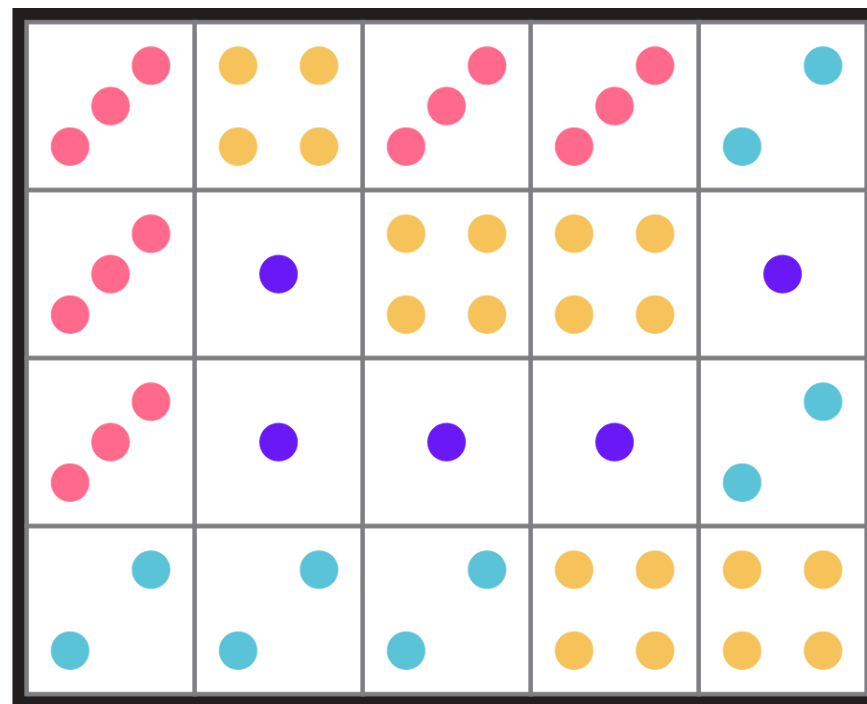


## Domino Dissection Tasks

**Puzzle 13**

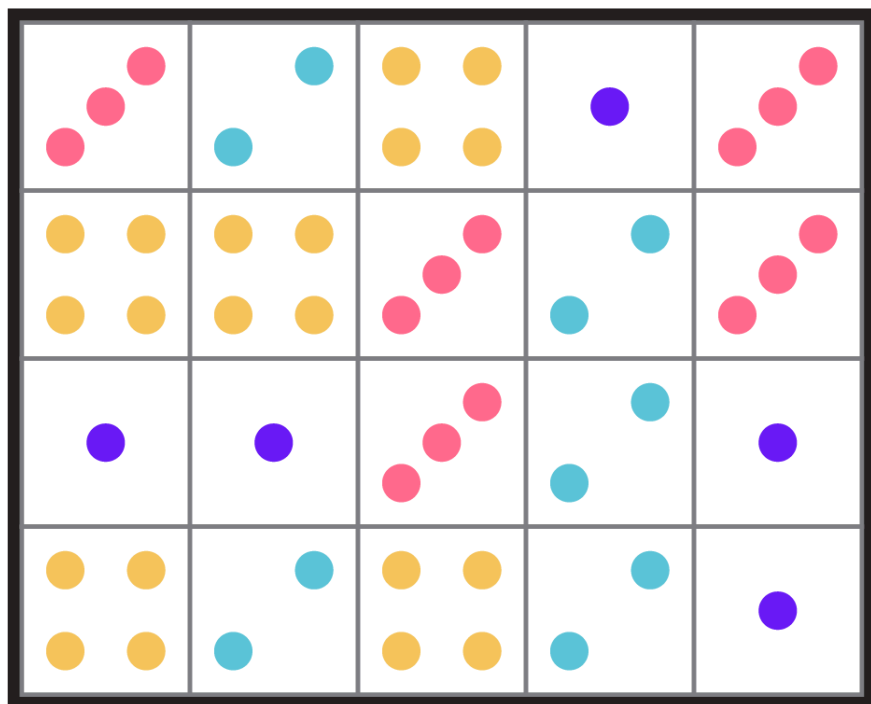


**Puzzle 14**

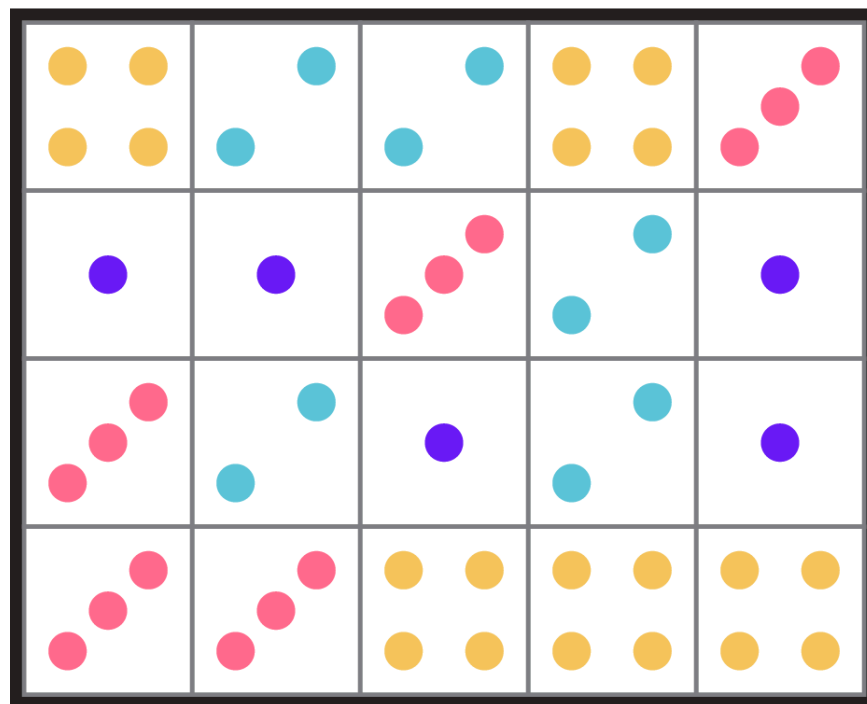


## Domino Dissection Tasks

**Puzzle 15**

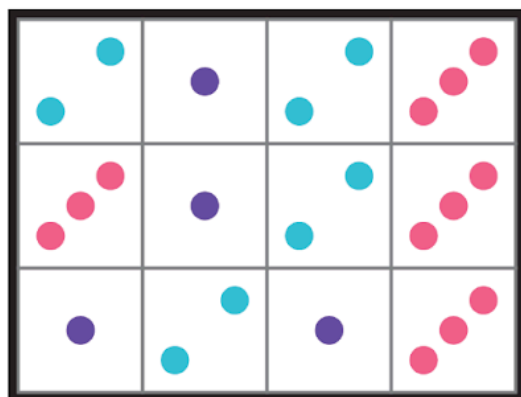


**Puzzle 16**





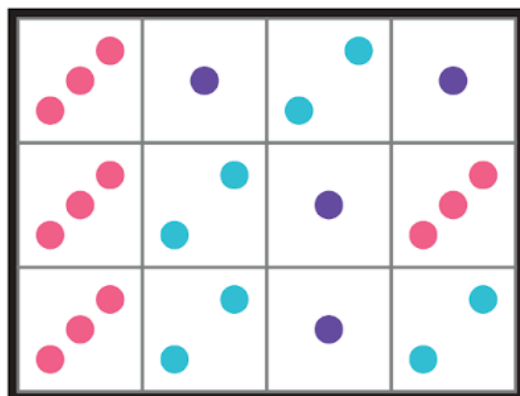
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# DOMINO DISSECTION



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