

CONNECT THE DOTS

FESTIVAL GUIDE

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Mathematics
Festival**

Materials and Setup

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

Per Table	Material Preparation	
3 copies of Instructions	1-page sheet	p. 6
5 copies of Tasks	6-page sheet in dry erase sleeves <i>can be printed double-sided</i>	p. 7-12
1 copy of Table Sign	1-page sheet <i>print on cardstock for sturdiness</i>	p. 13
15 dry erase plastic sleeves		
5 dry erase markers		
5 dry erase marker erasers		

Per Table	Purchasing Materials		
dry erase combo	30 piece set for \$22.53		Set comes with 30 plastic sleeves, 30 markers, and 4 erasers.
dry erase markers	pack of 72 for 9.99		If you need just the markers.
3 plastic sheet protectors	pack of 100 for \$7.67	pack of 500 for \$26.99	These are recommended in order to protect the instructions.



Objective

Start on the star, and draw a path that connects all of the dots.

Rules:

1. You can only go along the dashed lines, but you don't need to go over every dashed line.
2. You cannot go through a dot more than once.
3. You cannot lift your marker.

Materials

Each Connect the Dots table should be prepped for 5 stations.

Each station needs:

1. Connect the Dots instructions.
2. Connect the Dots tasks in dry erase sleeves.
3. 1 dry erase marker and eraser.

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. Demonstrate the rules by tracing the first image with them.
2. Ask the student to try tracing the second image. Encourage them to explain their thinking out loud as they trace.
3. Give the student a copy of the tasks to explore.

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. Look for and make use of structure. CCSS.MP7

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. Which puzzles were impossible? What do you think made them impossible?
 - b. Can you predict whether a puzzle is possible before solving it? How do you know?

Answers

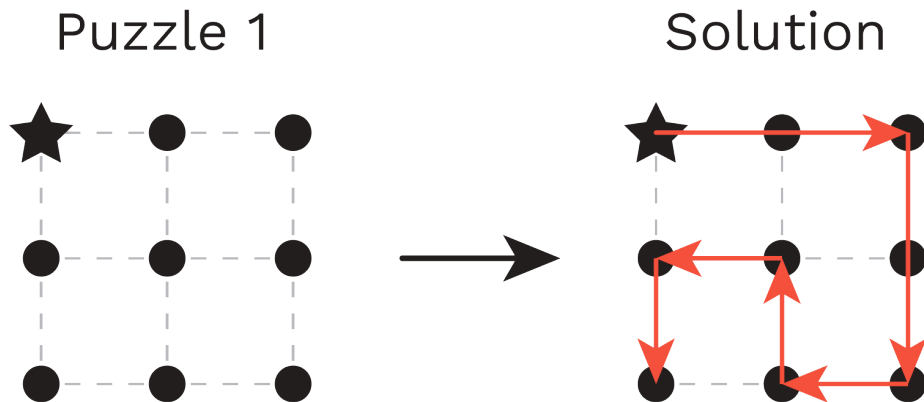
The impossible puzzles are:

- Puzzle 3
- Puzzle 6
- Puzzle 8
- Puzzle 9
- Puzzle 11
- Puzzle 15
- Puzzle 20
- Puzzle 22

Connect the Dots Instructions

Rules:

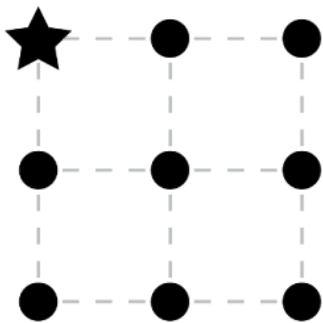
1. Start on the star, and draw a path that connects all of the dots.
2. You can only go along the dashed lines, but you don't need to go over every dashed line.
3. You cannot go through a dot more than once.
4. You cannot lift your marker.



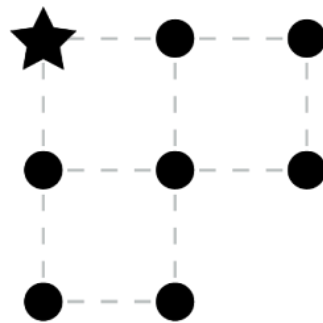
Connect the Dots

One of these puzzles is **impossible**. Which one?

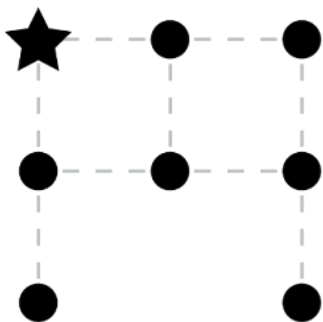
Puzzle 1



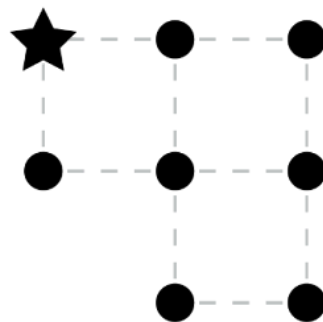
Puzzle 2



Puzzle 3



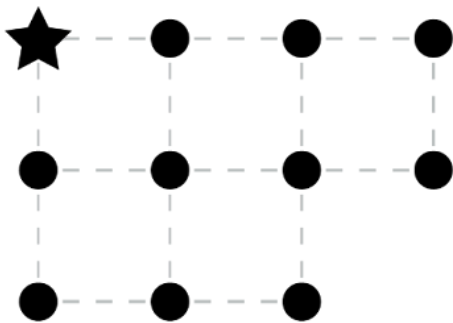
Puzzle 4



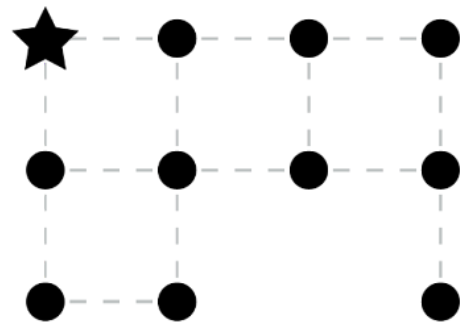
Connect the Dots

One of these puzzles is **impossible**. Which one?

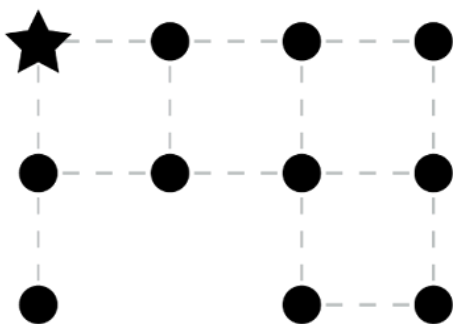
Puzzle 5



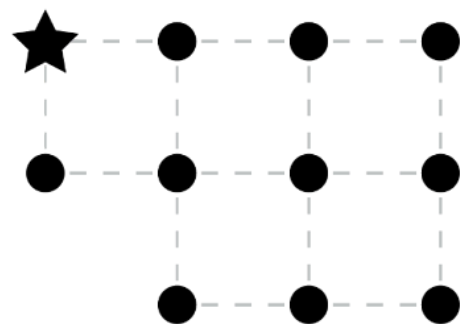
Puzzle 6



Puzzle 7



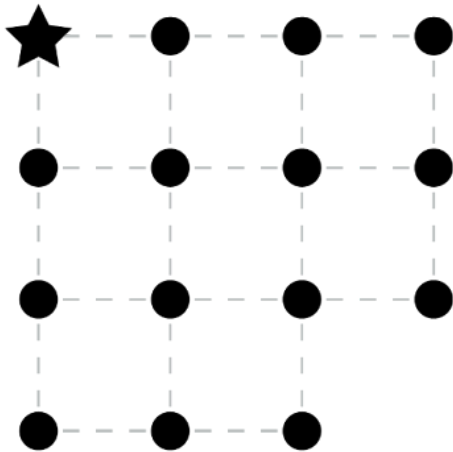
Puzzle 8



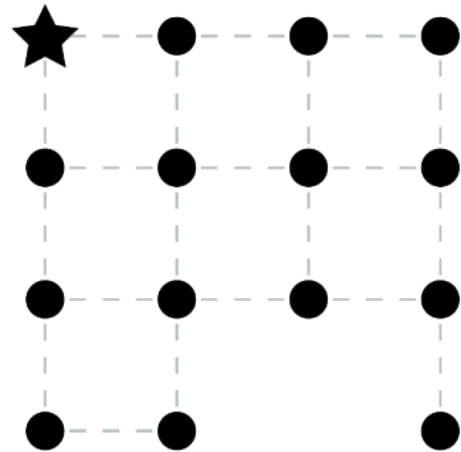
Connect the Dots

One of these puzzles is **impossible**. Which one?

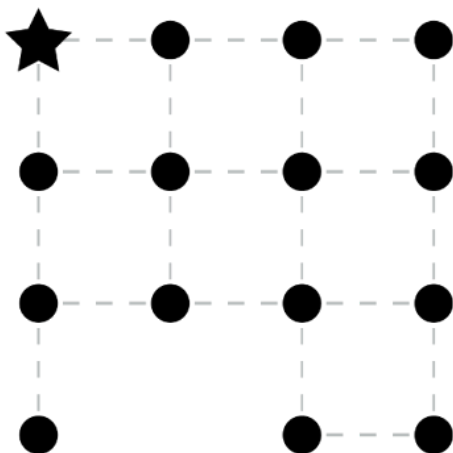
Puzzle 9



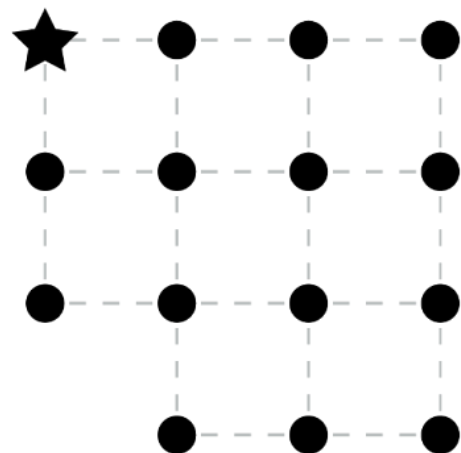
Puzzle 10



Puzzle 11



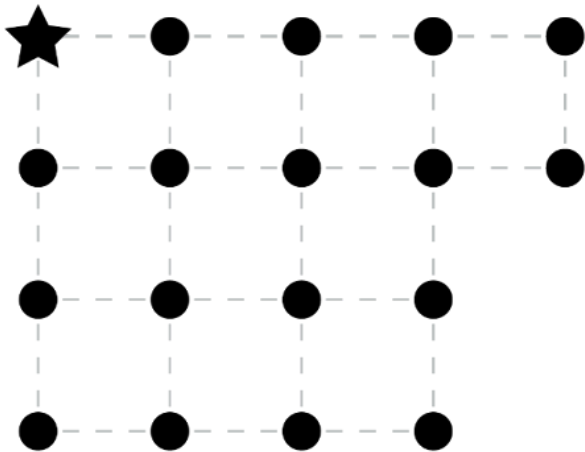
Puzzle 12



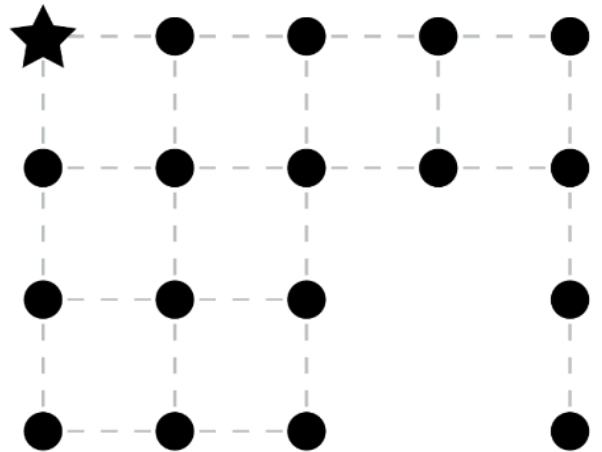
Connect the Dots

One of these puzzles is **impossible**. Which one?

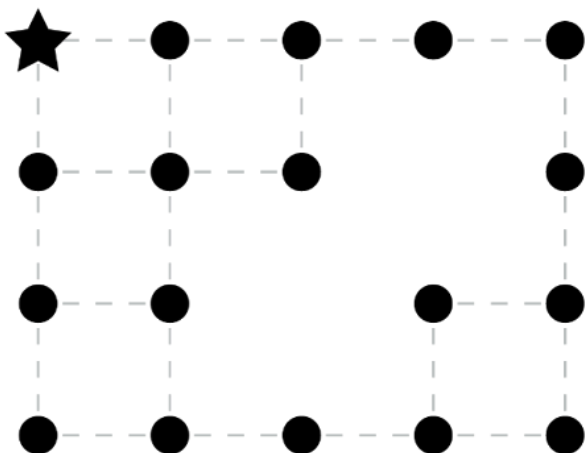
Puzzle 13



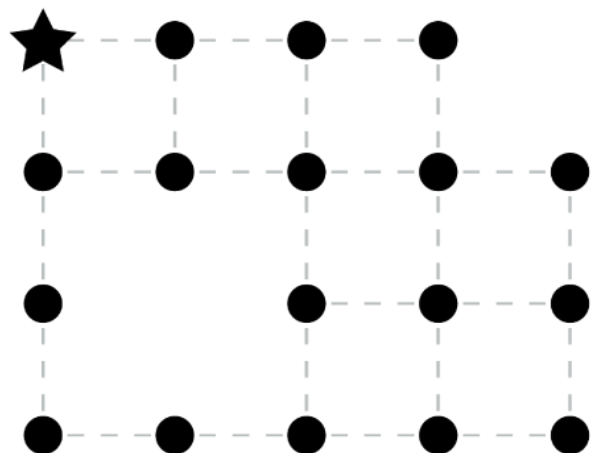
Puzzle 14



Puzzle 15



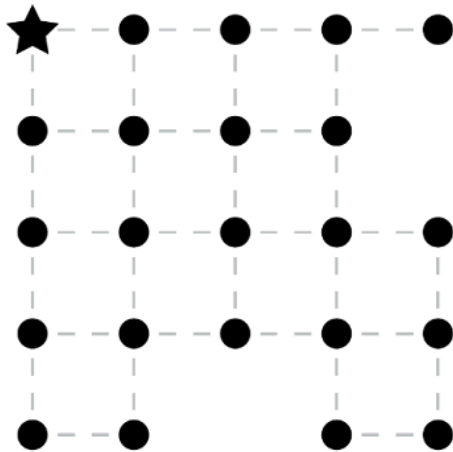
Puzzle 16



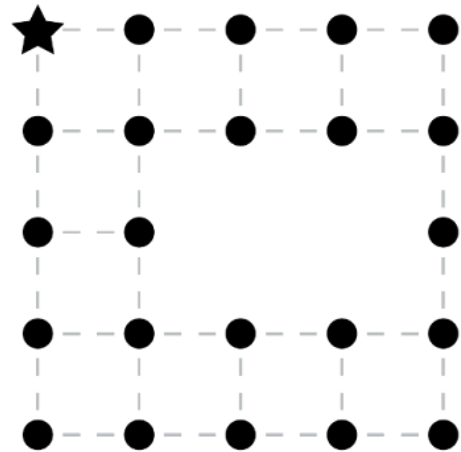
Connect the Dots

One of these puzzles is **impossible**. Which one?

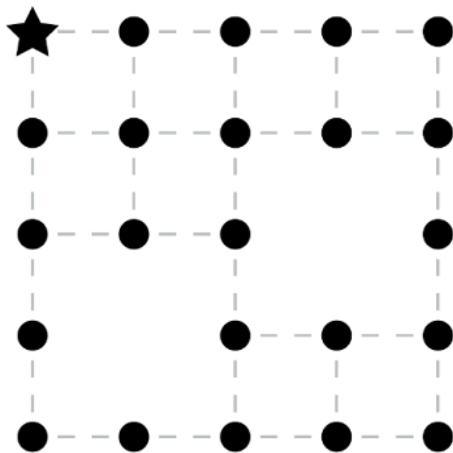
Puzzle 17



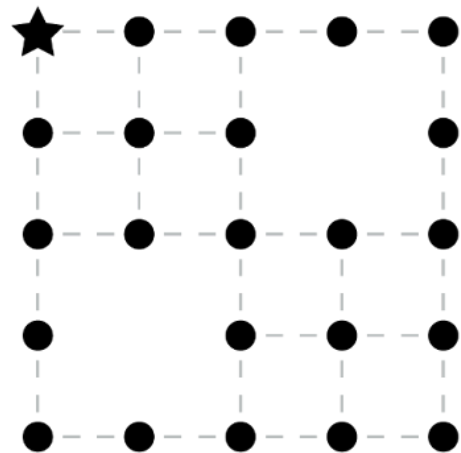
Puzzle 18



Puzzle 19



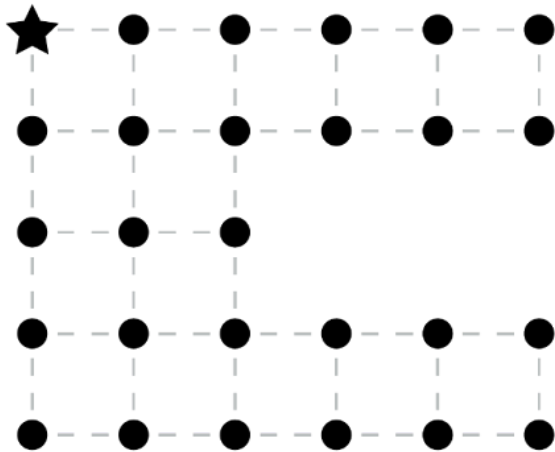
Puzzle 20



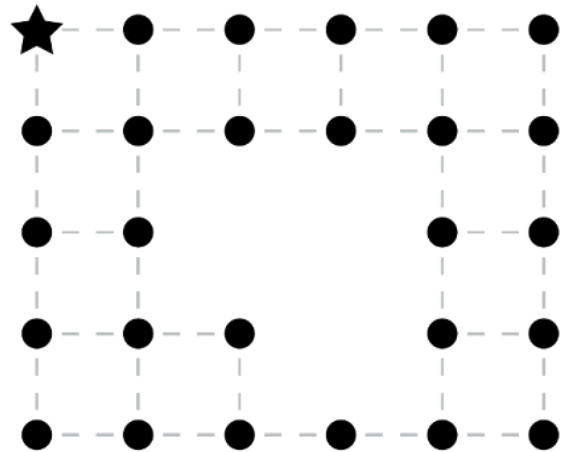
Connect the Dots

One of these puzzles is **impossible**. Which one?

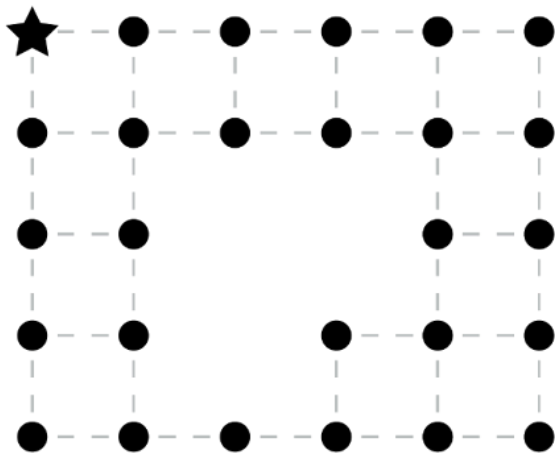
Puzzle 21



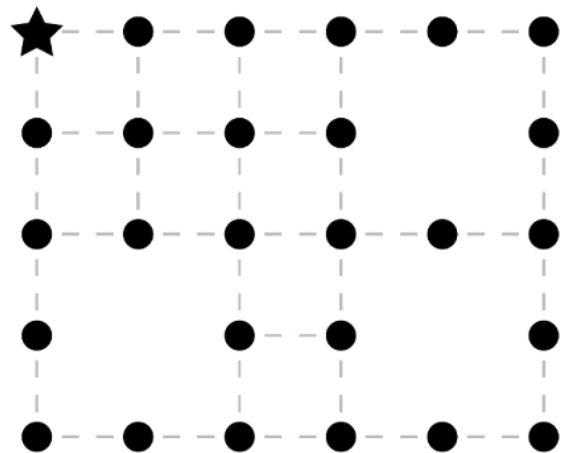
Puzzle 22



Puzzle 23

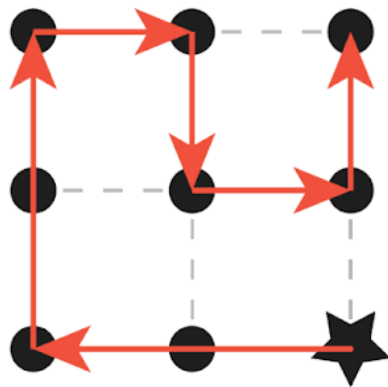


Puzzle 24





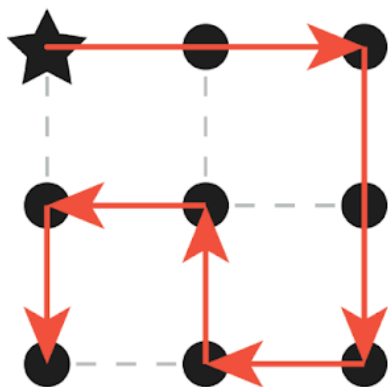
Play for free at jrmf.org/puzzle/connect-the-dots



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