

LIGHTHOUSES

ACTIVITY GUIDE

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Materials and Setup

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

Per Table	Material Preparation	
75 colored square tiles	Each station needs about 15 tiles	
3 copies of Instructions	1 page each	p. 6
5 copies of Tasks	10 pages each <i>can be printed double-sided</i>	p. 7-16
1 copy of Table Sign	1 page <i>print on cardstock for sturdiness</i>	p. 17

Per Table	Purchasing Materials		
Square tiles	pack of 400 for \$28.95		
28 plastic sheet protectors	pack of 100 for \$8.14	pack of 500 for \$26.99	These are recommended in order to protect the documents that students will be handling.
5 binder rings	pack of 100 \$8.99	These are recommended for keeping the task sheets in order.	



Objective

Cover up some of the squares so that each lighthouse sees the right number of squares.

1. The number inside of a lighthouse tells you how many squares it wants to see.
2. A lighthouse sees all of the squares left, right, up, and down, including the square it's on.
3. Lighthouses cannot see past covered up squares.
4. Covered up squares cannot be side-by-side.

Materials

Each Lighthouses table should be prepped for 5 stations.

Each station needs:

1. 15 colored square tiles.
2. Lighthouses instructions.
3. Lighthouses tasks.

How to Play

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

You can try our online version [here](#).

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 starting the first puzzle with them.
2. Have the student help you place the first few squares. Reinforce that the number of stars in the squares must equal the number indicated beside each row or column.
3. Have the student solve the first puzzle and then explore the next puzzles.

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.

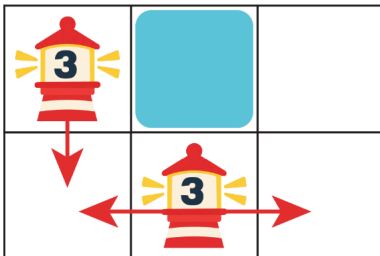
Answers

Coming soon!

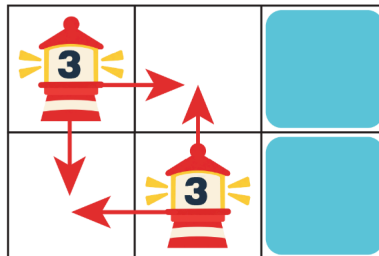
Lighthouses Instructions

Rules:

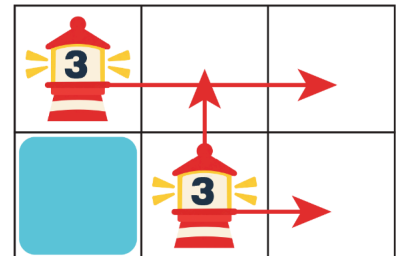
- Cover up some of the empty squares so that each lighthouse sees the right number of squares.
- The number inside of a lighthouse tells you how many squares it wants to see horizontally and vertically, including the square it's on.
- Lighthouses cannot see past covered up squares.
- Covered up squares cannot be side-by-side.
- You cannot cover up a lighthouse.



The left lighthouse only sees two squares



The covered up squares are side-by-side.

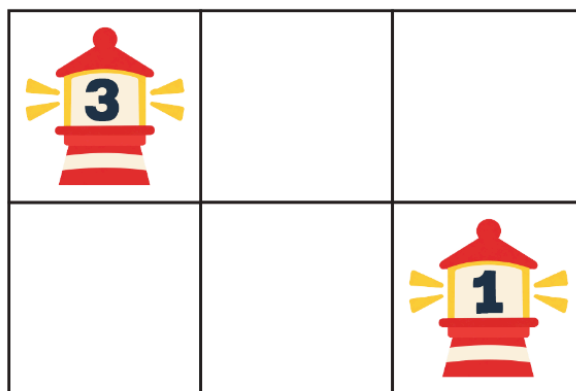


Lighthouses

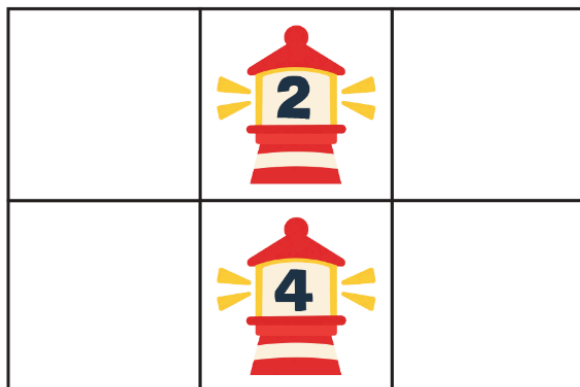
Puzzle 1



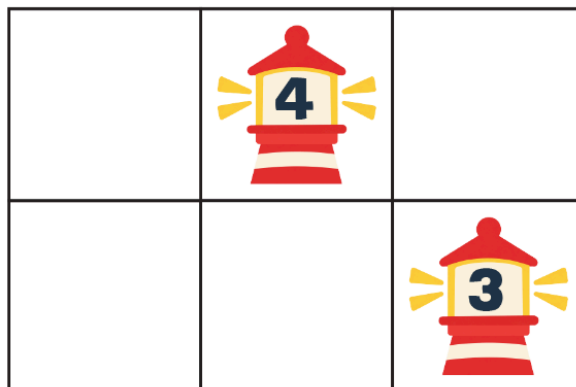
Puzzle 2



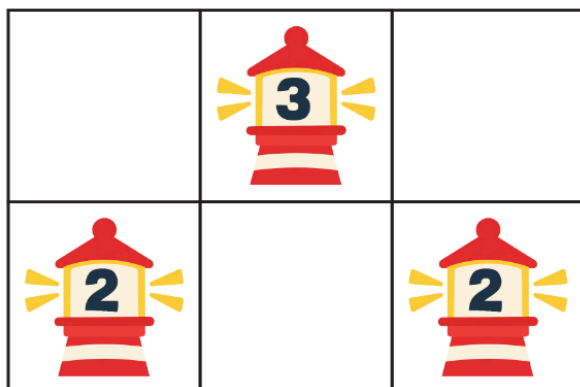
Puzzle 3



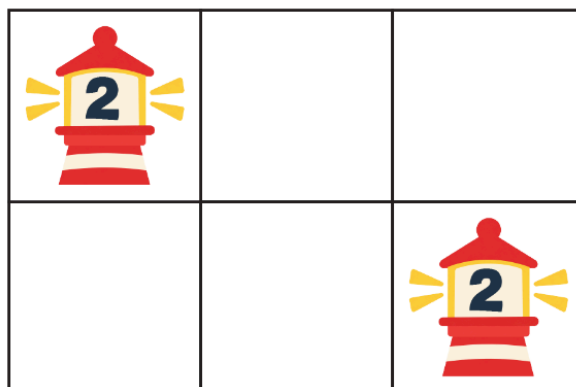
Puzzle 4



Puzzle 5

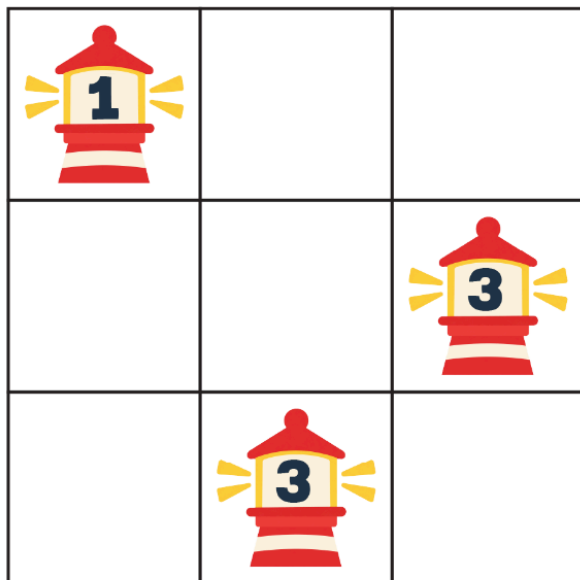


Puzzle 6



Lighthouses

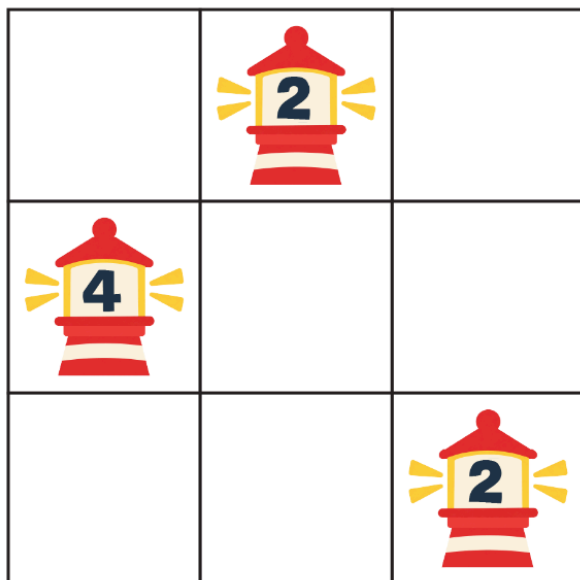
Puzzle 7



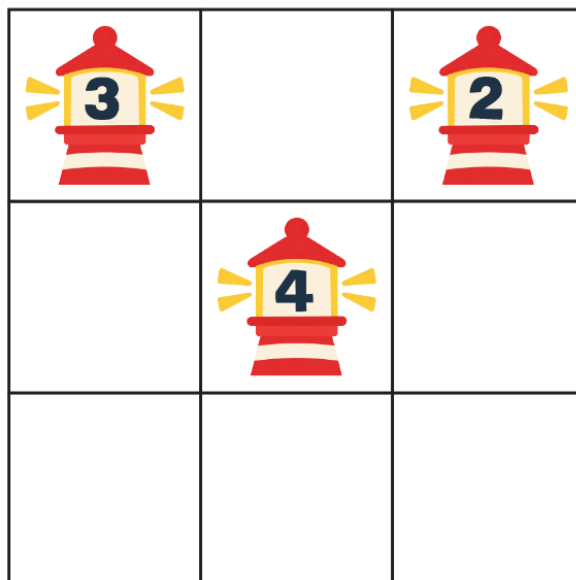
Puzzle 8



Puzzle 9



Puzzle 10



Lighthouses

Puzzle 11

Puzzle 12

Lighthouses

Puzzle 13

Puzzle 14

Lighthouses

Puzzle 15

Puzzle 16

Lighthouses

Puzzle 17

Puzzle 18

Lighthouses

Puzzle 19

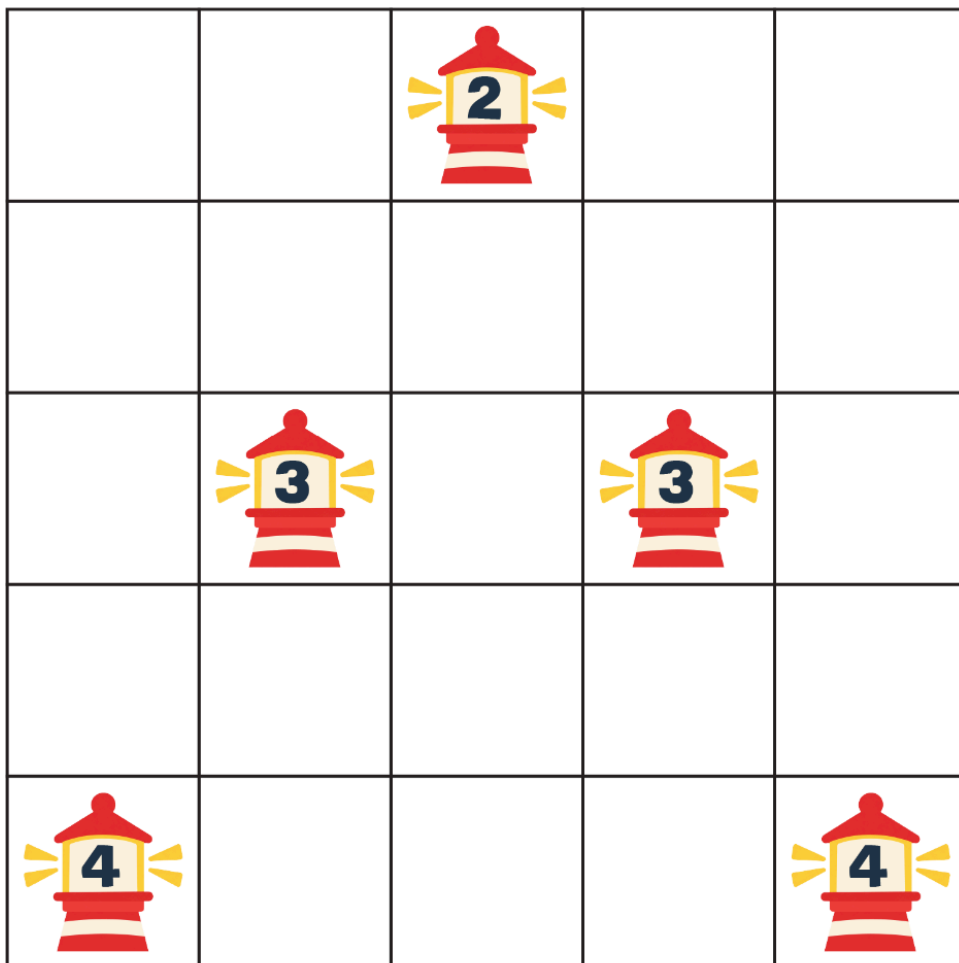
Lighthouses

Puzzle 20

Lighthouses

Puzzle 21



Lighthouses

Puzzle 22



Play for free at
jrmf.org/puzzle/lighthouses



LIGHTHOUSES



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