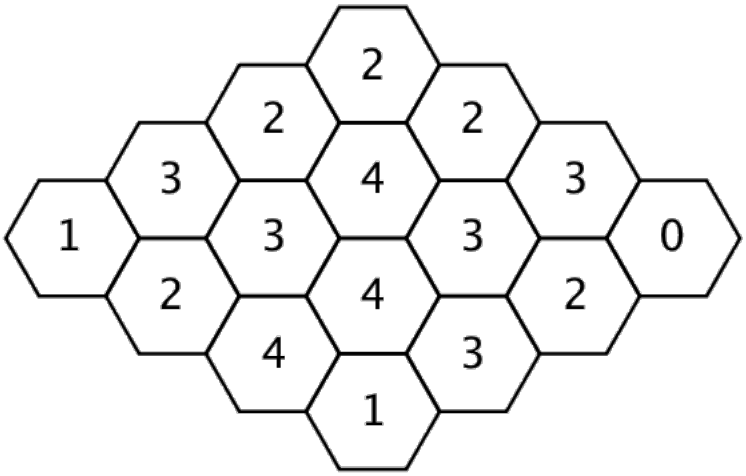
CEMC at Home

Grade 7/8 - Wednesday, March 25, 2020

Beehive

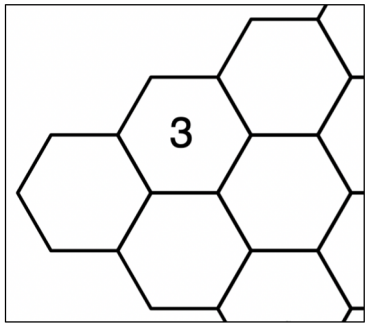
A bear studies how many hexagons in a honeycomb contain honey. For each hexagon, the bear records how many *other* hexagons touching this hexagon contain honey. The results of the bear's study are shown. How many hexagons in the honeycomb contain honey?

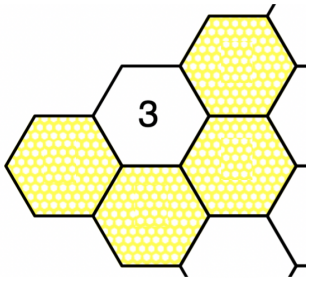
Honeycomb 1



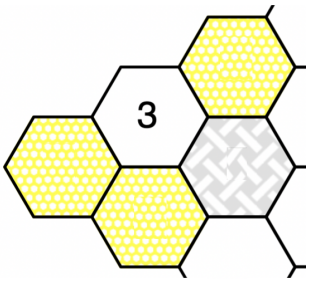
Need Help Getting Started?

Look at the hexagon marked with a "3" near the left corner of the honeycomb above. Notice that there are exactly 4 other hexagons that are touching this hexagon. This number 3 tells us that exactly 3 of those 4 touching hexagons have honey. But can you figure out which 3?





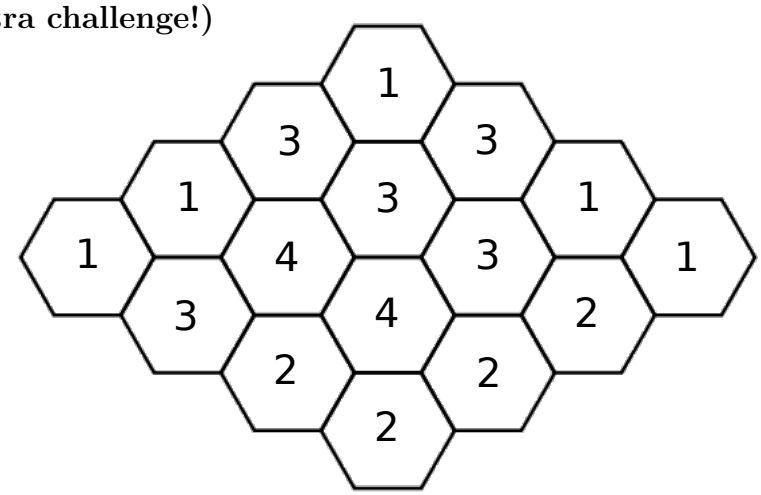
Impossible



Possible

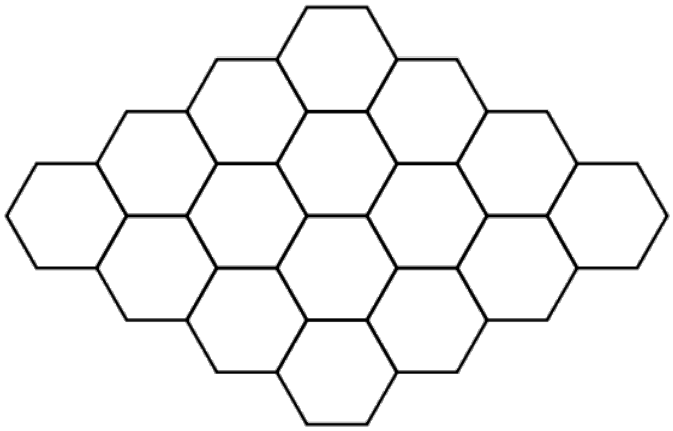
Use the online exploration (https://www.geogebra.org/m/mdbfsjvj) for this question to help you work through the solution. By clicking on a hexagon you can mark whether or not you think it contains honey. You can use this to keep track of what you discover about the hexagons as you go.

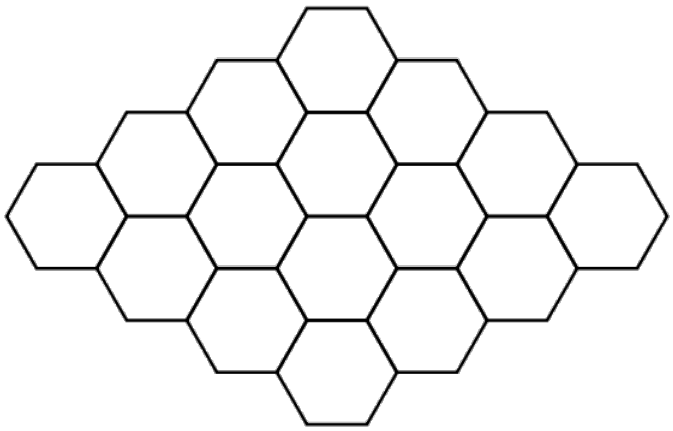
Honeycomb 2 (Extra challenge!)



You might find the second honeycomb harder to figure out. What makes this honeycomb more difficult?

Extension: Use the empty honeycombs below to create your own beehive problems and share them with your friends and family.





More Info:

Check out the CEMC at Home webpage on Thursday, March 26 for a solution to Beehive.

This problem was inspired by a problem on the *Beaver Computing Challenge*. You can find more problems like this on past BCC contests.