FILLOMINOES

STRATEGIES

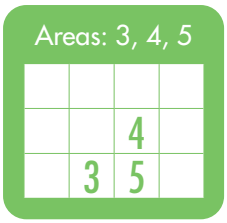
1. Cross out numbers from the list when completing polyominoes.

As we complete polyominoes, we can cross them out from the given list.

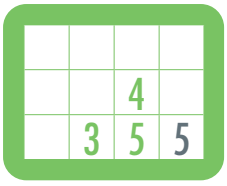
Also, mark which polyominoes don't have any starting numbers in the grid.

2. Find polyominoes that can only be completed in one way.

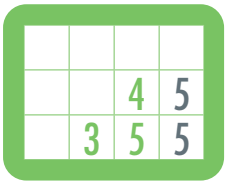
How can we complete the 5-omino?



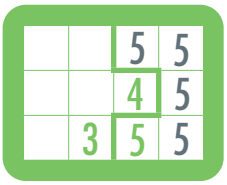
All the squares of the 5-omino must touch. There is only one empty square touching the 5, so we place a 5 in this square.



Then, there is only one empty square touching this 5, so we also place a 5 there.



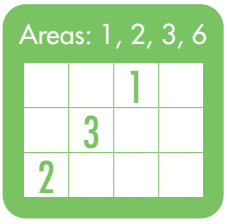
We continue this way until the 5-omino is complete.



(Sometimes we can only complete part of the polyomino. That's still useful.)

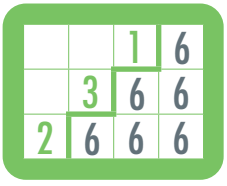
3. Find polyominoes that can only fit in one region.

Where can we place the 6-omino?



In the top-left empty part of the grid, there are three empty squares. In the bottom-right empty part of the grid, there are six empty squares.

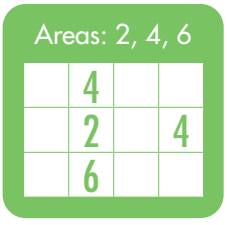
So, we can only place the 6-omino in the bottom-right region of the grid.



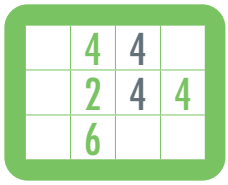
(This strategy is helpful when placing polyominoes that have no starting number on the grid.)

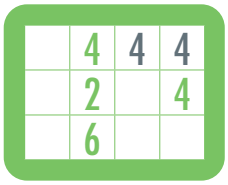
4. Don't isolate regions that can't be filled.

How can we complete the 4-omino?



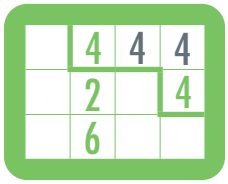
We need two more squares to complete the 4-omino. There are two ways to connect the two existing 4's:





However, if we place the 4's as shown on the left, there is one empty square in the top-right corner. Since there is no polyomino with area 1, we could never fill this square.

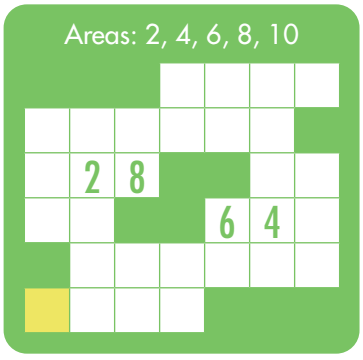
So, we place the 4's as shown.



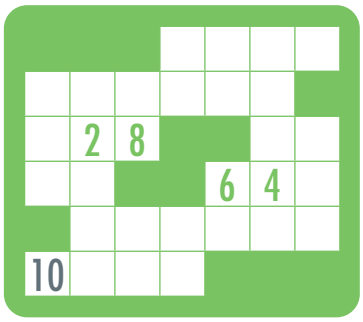
5. Find squares that can only be part of one polyomino.

Sometimes, an empty square (often in a distant corner) can only be part of one polyomino.

Which polyomino is the highlighted square part of?



The highlighted square is too far away from the given numbers to be part of the 2-omino, 4-omino, 6-omino, or 8-omino. So, it must be part of the 10-omino.

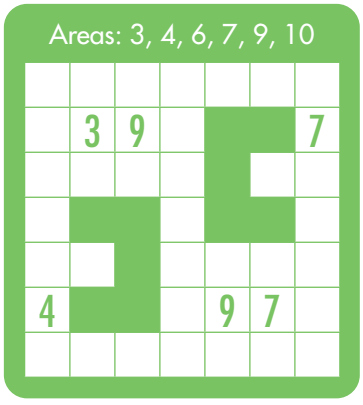


(Be careful if there are polyominoes that have no starting numbers in the grid.)

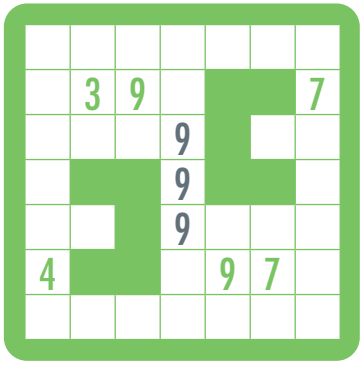
6. Find squares needed to complete a polyomino.

If a square is needed to connect two numbers of the same polyomino, fill that square.

What squares must be part of the 9-omino?



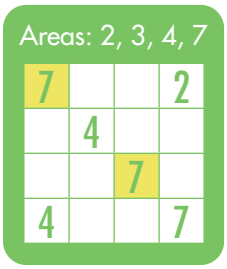
No matter how we connect the two given 9's, we must include the three squares shown below.



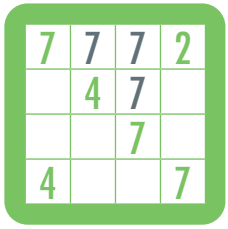
There are still four more 9's to add to the 9-omino, but we must place other polyominoes to find out where they go.

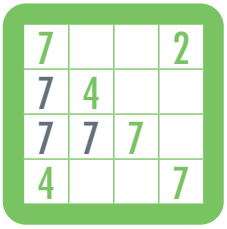
7. Don't block connections.

How can we connect the two highlighted 7's?

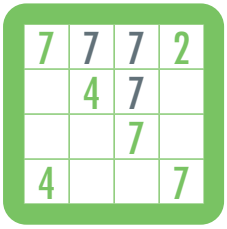


There are two ways to connect the 7's:





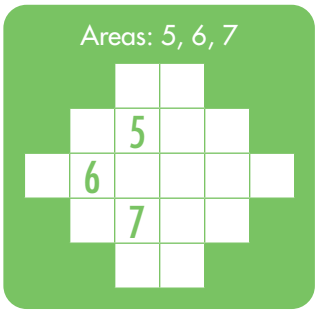
However, the grid on the right prevents us from connecting the two 4's. So, we connect the 7's as shown.



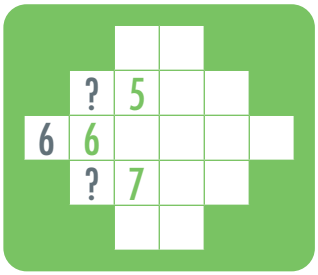
8. Find squares that must be part of a polyomino.

Are there squares that must be part of a polyomino, regardless of how the polyomino is completed?

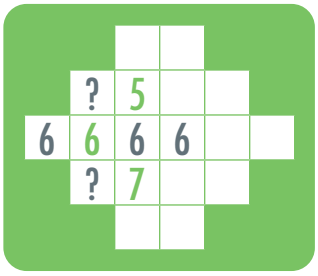
What squares must be part of the 6-omino below?



The square to the left of the given 6 can only be part of the 6-omino. The squares above or below the given 6 can be part of the 6-omino, or another polyomino.



That leaves at least two more squares that must be part of the 6-omino. We can only place these two 6's as shown.

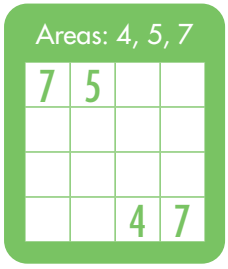


(Now, which squares must be part of the 5-omino and 7-omino?)

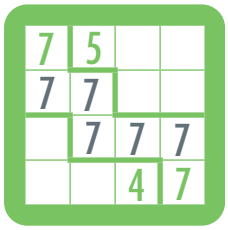
9. Make sure each polyomino has enough room.

When placing polyominoes, make sure there's enough room for the other polyominoes to be completed.

How can we connect the 7's?



There is only one way to connect the 7's that leaves four squares for the 4-omino and five squares for the 5-omino.



10. Stay flexible.

Keep looking for the squares that must be part of polyominoes. Sometimes placing just one square of one polyomino will help us complete another region of the grid.