CEMC at Home
Grade 4/5/6 - Tuesday, April 21, 2020
Four Square and Ten

Problems:

(a) Using only the four digits 1, 2, 3, and 4, place a digit in each blank square in the grid to the right so that every row, column, and diagonal in the grid uses each of the four digits exactly once.

(b) Notice that when you add up all 16 digits in your solution grid from part (a), you get a total of 40. In other words, the sum of all of the digits in the grid is 40.

Since 40 = 5 \times 8, it may be possible to divide your solution grid into 5 groups of squares for which the sum of the digits in each group of squares is 8. Can you divide your solution grid from part (a) into 5 groups of squares so that

- the sum of the digits in the squares in each group is 8, and
- the squares in each group are connected?

A group of squares is connected if each square in the group is touching another square in the group. Squares can touch by sharing an edge or by sharing a vertex as shown in the picture to the right.

Extra Challenges:

1. Can you find more than one solution for part (b)? How many different solutions can you find?

2. Notice that the digits in each row, column, and diagonal in your solution grid from part (a) add to 10. Complete the starting grid from part (a) again, using only the four digits 1, 2, 3, 4, but following these new rules:

   • Each digit can be used more than once in each row, column, or diagonal.
   • The digits in each row, column, and diagonal in your grid must add to 10.

   In how many different ways can you complete the starting grid from part (a) according to these new rules? Are there more possible solutions here than there were for part (a)?

More info:
Check out the CEMC at Home webpage on Tuesday, April 28 for a solution to Four Square and Ten.