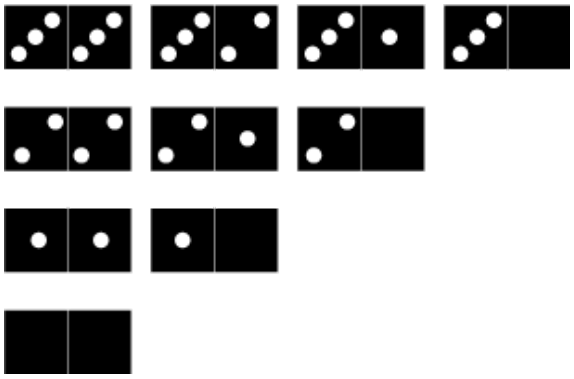
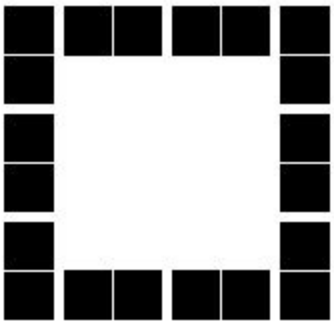
UCSB Math Circle: Dominoes and Magic Squares

You will need dominoes for these problems! See if you have a set of dominoes at home that you can use. If not, a link to some printable "dominoes" is on the Math Circle website. Have fun!

Problem 1: You only have these dominoes.



Arrange these dominoes into this square so that each side of the square has eight dots.



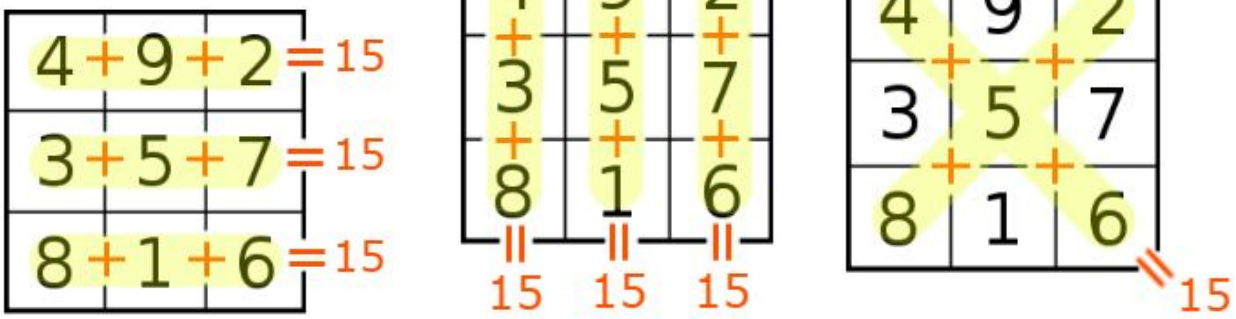
Problem 2: A **magic square** is square grid filled with numbers so that:

1) No number shows up in the magic square more than once.
2) When you add up all the numbers in each row, column, or diagonal, the answers will be equal.

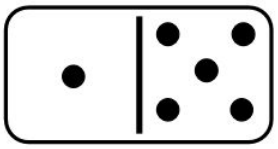
Here is an example! This is the *Lo Shu* magic square. Chinese legend has it that a magic turtle came out of the river one day with this magic square written on its shell.

4	9	2
3	5	7
8	1	6

Now, see what happens when you add up the numbers in the rows, columns, and diagonals:



Try making your own magic square using dominoes. Your magic square should be 5 dominoes by 5 dominoes. Each domino counts as the number of dots on that domino. For example, the domino:

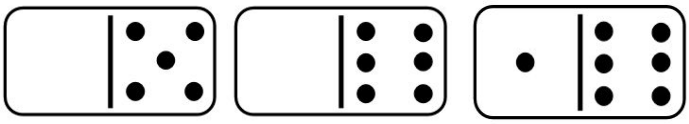


Represents the number 6.
(Hints for this problem are on the next page.)

Worksheet created by Rebecca Embar for UCSB Math Circle. Problems taken from NRICH at the University of Cambridge, and can be found at https://nrich.maths.org/mathscircle.

Hints (for problem 2):

1) You will not need to use these three dominos



2) The total of each row, column, and diagonal is 30.
3) Here is one POSSIBLE partially filled in magic square. This is not the only possibility! There are many possible domino magic squares.