Problem of the Week

Problem C

Domi Knows

A domino tile is a rectangular tile with a line dividing its face into two square ends. Each end is marked with a number of dots (also called pips) or is blank.

The first domino shown below is a [3, 5] domino, since there are 3 pips on its left end and 5 pips on its right end. The second domino shown below is a [0, 3] domino, since there are 0 pips on its left end and 3 pips on its right end. The third domino shown below is a [4, 4] domino, since there are 4 pips on its left end and 4 pips on its right end.

We can also rotate the domino tiles. The first domino shown below is a [5, 3] domino, since there are 5 pips on its left end and 3 pips on its right end.

However, since this tile can be obtained by rotating the [3, 5] tile, [5, 3] and [3, 5] represent the same domino. Similarly, the second domino shown below is a [3, 0] domino. Again, note that [3, 0] and [0, 3] represent the same domino.

A 2-set of dominoes contains all possible tiles with the number of pips on any end ranging from 0 to 2, with no two dominoes being the same. A 2-set of dominoes has the following six tiles: [0, 0], [0, 1], [0, 2], [1, 1], [1, 2], [2, 2]. Notice that the three dominoes [1, 0], [2, 0], and [2, 1] are not listed because they are the same as the three dominoes [0, 1], [0, 2], and [1, 2].

Similarly, a 12-set of dominoes contains all possible tiles with the number of pips on any end ranging from 0 to 12, with no two dominoes being the same.

Domi purchased a 12-set of dominoes. How many tiles are in the set?

Theme Number Sense