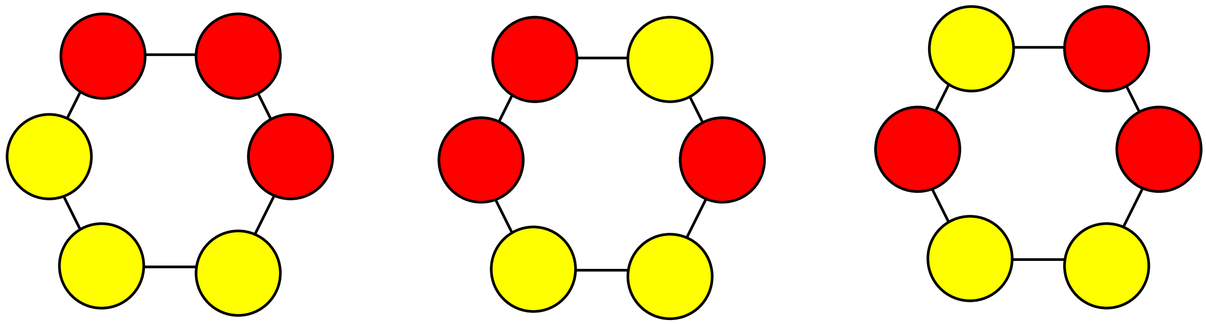
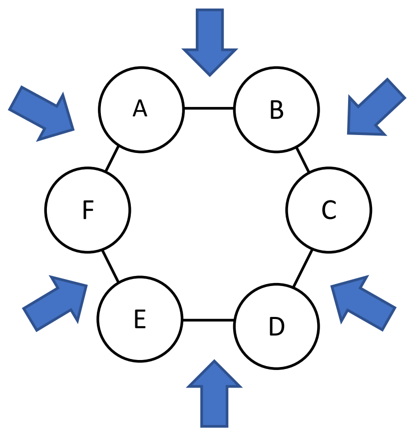
When arranging 3 red and 3 yellow dominos in a circle, there are 4 different ways. 3 ways are not rotationally symmetric, i.e. if we keep the orientation of the arrangement, when we rotate the arrangement 1 to 5 times, each arrangement is distinct from one another.

The 3 ways are:



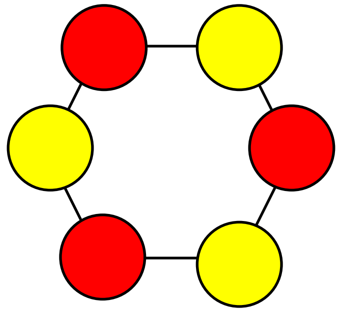
Because the arrangement is not rotationally symmetric, each domino is distinct from another. If so, we can just insert the blue dominos as per usual (like in a circle arrangement with A, B, …, F).



There are 6 gaps to insert the 3 blue dominos, hence $\binom{6}{3} = 20$ arrangements per way.

i.e. $3 \times \binom{6}{3} = 60$ arrangements in total.

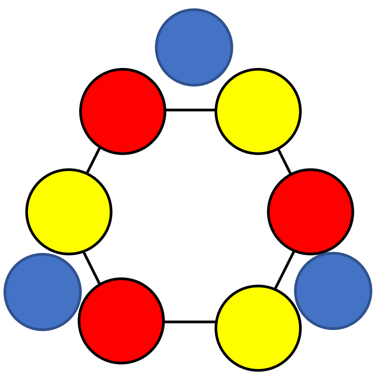
The last case is an arrangement that is rotationally symmetry. We can rotate it twice to get back the same arrangement.

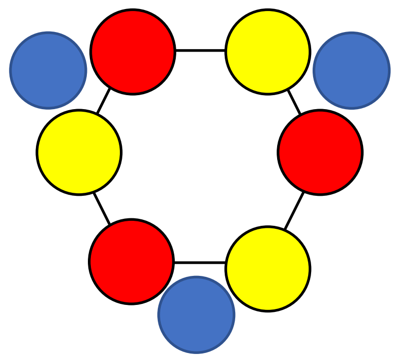


Here, we have to be careful on how we insert as we might incur many over-counting due rotational symmetry.

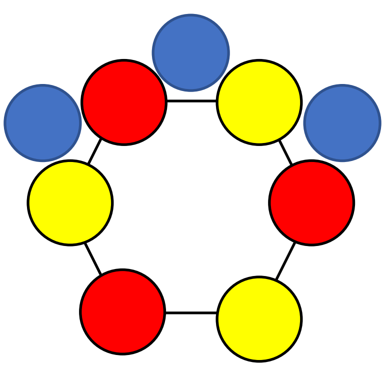
Here we consider when the blue dominos are at least 2 apart or not.

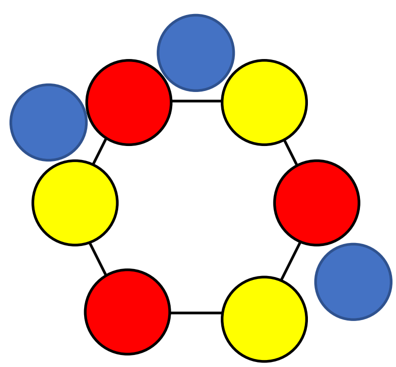
If they are at least 2 part there are only 2 cases:

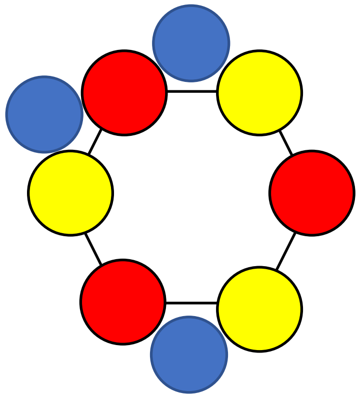


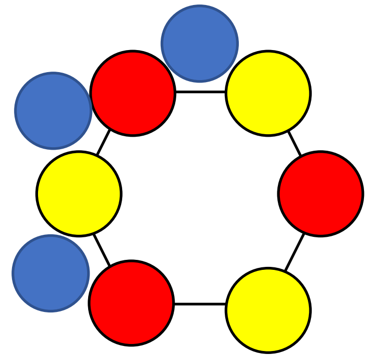


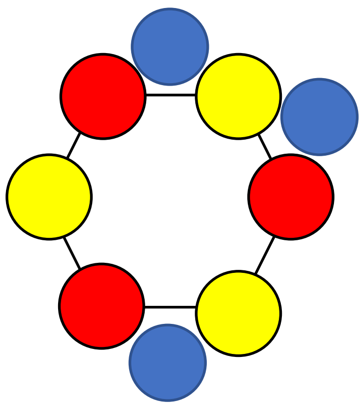
If they are not at least 2 apart, then there is one pair that is one apart. We consider these cases carefully:

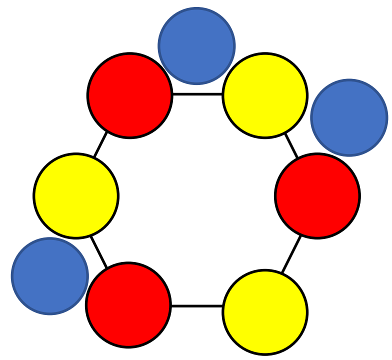












There are 6 ways here.

So, for this last case there are 8 ways.

Therefore, a total of $60+8=68$ arrangements.