1. What is the size of the game tree for Noughts and Crosses? Sketch the game tree.

The **game tree size** is the total number of possible games that can be played.

In Noughts and Crosses there are many ways of winning the game

**Win in 5 moves**: 8\*3!\*6\*5 =**1440 possibilities**

**Win in 6 moves**: (8\*3!\*6\*5\*4)-( 6\*3!\*2\*3!) = **5328 possibilities**

**Win in 7 moves**: (8\*3\*6\*3!\*5\*4\*3)- (6\*3\*6\*3!\*3!) = **47952 possibilities**

**Win in 8 moves**: (8\*3\*6\*3!\*5\*4\*3\*2) – (6\*3\*6\*3!\*2\*4! ) = **72576 possibilities**

**Win in 9 moves**: (2\*3\*8\*4!\*4!)+ (6\*3\*4\*4!\*4!) + (22\*1\*4!\*4!) = **81792 possibilities**

**Match Draw** : 16\*5!\*4! = **46080 possibilities**

So total number of games for noughts and crosses are 1440+5328+47952+72576+81792+46080 = **255168 possible games in total**.