# Problem Solving – Tic Tac Toe (Not Graded)

In this activity, we will explore how instructions can be written in a systematic way in order to achieve a goal.

You are, no doubt, familiar with the children’s game called Tic Tac Toe. In this game one player places an “X” on an unoccupied square of a 3 x 3 grid. The next player places an “O” on an unoccupied square. The two players continue to alternate turns like this until one player succeeds in getting three “X”s or three “O”s in a row. Rows may be horizontal, vertical, or diagonal. The first player to achieve three in a row wins the game. If no player achieves three in a row, the game is a tie.

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| Now imagine that you have a friend who has never played this game before. You want to give your friend instructions on how to play the game.  You also don’t want your friend to lose. Construct a set of instructions for your friend to follow so that every game she/he plays will result in a win or a tie. (That is, your friend should never lose!)  You are allowed to assume that your friend always gets to go first!  Hint: Consider the tic tac toe board shown here. You’ll need some sort of naming convention to represent each of the 9 squares. That will make your instructions easier. | Image result for tic tac toe |

At the end of the activity, your instructor will call on students at random to share their solutions with the class.

Your instructions:

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