Discover the Decimal

Number of players: two
Needed to play: double decimal number lines with fold, question tally, pencil.

Goal: guess the exact number your opponent has chosen by posing a series (up to 15) of yes and no questions for your opponent to answer. Use problem solving and deduction to figure out the hidden number.

To play:

1. Players must decide in advance to what number line will be chosen for play. There are a variety of number lines available, or, players can choose to use the blank number lines to create their own. However, if using the blank number line, ensure both players understand the start and finishing numbers on the line, as well as whether the decimal place is in the tenths (ie., 2.2) or hundredths (ie., 2.29).

2. Fold the number line paper in half where indicated, so that one number line is showing, and an identical copy of the number line is folded beneath it.

3. Player One chooses a decimal number that ranges somewhere between the numbers shown on the decimal number line and marks the decimal location on the hidden side of the folded number line. He/she then flips the number line over so that the other player can see the blank side.

4. Player Two initiates the game with his/her first question. The first question should be broad enough that it will allow the player to sense where on the number line the opponent's number may fall, but one that will still provide a sense of where the player should focus on the number line:

"Is this number between zero and three?" or, "Is this number greater than four but less than five?"

Remember that questions can only receive a yes or no answer!

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5. Player One responds to each question as it is asked, but offers no information other than a yes or a no. Either player can keep track of how many questions player one has asked on the score sheet or on a scrap piece of paper.

6. As the game continues and more questions are answered, Player Two can seek to guess Player One's number. However, every guess counts as one question.
7. The round is over when Player Two successfully guesses the decimal number, or when all 15 questions have been asked.

8. The turns then switch and Player Two can opt to select a new number line or a new decimal number on the existing line in play. Player One poses the questions.

Players will get better at this game the more that they play, as they will begin to understand how to ask questions in such a way that will elicit the most information out of a yes or no answer.

If players find the 15 question limit too easy or too restrictive, change the level of play by increasing or decreasing the decimal point (ie., using one decimal place instead of two) or by increasing or decreasing the number of questions the player is permitted to ask.