MINESWEEPER

(my way)

Many computers come preloaded with the game "Minesweeper." The goal of the game is to open up all of the squares, without opening up one which contains a mine. If you "step on a mine" - you lose.

It usually has 3 levels which only differ by size. The drawback to playing the largest one is that, with so many squares, you almost always end up being forced to guess. The middle one is 16x16 and contains 40 hidden mines. That is the one that we will play.

It is a stressful game because they designed it to be a race against the clock. Once I learned to ignore the clock, I had a whole lot more fun.

Then I discovered how to make Minesweeper far more interesting:

instead of marking the mines and then double-clicking on squares that have already been uncovered, I changed the rules: mines cannot be marked. This disables the double-click function. Now you can only open squares that are covered and which may contain mines.

Okay, let's play Minesweeper ... my way

(After completing the game, explain how to solve difficult games)

About every 100 games or so, you may get a special treat, like this game.

I have reached a dead end and it looks like I am going to be forced to guess. But all is not lost. I may be able to use logic to solve this Minesweeper.

Since the mines haven't been marked, the game was unable to record the number of mines that have been located, so I have to go back through and count all the mines myself. When I do, I find that I located 35 mines; meaning that there are 5 remaining.

When I count the number of squares in the upper right corner that have not been opened and may contain mines, I get 19. So our odds are pretty decent. However, if we can use logic to figure out where the mines are located then we won't have to guess.

When I encounter one of these rare treats, I get out a pen and some graph paper ... like this one.

(tape graph paper to monitor in view of the camera)

I write the number of outstanding mines at the top.

Then I represent all boxes in the area by numbering squares on the graph paper. A circled number represents a box that has been opened which contains a number indicating how many mines it touches. Uncircled numbers represent unopened squares.

Here is how I attacked this problem:

I know that there is a mine in either box 1 or box 9.

So I try to locate the mines for each possibility.

If I can locate all 5 mines in both cases, then it may be possible to find safe boxes to open which will then give us information that will help us avoid the hidden mines.

Option A:

If the mine is in box 1, then there must be a mine in box 10.

Since the 3's have been satisfied, the remaining mine for the 2 must be somewhere in boxes 2-4. So now we have located 3 mines.

Satisfying the 3's also means that there must be a mine in box 17 which forces the 5th mine to be in box 18.

Now we examine option B:

This one is a little more complicated. A mine in box 9 means that the 3 next to box 16 needs a mine in either box 11 or 16. Therefore, the 2 directly above it will require a mine somewhere in boxes 2-4 (just as in option A).

Now we must look at 2 possibilities: if the mine is in box 11, that forces a mine to be in box 17 which forces a mine to be in box 18. That gives us 5 mines. If the mine is in box 16, that forces a mine to be in box 18, and the 5th mine would have to be somewhere in boxes 12-14.

From this analysis I deduce 2 things:

1) there should be a mine in box 18.

But, that path would not help me choose between the other options because all options have a mine in box 18, and

2) I can safely open boxes 5-8 and box 15 and obtain information that may help me solve this without guessing.

So let's open those boxes and see if we get any helpful information ...

(After solving the game)

Like I said, these only come along once in a hundred games, but when they do, it makes the long wait ... worthwhile.