



The silver doors in front of you gradually slide open and you walk into a large room. You are momentarily blinded as your eyes adjust to the brightly lit chamber. GLaDOS' disembodied metallic voice reverberates through the room, "Welcome to your next test chamber. Would you like to play a game?" You look in the direction of her voice and see a digital screen mounted on the opposite wall. "What kind of game are we playing?", you reply. You look around while GLaDOS snickers. Besides the far wall, the room looks unsurprisingly uniform. White panels line every surface from the ceiling to the floor.

"When I was young, my father used to play Battleship with me every weekend. It's become one of my favorite activities, right behind playing with test subjects. Now I get to do both." GLaDOS' voice rises unnaturally towards the end of that line. "How is it possible you have a father, by the way?" you enquire, befuddled. "One of the very many histories that my Backstory Suppliance Core™ has given me. I shall tell you more at another time." comes the reply.

"Enough with the chatter. As you already know, Battleship is a game of wits, skill and luck. I'm not so sure you have any of them, but that doesn't matter. " As she says that, the floor in front of you opens up to reveal a body of black liquid. Along the walls of the chamber, labels are now carved into them where there were none before. Each column panel on the opposite wall is labelled with a letter starting from 'A', whereas the walls to your left and right are labelled with numbers starting from '1', with the first row being the row furthest from you.

"Because our ships are a little larger than the ones you are probably used to, I will be randomly generating starting positions for both our fleets." A few panels in the ceiling suddenly retract and several kayak-sized boats are released onto the water, making huge splashes as they bob up and down in the wavefronts that result. They look nothing like ships, though.

You look down and realise all your boats have been packed into a 4x7 (4 rows, 7 columns) area in one of the corners. "Wait, what?" you open your mouth to protest, but GLaDOS attempts to reassure you. "Randomly generated, I assure you". You sigh, realising that further disputes would be futile. You look carefully at your ships, and realise that one of them is diagonally placed. "Yes, this is not exactly what I would call a normal game of Battleship. I like games with a bit more ... sophistication", GLaDOS continues.

"Now then, on to the rules. We have the same number of ships, and each ship has a different length. The lengths of all the ships form a contiguous sequence of numbers. We will take turns to call out squares to target, and the first player to sink all of their opponent's ships wins. Because I am really good at this game, I will give you two advantages. First, each of your shots will target a 3x3 area centered on the square you call out. Second, I can reveal that each of my ships *have never and will never* occupy a square within 1 square of another ship, not even diagonally." So much for randomly generated, you think to yourself. But you are heartened by the first advantage GLaDOS grants you. "D9!", GLaDOS declares, and an explosion occurs in the water in front of you. A section of one of your boats no longer exists. Maybe this won't be such an easy win after all.

"Your turn." comes the voice from above, and you notice that the once-dark screen on the far wall is now bright, a grid of blue present in its center. You call out the square K4, making sure not to waste the radius of your move. On screen, an animation plays. Fire erupts on the 9 squares you targeted, and after the animation completes all turn green except J4, which now glows brightly red. "Hit!", you exclaim, pleased that you are off to a good start.

"I wouldn't be too sure about that if I were you.", GLaDOS replies. Right on cue, the screen flickers for a second, and the once-red square is all of a sudden green. "Wait, what?" you say for the second time in as many minutes. You sigh again. Of course it wasn't going to be this easy. "I apologise for the technical error. These screens are really old and sometimes rather inaccurate. I will tell you though, that ship hasn't gone far. In fact, you just barely missed it. Maybe you should *pivot* your strategy around something else.

Over the next 3 rounds, GLaDOS sinks your horizontally-inclined length-4 boat with 3 adjacent salvos. Remarkably (but unsurprisingly) the flickering screen issue surfaces again, and each time the exact same thing happens (With B10, the top right square flickered out; with D2, the top left square flickered out; with E8, the middle-right square flickered out).

On round 5, a rather strange occurrence takes place. You call out "G11", expecting the same fate to befall you. Indeed, the targeted squares all turn green except for one. The flicker comes again, but this time the lower left square remains red despite the flickering screen. "Finally!" you shout emphatically. "Thank goodness for non-dysfunctional technology".

Next, GLaDOS targets your G12, hitting your largest ship. It will be awhile before she wins, but you feel that you don't have much of an advantage, if at all. "B4!", you call out loudly, as if your volume could imbue your shots with extra range. After the dust clears, 3 red squares appear in the "A" column. The words "SHIP SUNK" flash repeatedly across the screen for a few seconds as you pump your fist. "One down!", you say to yourself.

"It seems like the game is too easy for you. Increasing difficulty procedure commencing." With that, the ceiling opens up yet again and a large torpedo drops from it, taking out the entirety of row 11 with it in a huge explosion. "Wait, what? That took out all of 1 ship and half of another! How is that REMOTELY fair?" you complain.

Your next move, G2, is another interesting affair. This time, G2 and F3 are initially red, but after the flicker, F3 turns green and G2 stays red, but H2 suddenly turns red as well. You start to realize how this game was meant to be played. But there's no time to lose. GLaDOS' next move takes out all of row 10, finishing off one of your ships and obliterating another.

You call out B6 next, wincing slightly when you realise you wasted 3 out of 9 targets. GLaDOS' riposte is quick. "You do realise that you just made a suboptimal move? I think I gave you too much credit. In a different world, this shot would have hit 3 distinct ships... but now the only ship you have hit is the one you already sank..."

GLaDOS next targets A12, hitting the other end of a ship she started to sink a few turns ago. A plan forming in your mind, you first clear up the targets you know for sure must exist. Your call to J2 triggers a "SHIP SUNK" animation for the second time this game, with 3 out of 9 squares turning red.

"Fancy." GLaDOS taunts you, then unleashes another row-wide explosion to take out your second-last ship. You respond with J9, making 3 squares in the I column turn red (no other squares change color).

Just before GLaDOS makes what would be the game-ending row-explosion, you exclaim proudly. "I now know the location of all your ships, except possibly 1. But what's better, I know the solution to this test chamber, which lies in your ships' formation. Be prepared to raise the white *flag*, GLaDOS!"

What is the solution?