Battleships puzzles are a solitaire version of the classic paper-and-pencil game. The object of each puzzle is to find the locations of the 10 ships in the fleet hidden in a section of ocean represented by a 10 × 10 grid. The fleet consists of one battleship (four grid squares in length), two cruisers (each three squares long), three destroyers (each two squares long), and four submarines (one square each).

The ships may be oriented either horizontally or vertically in the grid, but no two ships will occupy adjacent grid squares, even diagonally. The digits along the side of and below the grid indicate the number of grid squares in the corresponding rows and columns that are occupied by vessels.

In nearly all Battleships puzzles, the contents of a few of the squares have been revealed to start you off. These “shots” come in four types:

- **Water** — This square contains no ship.
- **Submarine** — This square consists of a submarine, and thus must be surrounded by water.
- **End of a ship** — This square can be oriented in any of four directions. It indicates the end of either a destroyer, cruiser, or battleship. The square adjacent to the flat side must be occupied by a ship segment. All other surrounding squares must have either a middle segment or be occupied by a ship segment.
- **Middle of a ship** — This is either the middle segment of a cruiser, or one of the two middle segments of the battleship. Either it has the squares to the left and right occupied by ship segments and the ones above and below it empty or the squares above and below are occupied by ship segments and the ones to the left and right empty. The middle segments of the battleship either lie in the squares to the left and right and two middle segments of the battleship. Either it has the squares to the left and right and two middle segments of the battleship.

The most basic strategy to Battleships solving has three parts:

1. Fill in what you know in squares adjacent to given ship segments.
2. Fill in water in rows and columns that have all of the ship segments already in place.
3. Fill in ship segments in rows and columns that must have all of their remaining spaces filled in order to equal the corresponding number.

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3. Fill in ship segments in rows and columns that must have all of their remaining spaces filled in order to equal the corresponding number.
Don't be discouraged, though. You've made it this far. You'll sink this fleet yet! Move on to advanced strategy. Where can the longest not-yet-placed ship go? The cruisers can

...
with an unidentified ship segment, use a small dot in the middle of the square. Your grid should now look like Figure 1.4. Whenever you fill in a ship segment, go back to strategy 1. Here, you can put water in FM and FO, and IS, too, since it touches a ship segment diagonally. And using strategy 2, you can put water in what's left of columns A and B and rows L and N, to get Figure 1.5.

It's time to use strategy 3 again. Column F must have a submarine in that empty space (it can't be something bigger because it's surrounded by water), and row M must have all ... spaces filled with ship segments, making a submarine on the left and a cruiser on the right. This gives you Figure 1.6.

When you return to strategy 1 this time, you'll find it doesn't help, but strategy 2 does: You can fill in the blank spaces of columns C, H, and I and row S with water, since they already contain the required number of ship segments. Your grid now looks like Figure 1.7.

The dots in row R are surrounded by water, so they must be submarines. And since you need two more ship segments in column J and have two spaces available, you can finish off the remaining two spaces with a destroyer. A quick double check verifies that you have all the required ships, so you're done (Figure 1.8).

The three basic strategies, though certainly important, will take you only so far. If you hope to regularly finish all but the easiest puzzles, you'll need more advanced strategies. When you've reached a point at which the basic strategies don't give you any new information, you must consider where the battleship can go. If the battleship is already in place, then look for spots for the other ships. Here's an example (Figure 2.1).

First, of course, you should fill in what you can using the basic strategies. Your grid should now look like Figure 2.2.

Now, consider where the battleship can go. It must go in a row or column that has a four or higher. Only two qualify: row L and column E. It can't fit in row L, though—that would make column E impossible. So you can put a dot in EQ. Any time you put a dot in a square, you can immediately put water in the diagonally adjacent squares.
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One more puzzle (Figure 6.1) and then you're on your own to discover new, more advanced strategies. Basic strategies doesn't help much (Figure 6.2). Our advanced strategies don't help much either. The battleship can go in a number of places, and none of the rows or columns are within one of being filled. What can you do?...

Moving on, try the battleship at the bottom of column G. Surround the ship with water and complete column F with a ship segment at FL and complete column G with water at GN.

You now know the battleship is in column I. Try placing it next to the top, at IL-IM-IN-IO. (It can't start at IK since row K has no ship segments.) Surround the destroyer with water and complete columns C, D, and J with water.

When you've filled in all the spaces surrounding a square that contains a dot, you can convert the dot to its proper ship segment. Here, square IQ must be the left end of a destroyer...don't yet know what type it is, put a dot in it. That dot gives you water in FS. Your grid should now look like Figure 2.4.

Now you'll need to think. Consider the four places the battleship can go. The first is EN-EO-EP-EQ. That's not possible because to put it there, ER would have to contain water, giving you Figure 2.5.

Now go back to the basic strategies. Fill in square BP with a dot (remember not to assume it's a submarine—it could extend upward!), and EN-EO with a destroyer. This puts water at FM, FN, and FO (Figure 2.6).

Continue using the basic strategies. Column F must contain a destroyer at FK-FL, and water must go in GK, GL, and GM. Now look at row K. HM-IM-JM must be a cruiser. This puts water at HM, IN, and JN. You can also fill in FM, FJ, and GN with water.

This leaves you with row M. If the battleship were in M, then CL and CN would both contain water, making column C impossible. So the backpiece goes at CN-DN-EN-FN. With basic strategies, you'll get Figure 5.6.

Figure 5.7

Figure 6.1

Figure 6.2

Figure 6.3

Figure 6.4

Figure 6.5

Figure 6.6

Figure 6.7

When you've filled in all the spaces surrounding a square, you can convert the dot to its proper ship segment. Here, square IQ must be the right end of a destroyer...don't yet know what type it is, put a dot in it. That dot gives you water in FS. Your grid should now look like Figure 2.4.

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Figure 6.2

Figure 6.3

Figure 6.4

Figure 6.5

Figure 6.6

Figure 6.7
You can complete the puzzle with the basic strategies. Finish rows K and L first, and then columns B, G, and H. When you're done, your solution should look like Figure 2.8.

This example illustrates how a typical Battleships puzzle of medium difficulty can be solved. You start with the three basic strategies, then use some logical thinking to break through to the next step, and finish by again using the basic strategies.

More difficult puzzles require more of these thought steps. Here's an example (Figure 3.1). Using the basic strategies, you can get to the point shown in Figure 3.2. Now try the advanced strategy of finding where the biggest remaining ship goes. In this case, the biggest ship not yet placed is the battleship. It can only go in column I: put water in it, since the battleship in the top of column I will use up all four allotted ship segments (Figure 3.3).

As always, after using an advanced strategy, you should reapply the basic strategies. You'll find you can put water in all the empty spaces of rows L and N, as well as in HK, HM, HO, JK, JM, and JO since they're diagonally adjacent to ship segments (Figure 3.4).

This is as far as you'll get with the basic strategies. It's time to try advanced strategy again. You know roughly where the battleship goes (somewhere at the top of column I); ... Two of those three must contain cruisers. If a cruiser goes in row K, it can only fit in the center section of that row (Figure 3.6).
By now, you should know enough to get through all but the toughest of Battleships puzzles. Further advancement requires practice and more advanced strategies. Take a look at the next puzzle (Figure 4.1).

After using the basic strategies, the puzzle should look like Figure 4.2. The biggest ship not yet placed is the battleship. Where can it go? Plenty of places: It could fit in one place in row N, one place in column B, or in any of four places in column J. You probably don't want to try that many possibilities.

It's time for a different strategy: Look around the board for rows and columns that are almost determined. In particular, look for rows and columns in which the number of possible squares is... segment; fill it in with water. After filling CN with water, the basic strategies will take you a long way (Figure 4.3).

Now you go back to the first advanced strategy: Where can the biggest remaining ship go? In this case, you still need to place two destroyers. You can fit one of them in row K; they must be... they go at FK-GK, so CK is water, leaving CS-CT for the other destroyer (Figure 4.4).

From here, you just need to make the dot at CL a submarine and fill the blank squares with water, and you're done (Figure 4.5).