



Fathom It! Help Contents

Click the colored, underlined words to see a definition or jump to another topic.

The Contents lists all the Help topics for Fathom It!.

To learn how to use Help, choose How to Use Help from the Help menu.

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Shareware and Registration Topics

Fathom It! is not free software, but is distributed as "Shareware". The topics listed below describe what Shareware is, and tell you how to register your copy of the program.

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What is shareware?

Shareware distribution gives users a chance to try software before buying it. If you try a Shareware program and continue using it, you are expected to register. Individual programs differ on details -- some request registration while others require it, some specify a maximum trial period. With registration, you get anything from the simple right to continue using the software to an updated program with a printed manual.

Copyright laws apply to both Shareware and commercial software, and the copyright holder retains all rights, with a few specific exceptions as stated below. Shareware authors are accomplished programmers, just like commercial authors, and the programs are of comparable quality (in both cases, there are good programs and bad ones!) The main difference is in the method of distribution. The author specifically grants the right to copy and distribute the software, either to all and sundry or to a specific group. For example, some authors require written permission before a commercial disk vendor may copy their Shareware.

Shareware is a distribution method, not a type of software. You should find software that suits your needs and pocketbook, whether it's commercial or Shareware. The Shareware system makes fitting your needs easier, because you can try before you buy. And because the overhead is low, prices are low also. Shareware has the ultimate money-back guarantee -- if you don't use the product, you don't pay for it.

ASP Ombudsman Statement

This program is produced by a member of the Association of Shareware Professionals (ASP). ASP wants to make sure that the shareware principle works for you. If you are unable to resolve a shareware-related problem with an ASP member by contacting the member directly, ASP may be able to help. The ASP Ombudsman can help you resolve a dispute or problem with an ASP member, but does not provide technical support for members' products. Please write to the ASP Ombudsman at 157-F Love Ave. Greenwood IN 46142 USA, FAX 317-888-2195, or send email to omb@asp-shareware.org.

How to Register Fathom It!

Fathom It! is distributed to you by a method known as shareware. Shareware is not free software but is distributed so that you may try it out before deciding whether to buy it.

If you find the evaluation version of Fathom It! enjoyable, consider ordering the full-blown registered version. The registration form accompanying the software tells you how to order. Registering entitles you to the following benefits:

- The latest version of Fathom It!
- 32,000 Fathom It! boards, divided into easy, intermediate, hard and expert categories!
- Notices and discounts on future upgrades, board libraries and new products!
- Removal of all registration reminder screens!

CompuServe

To register through CompuServe, you need to have a CompuServe account.

- 1 Log on to CompuServe.
- 2 At any prompt type "GO SWREG".
- 3 Select registration ID# 16402.

The registration fee will be billed to your CompuServe account.

Internet (World Wide Web)

Mountain Vista Software's WWW home page is located at:

- <http://www.mountainvistasoft.com>

To register Fathom It!, follow the instructions found on the home page.

Public Software Library

You can order Fathom It! (PsL product #15059) with MasterCard, Visa, Amex or Discover from Public Software Library by calling the following US numbers:

- 800-2424-PSL Ext. 15059 (toll-free number in the US)
- 713-524-6394 Ext. 15059
- 713-524-6398 (FAX)

When ordering by FAX or mail, please be sure to type or print your personal information

very clearly.



THE PSL NUMBERS ABOVE ARE FOR ORDERS ONLY. Any questions about the status of the shipment of the order, product details, technical support, etc. must be directed to Mountain Vista Software at:

info@mountainvistasoft.com

or at the address below:

Mountain Vista Software
Shatner Center
P.O. Box 34208
Jerusalem 91341
ISRAEL

Tel/Fax: +972-2-6513769

Mail

To register by mail (cash or checks only, all currencies accepted), click the words "Fathom It! Registration Form" below and print the registration form.

 [Fathom It! Registration Form](#)

Fathom It! Registration Form

To print the following form, select Print Topic from the File menu above.

For your convenience, you may register with check or money order. All foreign currencies are accepted. Registration includes:

- The latest version of Fathom It!
- 32,000 new original Fathom It! boards, divided into easy, intermediate, hard and expert categories!
- Notices and discounts on future upgrades, board libraries and new products!
- Removal of all registration reminder screens!

Name:

Address:

City:

State:

Zip:

Country:

Telephone:

Fax:

E-mail:

Yes, I would like to purchase _____ copies of Fathom It! at US\$24.95 each.

Sub-Total: _____

Add US\$4.00 for shipping and handling: _____

Total: _____

Please make checks payable to Mountain Vista Software. Send to:

Mountain Vista Software
Shatner Center
P.O. Box 34208
Jerusalem 91341
ISRAEL

Where did you get your shareware copy of Fathom It! (BBS, On-Line Service, a friend, or any other source)?

Comments? Criticisms? Accolades?

Thank you for your support!

Technical Details

Development Tools

Unless stated otherwise, all programs were developed using Borland C++ 3.1 and Windows API calls.

Fathom It! Software Components

The Fathom It! program consists of:

- The graphical Windows application.
- The board database. Contains thousands of valid Fathom It! boards, sorted by board size and difficulty level.
- The on-line automatic solver. A rule-based, expert system capable of solving every board in the database. The solver is called when the user requests a hint.

Off-line Auxiliary Programs

Fathom It!'s board database file contains thousands of boards. In addition to being graded into levels of difficulty, each board is guaranteed to have a unique solution. To ensure this, boards are pre-generated, checked, tested and graded off-line, before being included in the board database. To perform this work, several off-line DOS programs were written:

- Off-line board generator. Written as a DOS application, this generates a valid Fathom It! board by legally placing all ships on an empty board. This results in a specific set of row and column tallies. On the average, there are about 1500 distinct ways to place all the ships on a 10x10 board that will result in the identical row and column tallies. The generator program guarantees a unique solution for the board by providing the minimal number of 'starting-off' hints to ensure a single solution.
- Off-line board solver. A DOS application that accepts a board with a unique solution, and attempts to solve the board using its rule-based expert system. Based on the rules used to solve the board, the board is rated as easy, intermediate, hard or expert. The on-line automatic solver uses the identical source code as the off-line version.
- Off-line database creation program. Processing the output of the off-line board solver, this program creates the boards database file. Originally written as a DOS application, it was later converted to a Win32 console app (to handle the large in-memory requirements).

Other Software Products Used

- The help authoring system used was the shareware product Visual Help (v2.1i) by WinWare Inc.
- The setup program used was Kurt P. Herzog's shareware product Install/Setup (version 1.7).

See Also

[Interesting Statistics about Fathom It!](#)

Interesting Statistics about Fathom It!

Generating and solving thousands of Fathom It! boards uncovered many interesting statistics about boards, hints, possible solutions, etc.

Distribution of board difficulty ratings

All Fathom It! boards are randomly generated and then analyzed to guarantee a unique solution. This unique board configuration is then passed to the off-line solver. Based on the steps used by the solver to solve the board, the board is given one of the following difficulty ratings: easy, intermediate, hard or expert. In the event the solver cannot solve the board, it is discarded and not included in the Fathom It! board database.

The distribution of difficulty ratings for 10x10 (7x7) boards produced by the off-line solver is approximately:

- Easy: 6% (34%)
- Intermediate: 39% (59%)
- Hard: 35% (2%)
- Expert: 19% (57%)
- Unsolved: 1.5% (0.003%)

Distribution of 'starting-off' hints

To guarantee a unique solution for a board, Fathom It! provides the minimal number of 'starting-off' hints (i.e. revealed squares) to disambiguate the board. A board may have zero or more hints. The distribution of hints, taken from a sample of 32,000 randomly generated 10x10 (7x7) boards, is:

- 0: 2% (5%)
- 1: 7% (55%)
- 2: 35% (39%)
- 3: 44% (2%)
- 4: 13% (0.006%)
- 5: 1% (N/A)
- 6: 0.003% (N/A)

To date, no 10x10 board has been found to need more than 6 hints. In a sample of 32,000 randomly generated 10x10 boards, only one board needed 6 hints.

Non-unique board solutions

Given a set of valid row and column tallies, there are, on the average, approximately 1575 solutions. Fathom It! guarantees a unique solution by revealing the minimal

number of starting hints that eliminate all but one solution. The distribution of possible solutions, taken from a sample of 32,000 randomly generated 10x10 boards, is as follows:

- 1-1000: 64.9%
- 1001-2000: 13.9%
- 2001-3000: 7.0%
- 3001-4000: 4.3%
- 4001-5000: 2.6%
- 5001-6000: 1.8%
- 6001-7000: 1.1%
- 7001-above: 4.5%

The distribution of possible solutions, taken from a sample of 32,000 randomly generated 7x7 boards, is as follows:

- 1 - 10: 53.0%
- 11 - 20: 26.6%
- 21 - 30: 11.1%
- 31 - 40: 4.4%
- 41 - 50: 2.3%
- 51 - 60: 1.0%
- 61 - above: 1.6%

Do the numbers of ambiguous solutions exhibit any mathematical properties?

It would have been quite interesting had the number of ambiguous solutions exhibited some mathematical pattern (e.g. primes, non-primes, Fibonacci series, Farey series). Examining the set of 10x10 board solutions in the range 1-1000, every number appears except for five numbers (596, 835, 838, 849 and 947). The conclusion is that a board can always be found with a specific number of ambiguous solutions.

The largest known number of solutions for any single board

To date, the largest number of solutions for a single board is 93,124.

Uninstalling Fathom It!

I'm sorry Fathom It! does not meet your requirements. Here's what you do to get rid of it:

The complete list of Fathom It!-related files installed on your hard disk can be found in the "Packing List" section of the VENDINFO.DIZ file.

All of these files, including VENDINFO.DIZ, should be together in the directory in which they were installed. The default installation directory is "C:\FATHOMIT", but any directory could have been used. If you are unsure where they are located, choose "Search..." from the File Manager's "File" menu and enter "FATHOMIT.*" as the file name to search for. Choose the root directory of the installation drive (most commonly "C:\") and choose to search all directories. When you locate the above files, simply delete them.

If you installed Fathom It! in its own directory (that is, by itself) you need only select that directory in File Manager and press "Delete".

If the Fathom It! Program Manager icons created during the installation are still in their own group (and you have added nothing else to the group) just select the group in Program Manager, and then choose "Delete" from the Program Manager "File" menu.

If you have moved the icons to other groups you will have to track them all down and delete them individually from those groups.

Delete the file FATHOMIT.INI found in your Windows directory.

If you ran Fathom It! under Windows 3.x or NT 3.x, remove the following lines from the [sounds] section of WIN.INI:

```
[sounds]
...
Fathom It!_Banner=...
Fathom It!_LoseGame=...
Fathom It!_NewGame=...
Fathom It!_Step=...
Fathom It!_Tick=...
Fathom It!_WinGame=...
Fathom It!_WrongMove=...
```

If you ran Fathom It! under a Win32 version of Windows (e.g. Windows 95, Windows 98 or Windows NT 4.x), remove all Registration Database entries that contain the string "FathomIt". Run the REGEDIT program, select the "Find" option in the "Edit" menu and specify the string "FathomIt". When a match is found, carefully (!) remove it by pressing the Delete key. To find the next match, press F3. Continue until no matches can be found.

Fathom It! does not modify your AUTOEXEC.BAT or CONFIG.SYS files.

Please feel free to pass your unregistered distribution disk along to someone ... maybe they would enjoy using the program.

The author would like to hear from you about your experience with this program. Where do you feel it is inadequate? What would make it better?

Thank you for trying Fathom It! ...

Acknowledgements

It gives me great pleasure to thank everyone involved in the development and testing of Fathom It!. Without their help and feedback, Fathom It! would not have had the polished finish it does.

- Shmuel Siegel, for the most thorough testing any developer could hope for from a single person. He never ceased to amaze me by the genius and originality displayed in solving the toughest Fathom It! boards. Whether solving Fathom It! boards or discussing the inner workings of the automatic board solver, Shmuel consistently provided original ideas and suggestions.
- Steve Gale, for his creative suggestions and testing feedback. Together with Shmuel, Steve was the perfect sounding board for discussing board solving or program design.
- David Baron, for enjoying Fathom It! enough to play it daily for over two years. I couldn't have asked for a better market survey.
- Rafi Goldrich, for his excellent user interface suggestions, for helping solve some sticky technical problems, and for goading me to get Fathom It! out.
- Phil Chernofsky, for providing his typically high standard of beta tester feedback.
- Yehudah Warshaw, an accomplished shareware author himself, for gladly sharing his remarkable store of shareware lore and knowledge.
- My colleagues at Accent Software, for their suggestions and encouragement: Naama Bamberger, David Goldstein, Hannah Groumi, Yehudit Halle, Abby Kehat, Dan Ostroff, Adina Rabinowitz, Meir Schreiber, Michael Taub and Randy Wohl.
- Yitzchak Gale, for testing Fathom It! and providing insightful feedback.
- Four excellent CompuServe beta testers, who provided first-rate feedback while testing version 0.81: Ben Herring, Dave Lamoureux, Gerald Rhodes and Franziska Tinner.
- Jaime Poniachik, creator of Solitaire Battleship, editor and co-owner of Juegos & Co. (Buenos Aires), a publisher of quality puzzle magazines popular in Argentina and elsewhere in South America. Jaime gave his kind permission to implement Solitaire Battleship as a shareware program.
- Peter Gordon and Mike Shenk, for editing the Battleships column in Games Magazine, the column that initially "hooked" me on Solitaire Battleship and inspired Fathom It!.
- Bob Rosenschein of Accent Software, for permission to use company computers after hours, enabling me to generate Fathom It! boards in a matter of days rather than weeks.
- Fran Schnall, for her high quality proof-reading and editing of the final product.
- My nephews (and game aficionados) Akiva Felt, Yoel Rubin and Binyamin Rubin, for excellent ideas and suggestions, and for giving me the "younger generation" view of things.
- My wife Rochelle and our children Nachum, Chani, Dvora, Tzivya and Shoshana, for putting up with me during the development of Fathom It!. Without Rochelle's constant encouragement throughout, Fathom It! might never have seen the light of day.

About the Author

Moshe Rubin, the author of Fathom It!, is a professional software engineer at Accent Software International in Jerusalem, Israel. He holds a B.Sc. in Computer Science, and has been a Windows programmer since the days of Windows 2.0 (a long time ago!).

When not occupied with his professional work or improving Fathom It!, he has been known to publish technical articles in prestigious magazines, such as Windows Tech Journal and Windows Developer's Journal.

His other interests are playing the English Concertina and classical guitar, and trying to explain the intricacies of Fathom It! to his wife Rochelle and children (Nachum, Chani, Dvora, Tzivya and Shoshana).

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Mountain Vista Software
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Jerusalem 91341
ISRAEL

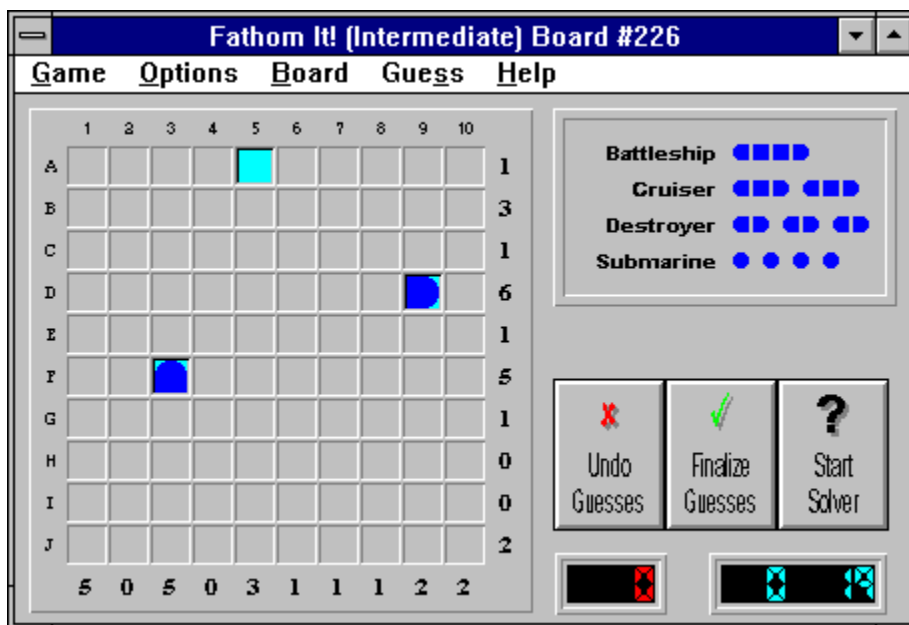
Tel/Fax: +972-2-6513769

What is Fathom It! ?

Click the colored, underlined words to see a definition or jump to another topic.

Fathom It! is a challenging and fascinating adaptation of the GAMES Magazine column, "Battleships". Unlike the classic game of Battleship, your mission is to solve the board by locating the underlying fleet of ships using logic alone.

A Fathom It! board is a grid representing a section of ocean in which an entire fleet of ships is hiding. The fleet consists of a known number of battleships, cruisers, destroyers and submarines. The following is a typical starting Fathom It! board:



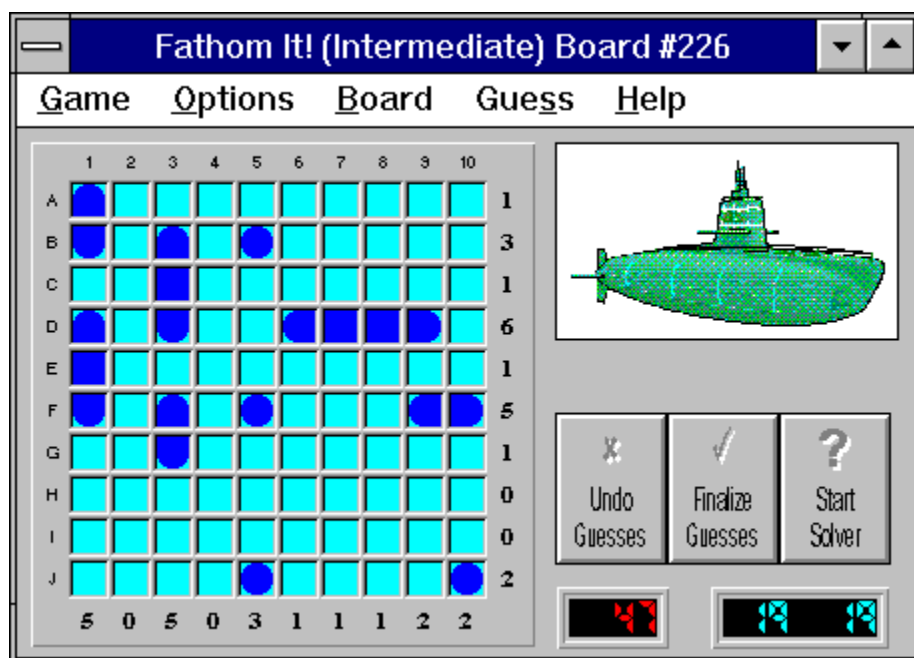
- For more information, position the cursor over any portion of the above board and click the left button.

The ship display in the upper right-hand portion of the window tells you the fleet consists of one battleship, two cruisers, three destroyers and four submarines. Ships in the display may be in a different color than all the other ships. This means that those ships have already been found, while all other ships have yet to be found.

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

On a board, a few shots may have been taken to start you off. They may show water, a complete submarine (a circle), or the middle (a square) or the end (a rounded-off square) of a longer vessel.

To give you an idea of what a solved board looks like, here is the above board completely solved:



See Also

- [Playing the Game](#)
- [Step-by-Step Tutorial](#)
- [Scoring](#)
- [Strategy and Hints](#)

Commands

- [Game Menu Commands](#)
- [Options Menu Commands](#)
- [Board Menu Commands](#)
- [Guess Menu Commands](#)

Playing the Game

Click the colored, underlined words to see a definition or jump to another topic.

You can learn Fathom It! quickly, though mastery of the game takes longer. You will find that almost every board presents unique situations, necessitating new techniques, rules and insights to solve it. Whatever your aspirations, you'll enjoy the game.

Objective of the game

The objective of Fathom It! is to solve a given board by correctly locating all underlying ships.

Solving a Fathom It! board consists of toggling and correctly finalizing all unknown squares.



Finalizing squares is the essence of solving Fathom It! boards -- be sure to read about it below!

Toggling a board square

Toggling a square consists of positioning the cursor over a grid square, clicking the toggling mouse button continuously until you see the ship segment type you want. You will notice a number inside the ship segment type (the toggle level number), denoting a temporary guess. The possible ship segment types are:



Water



Submarine



Middle segment



End segment (possible end segments are a top, right, bottom or left)



Segment wildcard. A segment wildcard represents a ship segment, but no segment in particular. This is useful when you know that a square is definitely a segment (rather than water), but are not certain whether it is a submarine, middle or end segment.

To quickly toggle all squares in a row (column) to water, double-click the coordinate (tally symbol).

Finalizing a board square

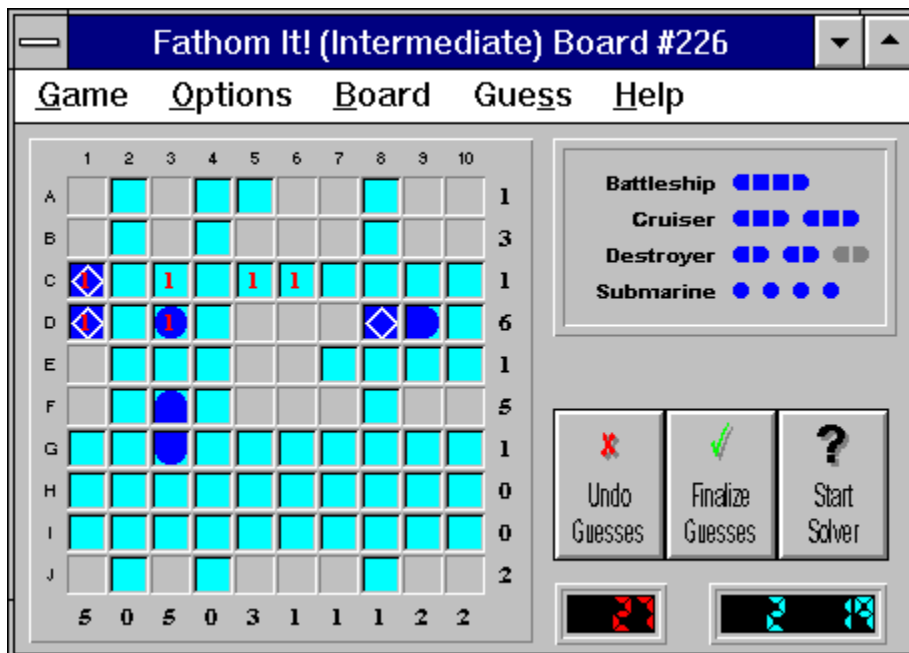
If you are sure about your guess, finalize the square by positioning the cursor over the square and clicking the finalizing mouse button. If your guess is correct, Fathom It! will display the ship segment without the number inside the segment. If your guess is incorrect, Fathom It! will tell you so and allow you to continue the game.

Why should you finalize a square? When you finalize a square, Fathom It! automatically finalizes other obvious squares for you (this is known as "smart fill"). For example, if you correctly finalize a submarine, Fathom It! will reveal the water squares around that submarine. In addition, Fathom It! will also smart-fill any rows or columns that have no remaining ship segments (i.e. only water remaining).

Finalizing removes the tedium of toggling and finalizing obvious squares, letting you concentrate on the puzzle aspects of the board.

Example of a board during the solving stage

The following shows a board during the solving stage. Notice both the temporary and finalized squares, and the segment wildcard.



For a real-life example of solving a Fathom It! board, see [Guess Toggle Levels](#).

Requesting a hint

The more you play Fathom It!, the more proficient you will become. In the beginning, however, you may want a little help from Fathom It!. Press F7 or click the Start Solver button to ask Fathom It! for a hint. Fathom It! will ignore all temporary guesses currently visible, analyze the board and suggest a hint.

Using the keyboard

You may prefer to use the keyboard rather than the mouse to play Fathom It!. A red frame will highlight the current square, and the SPACE and ENTER keys perform toggling and finalizing, respectively.

To use a keyboard, rather than a mouse: open the Options menu, choose Enable Keyboard.

Minimizing Fathom It! quickly

If you are playing Fathom It! in less than perfect surroundings (for example at school or at work), you can press ESC (also known as the BOSS key) to make the game instantly disappear from your screen. Fathom It! will become a minimized icon. You can restore Fathom It! to its normal size at any time by pressing ALT+TAB.

To minimize Fathom It! quickly, press the ESC key.

Customizing Fathom It!

From the Options menu, choose Customize Game, or press F9. This will display the Customize Game dialog box.

You can resize the entire window and its contents, the sounds played, the contents of the ship display window, whether pictures should be displayed, and more.

See Also

[Step-by-Step Tutorial](#)

[Scoring](#)

[Strategy and Hints](#)

[What is Fathom It! ?](#)

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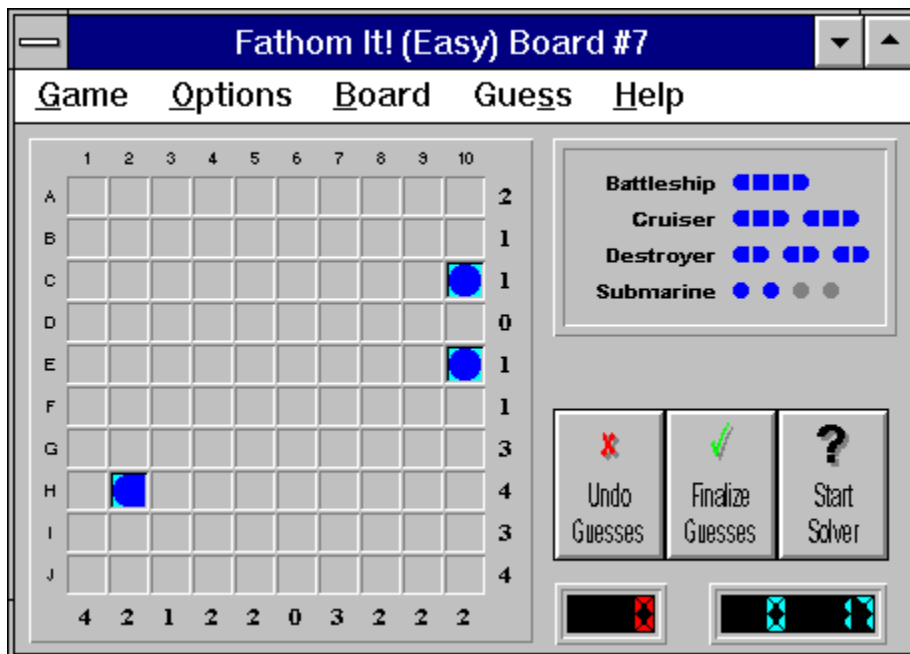
Step-by-Step Tutorial

In this tutorial you'll learn how to solve a simple Fathom It! board. You'll also learn the basics of toggling, finalizing, and using the automatic [solver](#).

Let's solve Fathom It!'s Easy 10x10 board #7. Make sure Fathom It! is presenting Easy 10x10 boards by looking at the main window. The board displayed should have ten rows and ten columns, and the window title bar should show "Fathom It! (Easy) Board #n". If it does not, select the Board menu option, and click on both "Easy" and "10x10".

Open board #7 by selecting Game | Select Game from the menu, or just press F3. Type "7" in the "Game Number" dialog box. Press OK to bring up the board.

[Click to advance to the next step](#)



The object of playing Fathom It! is to solve the board using logical deduction. Your goal is to locate the fleet of ships by revealing their ship segments. You do this by:

- identifying the contents of a square (or squares) using logical deduction
- "toggling" the square, choosing and displaying the correct type of ship segment (i.e. top, right, left, bottom, submarine, middle, wildcard) by clicking the left mouse button over the square
- "finalizing" the square by clicking the right mouse over the square

When you correctly finalize every square on the board, you've solved it! Let's toggle and finalize our first square: (H,3).

Identifying Square (H,3)

The left ship segment at (H,2) could belong to a destroyer, cruiser or battleship. This means that square (H,3) is either a middle or a right segment. One thing is for sure: the square next to it, (H,3) is definitely a ship segment. Here's what the square looks like right now:



Toggling Square (H,3)

Let's toggle the square. Point the mouse cursor at square (H,3) and click the left button once. You should now see:



The ship segment displayed at (H,3) is called a middle segment. Let's toggle again. You should now see:



The segment you see is called a right segment. Toggling again, you should see:



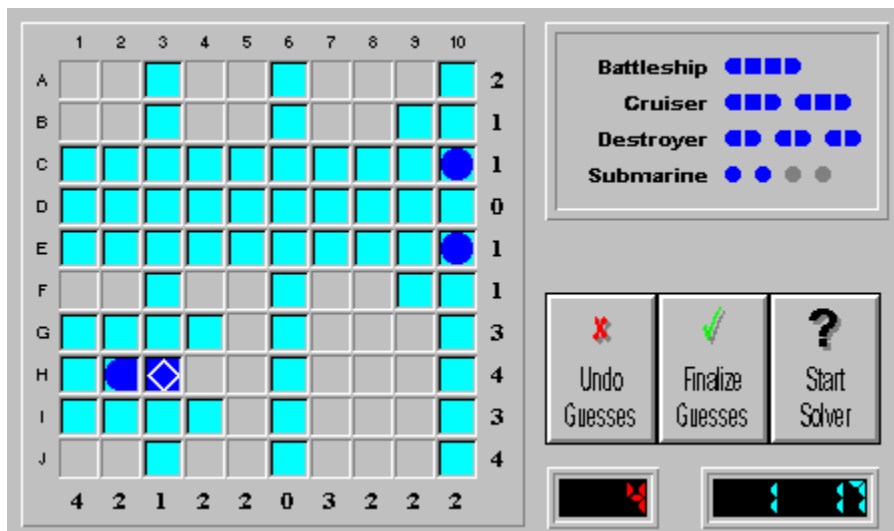
This important ship segment is called a wildcard segment, and means "a ship segment, but I'm not yet sure which one". Since we're not yet sure what type of segment (H,3) is (it can be either a middle or right segment), we'll use the wildcard for now.

Finalizing Square (H,3)

Until we finalize square (H,3), Fathom It! knows nothing about our guess. Finalize the square by pointing to it and clicking the right button. A lot of action takes place now, and you should now see ...

[Back \(step 1\)](#)

[Forward \(step 3\)](#)



"Smart-Filling" Obvious Water Squares

A lot has happened since finalizing square (H,3)! Besides displaying a finalized wildcard segment in (H,3), Fathom It! has automatically filled in many squares that were obviously water.

- Column 3 has a tally of one. With (H,3) a ship segment, the rest of the column must be water.
- Column 6 has a tally of zero, so all squares in the column must be water.
- Column 10 has a tally of two. Given the two hints in column 10, the remaining squares must be water.
- Row C has a tally of one. The starting hint of a submarine in (C,10) accounts for the tally, so the remaining nine squares are all water. The same is true for row E.
- Row D has a tally of zero, so all squares in the row are water.
- Because ships cannot be adjacent to each other, the squares around the left segment and wildcard along row H must be water. Similarly, the squares around the submarines in column 10 have been filled in as water.

By "smart filling" obvious water squares, Fathom It! removes much of the drudgery of board solving, allowing you to concentrate on the puzzle aspects of the board.

Identifying More Squares

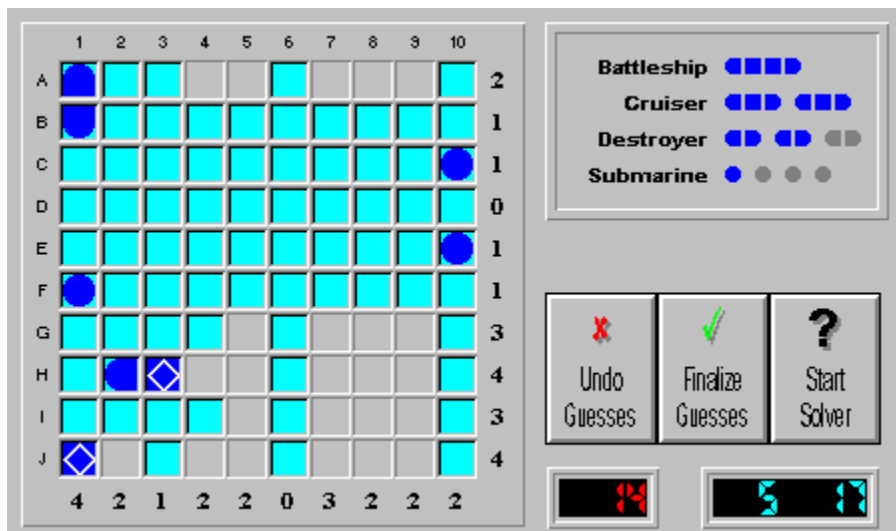
Column 1 has a tally of four. Since there are exactly four unknown squares remaining, they must all be ship segments. Toggle the unknown squares in column 1:



and finalize the squares. The board should now look like:

[Back \(step 2\)](#)

[Forward \(step 4\)](#)

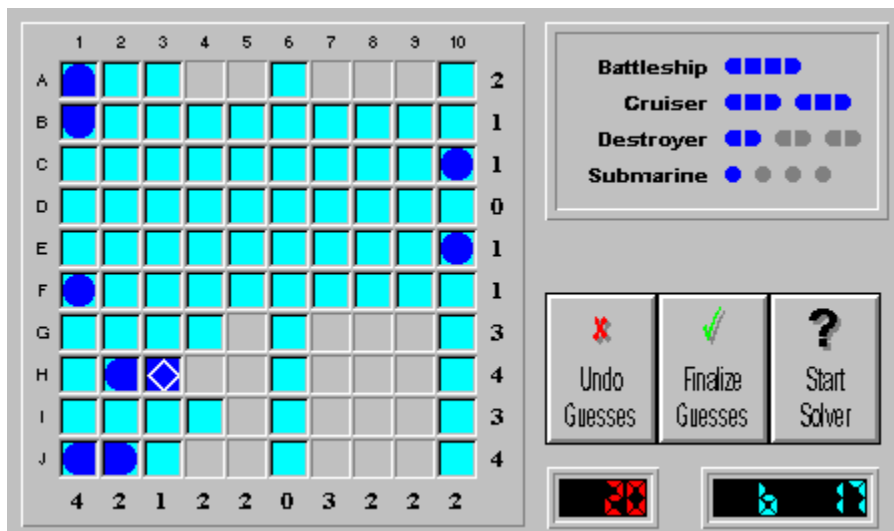


Like the previous step, column 2 has a tally of two. Square (J,2) must be the remaining ship segment. Toggling (J,2) to a wildcard segment (or a right segment):



and finalizing, you should see the following board:

[Back \(step 3\)](#)
[Forward \(step 5\)](#)



Using Fathom It!'s Automatic Solver

We'll let the automatic solver find our next move. Click on the "Start Solver" button (or press F7) to start the solver. Within seconds, Fathom It! recommends the following:

"1 battleship can be placed in exactly one way: (H,2)-(H,5)"

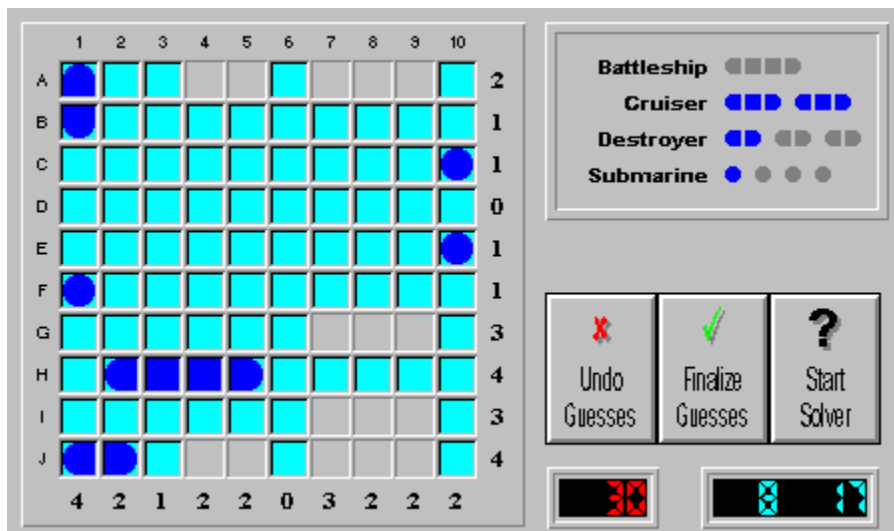
The automatic solver has found that the battleship can only be placed in the squares (H,2) through (H,5). Sure enough, the battleship cannot be placed anywhere else on the board (take a moment to convince yourself this is true). Therefore, toggle square (H,4) to a middle segment, (H,5) to a right segment:



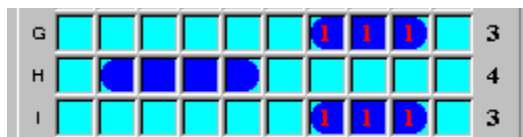
and finalize the squares. You should now see ...

[Back \(step 4\)](#)

[Forward \(step 6\)](#)

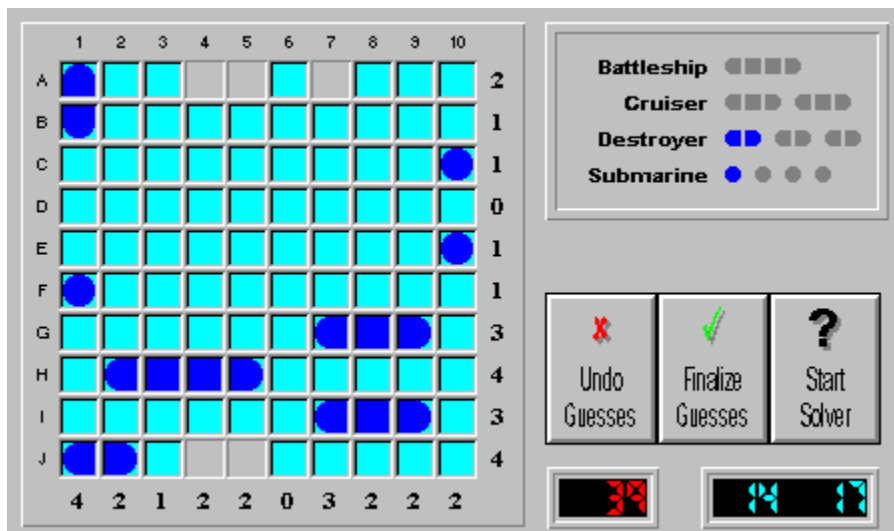


Rows G and I have tallies of three, and they both have exactly three remaining unknown squares. These must be the two cruisers! Toggling the squares in row G and I to cruisers:



and finalizing, you should see the following board ...

[Back \(step 5\)](#)
[Forward \(step 7\)](#)



You're almost there!

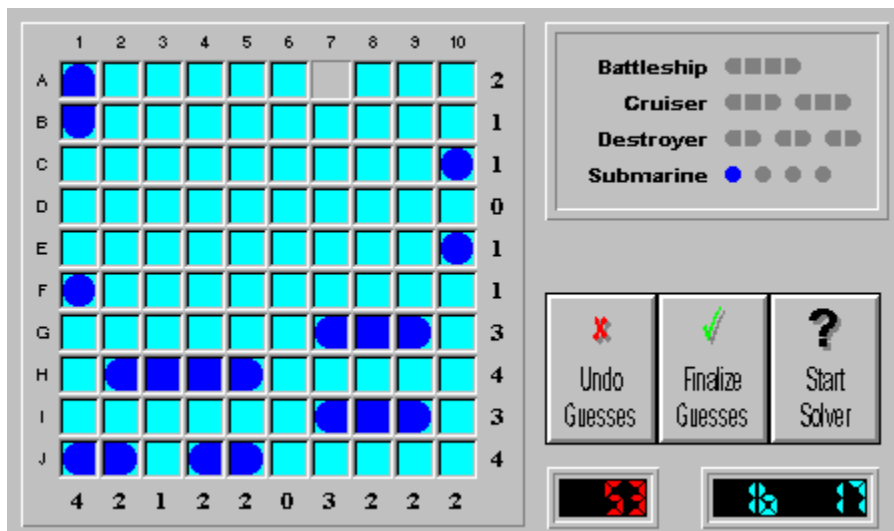
With a tally of four in row J, the squares (J,4) and (J,5) are ship segments and make up the last destroyer. Toggling in a destroyer:



and finalizing, you have the following ...

[Back \(step 6\)](#)

[Forward \(step 8\)](#)



The last remaining unknown square (A,7) is also the last remaining submarine. Toggle (A,7) to a submarine:



and finalize the square to solve the board ...

[Back \(step 7\)](#)

[Forward \(step 9\)](#)

	1	2	3	4	5	6	7	8	9	10	
A	●						●				2
B	●										1
C										●	1
D											0
E										●	1
F	●										1
G							●	●	●		3
H		●	●	●	●						4
I							●	●	●		3
J	●	●		●	●						4
	4	2	1	2	2	0	3	2	2	2	

Congratulations, you have completely solved the board!

You can now try your newly-learned skills on other easy boards. When you feel ready, you can move on to the intermediate, hard and expert boards.

Happy solving, and enjoy!

[Back \(step 8\)](#)

Scoring

Click the colored, underlined words to see a definition or jump to another topic.

Fathom It! provides two different methods of measuring performance while solving a board. Use either one or both of the methods to give yourself a competitive challenge!

By default, Fathom It! displays both performance methods in the lower right-hand portion of the board:



The red display on the left shows the running score, while the light-blue one on the right displays the number of squares finalized.

Running Score

Fathom It! displays a running (red) score of your game, and will notify you if you solve a board in record time (i.e. the lowest score). The object is to solve a board in the shortest time while incurring the least number of penalty points.

Using Fathom It!'s default settings, the following actions will add points to your score:

- The score is incremented by one point every second.
- Requesting and receiving a hint from Fathom It! costs 50 points. This includes asking Fathom It! to reveal a square (using the Reveal Square menu command in the Guess menu).
- An incorrect finalization (if Forgive Wrong Move mode is on) costs one half of the penalty points for receiving a hint (by default 25 points).

You can modify the score increment rate and penalty costs at any time by using the Customize Game dialog box.

Number of Squares Finalized

Fathom It! also displays the number of squares you finalize. This moves counter is displayed with light-blue digits, and consists of two numbers: yours and the automatic solver's finalization counts, respectively. Here, the object is to solve the board with a minimal number of finalizations.

When Fathom It! first presents you with a board, your finalization count is zero: you haven't finalized any squares yet. Every time you finalize a square as water or a ship segment, this count will be incremented by one. When the board is solved, you can see how many squares you needed to finalize to solve the board.

You may have noticed a second number together with your finalization count. This is the number of squares the automatic solver needed to solve the board. As an added challenge, try to beat the solver by solving the board with fewer square finalizations.

See Also

[Strategy and Hints](#)

[What is Fathom It! ?](#)

[Playing the Game](#)

Commands

[Game Menu Commands](#)

[Options Menu Commands](#)

[Board Menu Commands](#)

[Guess Menu Commands](#)

Strategy and Hints

Click the colored, underlined words to see a definition or jump to another topic.

This section contains helpful hints for playing Fathom It! successfully. As you play Fathom It!, you will undoubtedly discover new techniques, rules and tips that will elegantly solve even the toughest-looking boards.

- You can learn rules for solving Fathom It! boards by observing the automatic solver.
- Finalize your guesses as soon as possible. Fathom It! will fill in obvious squares with water, making it easier for you to solve the board.
- Use the segment wildcard (i.e. the diamond-shaped ship segment) when you want to finalize a square to a ship segment, but you don't know which specific segment. Fathom It! will fill in as many obvious squares as it can.
- Enable the Forgive Wrong Move feature when first playing Fathom It! until you feel comfortable with the mouse buttons and rules of the game.
- Try first placing the largest ship not yet found. You will often find there is only one possible position to place it.
- A middle ship segment (a square) must have segments on opposite sides. Check the row and column counts -- you can rule out any row or column with a count less than three.
- Explore a hypothesis by toggling squares without finalizing them. If you reach a contradiction, you can either undo all guesses at once (by clicking the "Undo Guesses" button or choosing the "Undo Level n Guesses" menu option) or remove the guesses one-by-one (by pressing the BACKSPACE key).
- You can toggle an entire row or column to water by double-clicking the coordinate or tally count of the row or column with the toggling mouse button.
- Any guess that leads to too many of any one ship type is wrong. Be aware of the number of submarines at all times. This can be very useful in rejecting a guess.
- No ship length can exceed the longest possible ship. For example, when solving a 10x10 board, a ship with five segments is not possible.
- You can configure the scoring to reduce the penalties for hints and wrong guesses by reducing the hint penalty in the Customize Game dialog box. To totally remove the score box, select the Options | Display | Display Score menu item.
- If you are playing Fathom It! in less than perfect surroundings (for example at school or at work), you can press ESC (also known as the BOSS key) to make the game instantly disappear from your screen. Fathom It! will become a minimized icon. You can restore Fathom It! to its normal size at any time by pressing ALT+TAB.

See Also

[What is Fathom It! ?](#)

[Playing the Game](#)

[Step-by-Step Tutorial](#)

[Scoring](#)

[Solver Rules](#)

Commands

[Game Menu Commands](#)

[Options Menu Commands](#)

[Board Menu Commands](#)
[Guess Menu Commands](#)

Automatic Solver

Click the colored, underlined words to see a definition or jump to another topic.

The automatic solver draws upon a collection of rules in order to solve the board and suggest a hint. To request the solver for a hint, do one of the following:

- click the mouse on the "Start Solver" button, OR
- press F7, OR
- from the Guess menu click Start Solver



For more information, position the cursor over any portion of the board below and click the left button.

Fathom It! Solver

	1	2	3	4	5	6	7	8	9	10	
A											2
B											1
C											1
D											3
E											3
F											3
G											1
H											1
I											1
J											4
	4	1	2	3	0	2	2	0	5	1	

Battleship ■■■■
Cruiser ■■■ ■■■
Destroyer ■■ ■■ ■■
Submarine ● ● ● ●

All squares remaining in column 2 are ship segments.

<First <Previous **Next** >Last
Give Hint Do It! Help Close

The following are rules used by the solver when analyzing a board:

Rules

- Rest of row/column is water
- Rest of row/column is ship segments
- Fill in ship segments around a ship segment
- Unbounded ship found in row/column
- Ship positions found
- Common ship segments found
- End ship segment has an adjacent anypiece
- End squares are ship segments
- All submarines are accounted for
- Last submarine can be found at row/column intersection

Contradictions

- Square must be a ship segment
- Square must be water
- Too many ship segments in row/column
- Not enough free squares
- Ship is too large
- Too many ships of specific type
- No places left to place specific ship
- Middle segment is flanked by adjacent water squares

Non-Rules

- Final board position

Solver Rule: The rest of the row/column consists of water

If all ship segments in a row or column are known and finalized, the remaining squares in the same row or column are water.

By default, Fathom It! automatically finalizes remaining water squares when all ship segments in the row or column have been finalized.

Solver Rule: The rest of the row/column consists of ship segments

If all water squares in a row/column have been found, the rest of the row/column consists solely of ship segments.

Example



In the example above, row A has a row tally of seven (that's the number to the right of the row). This means there are exactly seven ship segments hidden in row A. In other words, there are exactly three water squares to be found in row A. Since the three water squares have been found at (A,5), (A,6) and (A,10), the remaining unknown squares (A,7)-(A,9) must be ship segments.

Solver Rule: Fill in Segments Around a Middle Segment

A middle ship segment by definition has neighboring ship segments on opposite sides. If you can ascertain the direction of the middle segment (e.g. up/down or left/right), you can finalize segment wildcards on both sides of the middle.

Example

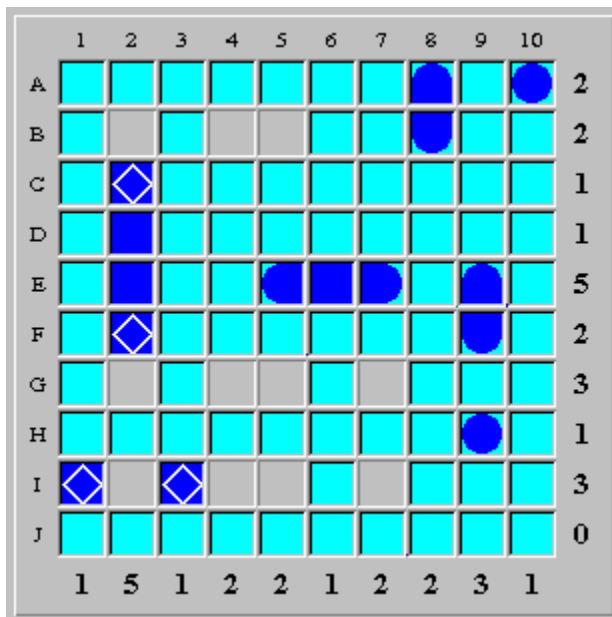
I	■	■	■	■	■	■	■	■	■	2
J	■	■	■	■	■	■	■	■	■	4
	0	6	1	4	0	2	1	2	1	3

In the example above, the middle segment at (J,7) is obviously part of a ship going from left to right. Therefore, the square (J,6) is a left segment, while (J,8) can be finalized as a segment wildcard.

Solver Rule: An Unbounded Ship was Found

A completely solved ship was found, even though it was not bounded on both sides by water or the board edge.

Example



In the above example, the ship segments (B,5)-(B,8) obviously comprise a battleship (because a battleship is the largest ship possible on a 10x10 board). Therefore, the squares (B,5) and (B,8) are left and right ship segments, respectively.

Solver Rule: Ship positions found

The solver is able to position as-yet unplaced ships. There are two "flavors" to this rule:

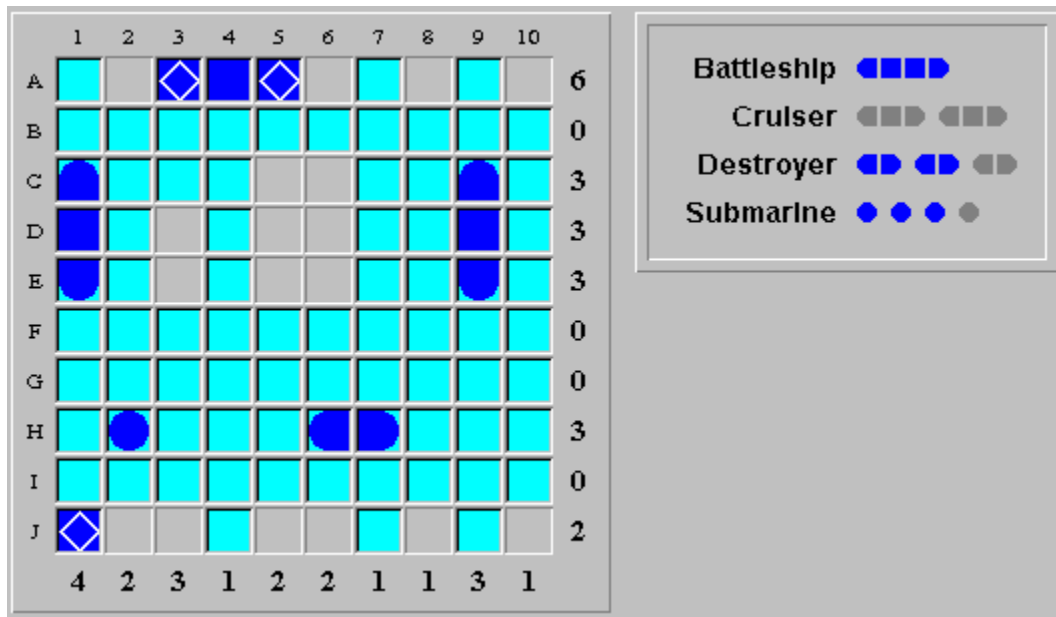
All remaining ships (of one type) are found

Several ships (of one type, including virtual ships) are found

Solver Rule: All ships (of one type) are found

There is one, and only one, way to place all remaining ships of a specific type.

Example



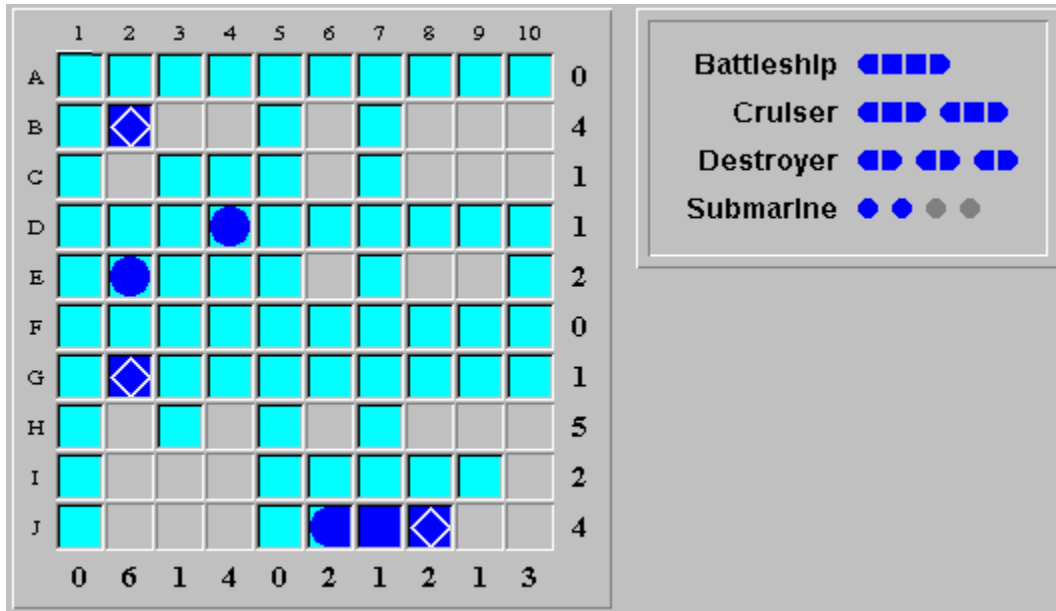
In the above board, there are two destroyers remaining to place. Examining the board, you can verify that there is one, and only one way to place the two destroyers:

- (D,3)-(E,3)
- (J,1)-(J,2)

Solver Rule: Several ships (of one type, including virtual ships) are found

One (or more) ships can be placed because they are common to all possible placements.

Example



There are six possible positions to place a cruiser:

- (B,2) - (B,4)
- (G,2) - (I,2)
- (H,4) - (J,4)
- (H,8) - (H,10)
- (H,10) - (J,10)
- (J,6) - (J,8)

(Placing a cruiser at (B,8)-(B,10) would close off too many squares along row H).

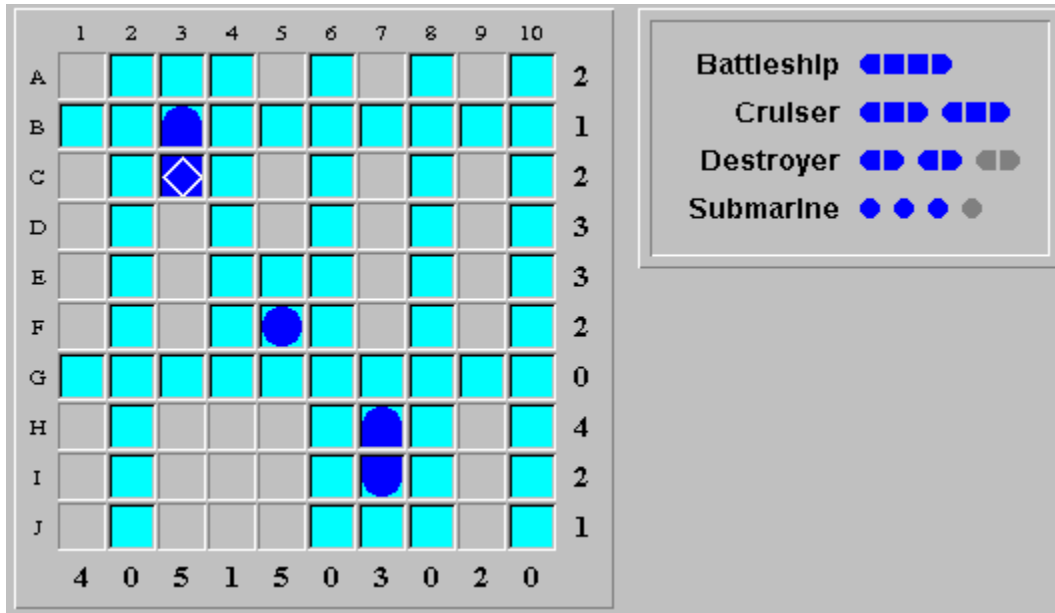
Examining the board, you can see that there are five valid ways to place the two remaining cruisers:

- (B,2)-(B,4) and (J,6)-(J,8)
- (G,2)-(I,2) and (J,6)-(J,8)
- (H,4)-(J,4) and (J,6)-(J,8)

- (H,8)-(H,10) and (J,6)-(J,8)
- (H,10)-(J,10) and (J,6)-(J,8)

A cruiser at (J,6)-(J,8) is common to each of the five placements. Therefore, a cruiser must be placed at (J,6)-(J,8).

Example (virtual ships)



The above board has three virtual cruisers remaining to place (one battleship and two cruisers). There are six valid virtual cruiser positions:

- (B,3) - (D,3)
- (C,1) - (E,1)
- (C,3) - (E,3)
- (D,1) - (F,1)
- (H,1) - (J,1)
- (H,3) - (H,5)

(There are two non-valid virtual cruiser positions: (H,3)-(J,3) and (H,5)-(J,5). Placing a virtual cruiser (i.e. three segment wildcards) at either of these positions would have completely closed off column 4, which must have one ship segment).

In how many ways can the three remaining virtual cruisers be placed on the board?
Here are the four valid ways to place them:

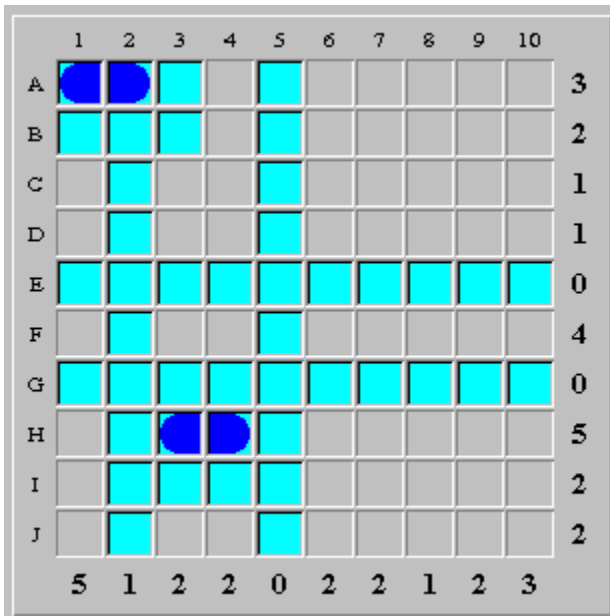
- (B,3)-(D,3), (C,1)-(E,1) and (H,3)-(H,5)
- (B,3)-(D,3), (D,1)-(F,1) and (H,3)-(H,5)
- (C,1)-(E,1), (C,3)-(E,3) and (H,3)-(H,5)
- (C,3)-(E,3), (D,1)-(F,1) and (H,3)-(H,5)

A virtual cruiser at (H,3)-(H,5) is common to the four valid placements above. No matter how we place the three virtual cruisers, there must be one at (H,3)-(H,5).

Solver Rule: Common Ship Segments Found

There are several candidate positions for the ship, and the positions overlap each other. In this case, the overlapped squares are ship segments (no matter which position is the correct one), allowing you to finalize the overlapped squares as segment wildcards.

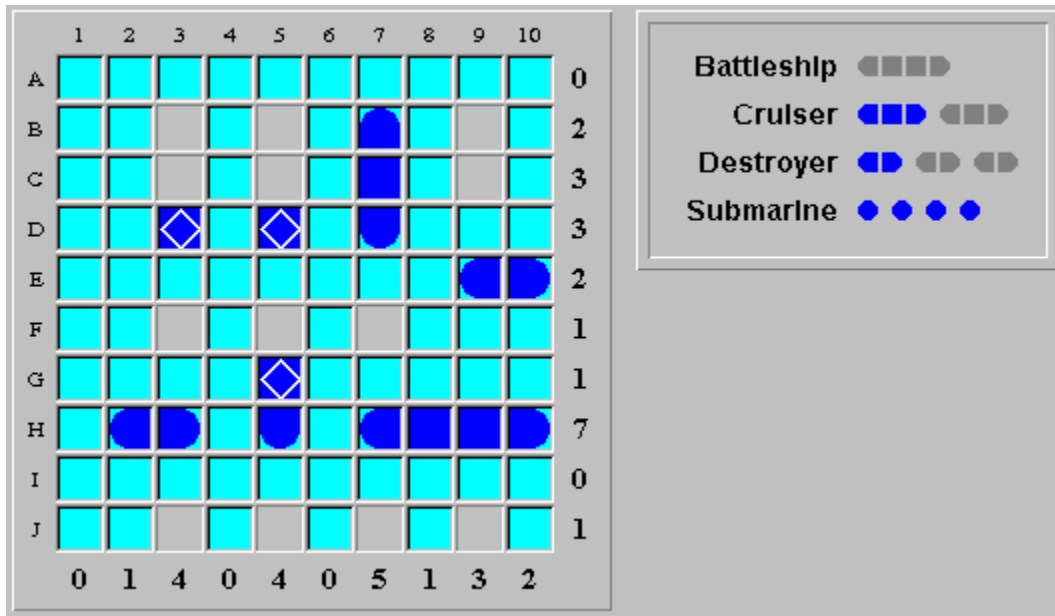
Example



The battleship can be placed in two possible positions only: (F,6)-(F,9) or (F,7)-(F,10). In both cases, the squares (F,7), (F,8) and (F,9) are ship segments, allowing you to finalize these three squares as segment wildcards.

There is an added "bonus" in the above case: because row F has a tally of four and the battleship is confined to the squares (F,6)-(F,10), the other unknown squares along the row (i.e. (F,1), (F,3) and (F,4)) must be water.

Example (virtual ships)



The above board has two virtual destroyers remaining (one cruiser and one destroyer). There are four valid virtual destroyer positions:

- (B,3) - (C,3)
- (C,3) - (D,3)
- (F,5) - (G,5)
- (G,5) - (H,5)

(The destroyer position (C,5)-(D,5) is not valid, as it would result in four destroyers on the board).

In how many ways can the two remaining virtual destroyers be placed on the board? Here are the three valid ways to place them:

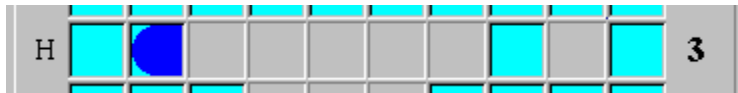
- (B,3)-(C,3) and (G,5)-(H,5)
- (C,3)-(D,3) and (F,5)-(G,5)
- (C,3)-(D,3) and (G,5)-(H,5)

It is obvious that a virtual destroyer must be placed in either (B,3)-(C,3) or (C,3)-(D,3). Since the square (C,3) is common to both positions, (C,3) must be a ship segment.

Solver Rule: End Segment has an Adjacent Segment Wildcard

By definition, all end ship segments (i.e. top, right, bottom and left) have another ship segment connected to them.

Example



In the example above, the left ship segment at (H,2) must have a neighboring ship segment at (H,3).

Even if you don't know the exact type of ship segment (in the example above, (H,3) might be a right or middle ship segment), you can finalize the square as a segment wildcard (a diamond-shaped segment).

Solver Rule: End Squares are Segment Wildcards

This rule is applicable when a row or column has one remaining water square left to find, and the remaining non-water squares are connected. The end squares of the connected sequence cannot be water, as this would force a ship exceeding the largest ship size.

Example



In the example above, the row has a tally of five. Since four water squares have been found, there is one remaining water square to locate.

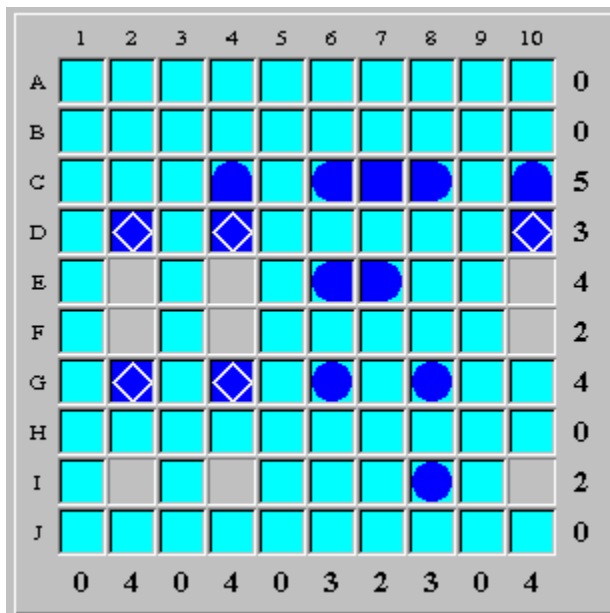
There are six non-water squares in a connected sequence: (I,5) to (I,10). The square (I,5) cannot be the last remaining water, as this would force a ship of length five in (I,6) to (I,10). Likewise, (I,10) cannot be water. This allows us to finalize the end squares as segment wildcards.

Solver Rule: All submarines are accounted for

If all submarines on the board can be accounted for, you may be able to finalize other squares as ship segments. In this case, you know that other finalized ship segments cannot be submarines, and therefore must have an adjacent ship segment.

Note that you do not necessarily need to know the exact positions of the submarines. Knowing which rows or columns they reside in may be enough.

Example



The board shown above has four submarines to be found.

Three finalized submarines are shown: (G,6), (G,8) and (I,8).

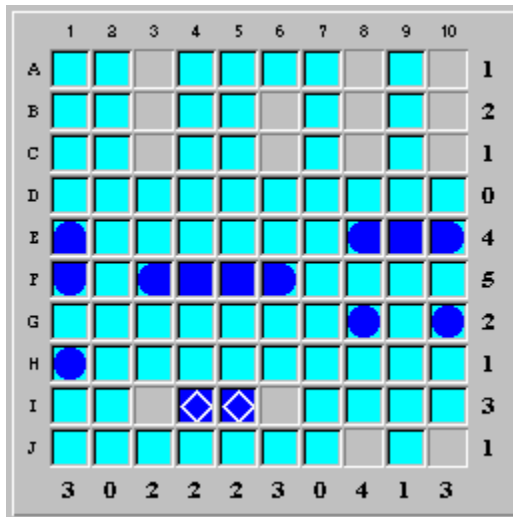
Examining the board shows that the last submarine must reside somewhere along row I. This is because wherever the remaining ship segment in row I is, it is a submarine.

Having accounted for all four submarines, we know that the ship segments (D,2), (G,2) and (G,4) cannot be submarines. If any of the squares (E,2), (F,2) or (F,4) were water, this would create an unacceptable fifth submarine. Therefore, (E,2), (F,2) and (F,4) must all be ship segments.

Solver Rule: Last submarine can be found at row/column intersection

This rule enables you to locate the last remaining submarine. If the last submarine is known to reside in both a specific row and a specific column, the submarine is located at the intersection of the row and column.

Example



The board shown above has four submarines to be found.

Three finalized submarines are shown: (G,8), (G,10) and (H,1).

Examining the board shows that the last submarine must reside somewhere along row J. This is because wherever the remaining ship segment in row J is, it is a submarine.

Using similar logic, however, we know the last submarine must also reside along column 10. Again, this is because wherever the remaining ship segment in column 10 is, it is a submarine.

The only location for the last submarine that will satisfy both assertions is the intersection of row J and column 10: square (J,10).

Solver Rule: Square must be a Ship Segment

The specified square must be a ship segment and not water.

The rule uses indirect reasoning: if the square were water, this would lead to a contradiction. The remaining solver rules in the solver window fully explain the indirect reasoning.

Solver Rule: Square must be Water

The specified square must be water and not a ship segment.

The rule uses indirect reasoning: if the square were a ship segment, this would lead to a contradiction. The remaining solver rules in the solver window fully explain the indirect reasoning.

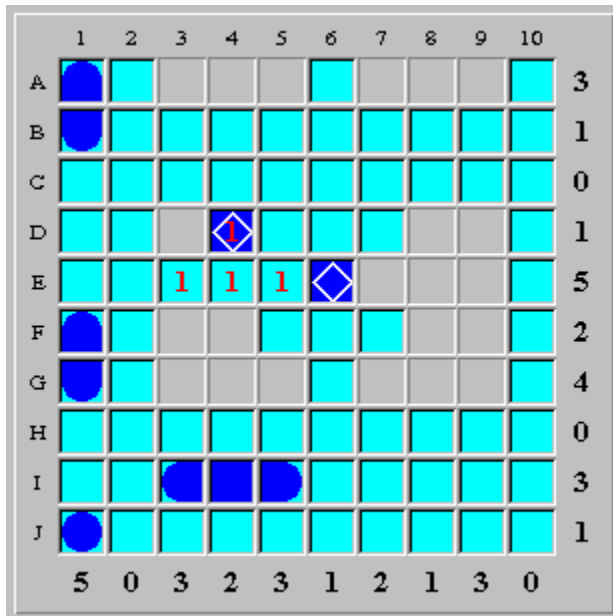
Solver Contradiction: Too Many Ship Segments in Row/Column

There are more ship segments in a row or column than its tally (count) allows. This is not allowed in Fathom It!, and is found as the last contradictory step of an indirect logical sequence.

Solver Contradiction: Not Enough Free Squares in a Row/Column

There are not enough free squares left in a row or column. The row or column can never have the necessary number of ship segments. This rule is encountered as the last contradictory step of an indirect logical sequence.

Example



In the above board, square (D,4) cannot be a ship segment. Making (D,4) a ship segment would make squares (E,3-5) water, leaving only four squares in row E as possible ship segments. Since row E has a tally of five, there are not enough free squares left in the row. Therefore, (D,4) must be water.

Solver Contradiction: Ship is Too Large

A ship was found having too many ship segments. For example, a 10x10 board can never have a ship with more than four segments.

This rule is encountered as the last contradictory step of an indirect logical sequence.

Solver Contradiction: Too Many Ships of One Type

Too many ships of one type were found on the board. This rule is encountered as the last contradictory step of an indirect logical sequence.

Example

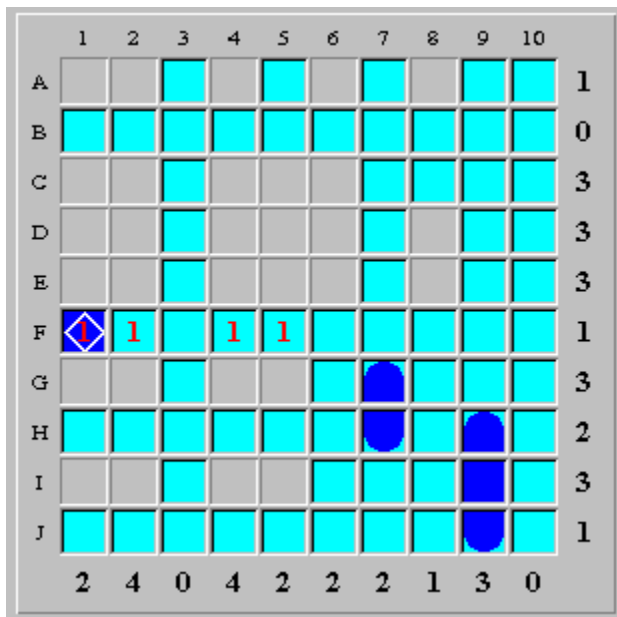
	1	2	3	4	5	6	7	8	9	10	
A											1
B								■	■		2
C											0
D						■	■				2
E	1			1						1	1
F											0
G	■			■	■			■		◇	5
H	◇							■		1	2
I								■		1	5
J								■		1	2
	3	0	0	2	2	2	1	5	1	4	

The above board is the last step of an indirect logical sequence proving that (H,10) must be a ship segment. Assuming it were water would lead to the above board. Since there cannot be more than three destroyers (and there are four destroyers above!), this contradicts the possibility of (H,10) being water.

Solver Contradiction: No Places Left to Position a Ship

A specific type of ship cannot be placed on the board. This rule is encountered as the last contradictory step of an indirect logical sequence.

Example



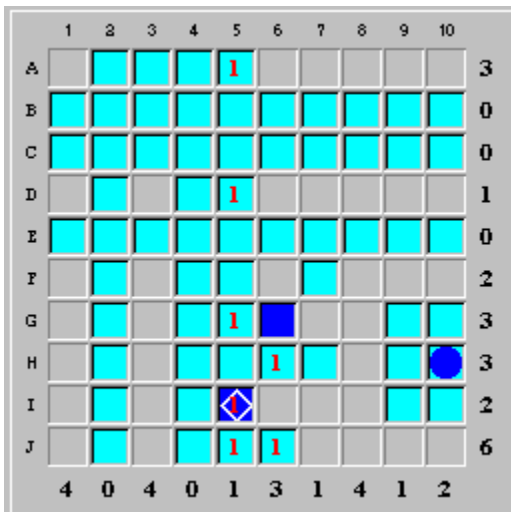
The above board shows the consequences of square (F,1) being a ship segment. As you can see, the battleship cannot be placed anywhere (check it for yourself!). Therefore, (F,1) must be water.

Solver Contradiction: Middle Segment is Flanked by Adjacent Water Squares

A middle ship segment is flanked by water on two adjacent sides.

By definition, a middle segment always has a water segment and a ship segment on adjacent sides. This rule is encountered as the last contradictory step of an indirect logical sequence.

Example



The above board shows the consequences of square (I,5) being a ship segment. Making (I,5) a ship segment turns squares (G,5) and (H,6) into water. This leads to the impossible situation where the middle segment at (G,6) is flanked by water on adjacent sides (exactly one of these sides must be a ship segment).

Solver Rule: End of Hint

The solver shows you what the board would look like after performing the rules comprising the hint.

Game Menu Commands

Click the colored, underlined words to see a definition or jump to another topic.

This section contains information about Game menu commands in Fathom It!.

<u>Game</u>	
<u>N</u> ew Game	F2
<u>S</u> elect Game	F3
<u>R</u> estart Game	F4
Exit	

New Game

Starts a new game. You can also press F2 to start a new game.

Select Game

Allows you to select a specific board.

Type a valid board number in the dialog box displayed. You can also press F3 to select a game.

Restart Game

Restarts the current board from the beginning. You can also press F4 to restart a game.

Exit

Quits Fathom It!.

You can quit at any time, even in the middle of a game. You can also press ALT+F4 to quit a game.

See Also

[Options Menu Commands](#)

[Board Menu Commands](#)

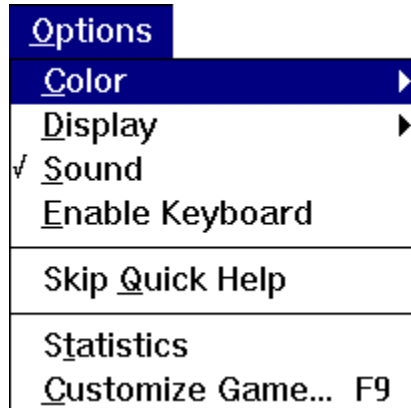
[Guess Menu Commands](#)

[How to Play](#)

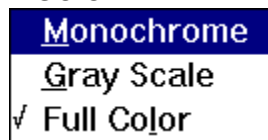
Options Menu Commands

Click the colored, underlined words to see a definition or jump to another topic.

This section contains information about Options menu commands in Fathom It!.



Color



Allows you to display the Fathom It! window as color, gray-scale or monochrome (black-and-white).

A check mark is displayed next to the command name when the color display is turned on.

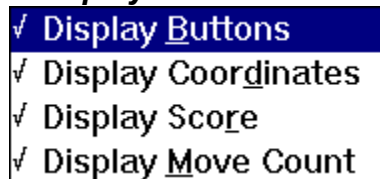


Displaying Fathom It! as gray-scale or monochrome can be useful when playing the game on a machine that does not display true colors (for example, a laptop computer or an older VGA display).



It is recommended to use gray-scale mode to print Fathom It! screen captures to a printer.

Display



Allows you to turn the buttons, score box and board coordinates display on and off.

A check mark is displayed next to a command name if it is displayed.

Display Buttons

Turns the main window button display on and off.

Display Coordinates

Turns the board coordinate display on and off.

When turned on, the row and column coordinates are displayed to the left and top of the board. The coordinates are useful when referring to a particular square, or when describing your solution to someone else.

Display Score

Turns the score box display on and off.

Display Move Count

Turns the move count box display on and off. The move count shows the number of squares that were finalized by the user.

Sound

Turns all sound effects on and off.

A check mark is displayed next to the command name when the sound is turned on.

To turn individual sound effects on or off, choose the Customize Game menu command, or press F9.



You need a sound card and a Windows-based sound driver to hear sound effects.

Enable Keyboard

Allows you to use your keyboard to play Fathom It!.

When the keyboard is enabled, Fathom It! displays a red frame around the current square. Pressing the spacebar will toggle the current square display, while pressing ENTER will finalize the current square.

Use the direction keys to maneuver the current square frame over the board, making sure the NUMLOCK key is off.

A check mark is displayed next to the command name when the keyboard mode is enabled.

Skip Quick Help

Turns Quick Help on and off.

If you do not want to see the Quick Help screen each time you start a game, choose Skip Quick Help.

A check mark is displayed next to the command name when Skip Quick Help is turned on.

Statistics

Displays the best score and move statistics for the current board dimensions (i.e. 7x7, 10x10) and the current board level (easy, intermediate, hard or expert). The [Statistics dialog box](#) simultaneously displays the top three scores and moves.

You can clear the best scores and moves at any time by clicking the appropriate Clear button in the Statistics dialog box.

Customize Game

Allows you to customize Fathom It! to your personal taste.

Displays the [Customize Game dialog box](#) so that you can change game settings. For example, you can scale the size of the game and its components, configure the score parameters, enable individual sound effects, set different displays on and off, and change other variables to create your own personalized version of Fathom It!. You can also press F9 to customize a game.

See Also

[Board Menu Commands](#)

[Guess Menu Commands](#)

[Game Menu Commands](#)

[How to Play](#)

Board Menu Commands

Click the colored, underlined words to see a definition or jump to another topic.

This section contains information about Board menu commands in Fathom It!.

<u>B</u> oard
<u>E</u> asy
✓ <u>I</u> ntermediate
<u>H</u> ard
<u>E</u> xpert
7 × 7
✓ 10 × 10

Easy

If checked, Fathom It! will choose simple, beginner-level boards. These boards are ideal when you need a quick-and-easy distraction, and are well suited for children.

Intermediate

If checked, Fathom It! will choose advanced-level boards. These boards are harder than "Easy" boards, but can be solved with ease by advanced players.

Hard

If checked, Fathom It! will choose difficult boards. Solving these boards usually requires the application of sophisticated rules, but might be solved by applying a novel sequence of logic.

Expert

If checked, Fathom It! will choose expert-level boards. These group includes all boards solved by the automatic solver that do not fall into the categories of Easy, Intermediate or Hard.

RxC (i.e. 7x7 or 10x10)

If checked, Fathom It! will choose boards with R rows and C columns. The number of ships to find may change between different board dimensions.

See Also

[Guess Menu Commands](#)

[Game Menu Commands](#)

[Options Menu Commands](#)

[How to Play](#)

Guess Menu Commands

Click the colored, underlined words to see a definition or jump to another topic.

This section contains information about Guess menu commands in Fathom It!.

Guess	
Toggle Level	
Undo Last Guess	Backspace
Undo Level 1 Guesses	Ctrl+U
Finalize Level 1 Guesses	Ctrl+F
Undo All Guesses	Alt+U
Finalize All Guesses	Alt+F
Reveal Square	
Start Solver...	F7
Cancel Solver...	F8

Toggle Level

✓ Level 1	Ctrl+1
Level 2	Ctrl+2
Level 3	Ctrl+3

Sets the current guess toggle level.

The guess toggle level is the number displayed in temporary ship segments when toggling.

You can think of the three guess toggle levels as three "colored pencils". Use a different "colored pencil" when examining a complicated thread of reasoning. Until you finalize a guess, you can always backtrack and undo the logical thread. This help file contains an example using guess toggle levels.

Typically you will use guess toggle level one, but might use other levels to handle a more complicated train of reasoning.

Undo Last Guess

Removes the last guess made.

You can also press the BACKSPACE key to undo the last guess. You can continuously undo moves until there are no more guesses on the board.

Undo Level n Guesses (n=1,2,3)

Removes all guesses with a guess level of n on the board.

This is an easy way to remove a long sequence of guesses that turns out to be wrong.

Finalize Level n Guesses (n=1,2,3)

Finalizes all guesses with a guess level of n on the board.

This is an easy way to finalize a long sequence of correct guesses.

Undo All Guesses

Removes all guesses on the board, regardless of their guess level numbers.

This is an easy way to remove all guesses, allowing you to start with a "clean" board.

Finalize All Guesses

Finalizes all guesses on the board, regardless of their guess level numbers.

This is an easy way to finish solving a board that is filled with correct guesses.

Reveal Square

Allows you to reveal (and finalize) any square on the board.

After choosing this command, the cursor will change to a cursor with a question mark. Point the cursor at the square you want to reveal and click the [finalizing mouse button](#). Fathom It! will reveal the square and smart fill obvious squares.

Revealing a square costs you 50 score points (default).

Start Solver

Asks Fathom It! to ignore all temporary guesses and suggest a hint. You can also press F7 to request a hint.

You will be penalized 50 score points (default) if Fathom It! suggests a hint.

Fathom It! is guaranteed to suggest a hint. The hint recommended is the best Fathom It!'s automatic [solver](#) can suggest. It is very possible, and preferable, that you will come up with a [better](#) move.

Cancel Solver

Stops Fathom It!'s automatic solver, if active.

See Also

[Game Menu Commands](#)

[Options Menu Commands](#)

[Board Menu Commands](#)

[How to Play](#)

How to Play Fathom It!

Click the colored, underlined words to see a definition or jump to another topic.

This section contains information on how to play Fathom It!.

[What is Fathom It! ?](#)

[Playing the Game](#)

[Step-by-Step Tutorial](#)

[Scoring](#)

[Strategy and Hints](#)

See Also

[Commands](#)

Commands

Click the colored, underlined words to see a definition or jump to another topic.

This section contains information about commands in Fathom It!.

[Game Menu Commands](#)

[Options Menu Commands](#)

[Board Menu Commands](#)

[Guess Menu Commands](#)

See Also

[How to Play](#)

Tips for Sight-Challenged Users

Maximize the main window

From the very start, one of Fathom It!'s primary goals was to enable people with sight disabilities to enjoy the game. To that end, a great deal of effort was invested to enable a player to maximize Fathom It!'s board. By maximizing the main window, the player can enjoy large squares, numbers, buttons, etc.

Run in 640x480 VGA mode for largest solver hint text

Although the player can maximize the main window, the automatic solver window (which provides optional hints) does not scale to a larger size. It is recommended to run Fathom It! in 640x480 VGA mode. This will cause the solver hint text to be displayed in the largest font possible.

Possible future feature: total audio interface to Fathom It!

The current version of Fathom It! would be difficult for a blind user to play. If there were enough public interest, a future version could include speech synthesizer features as pronouncing:

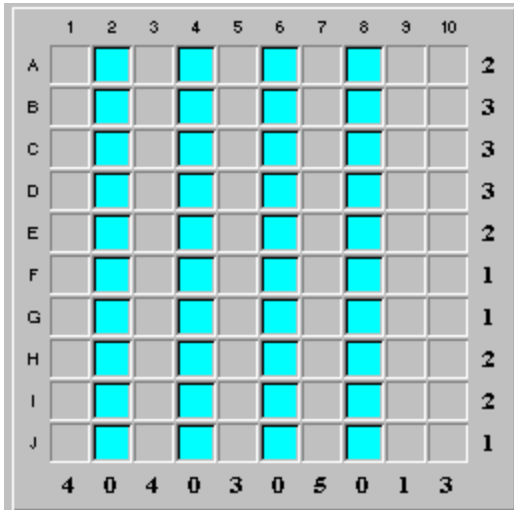
- current square coordinates
- pieces along a row/column
- pieces around the current square
- row/column tallies
- positions and directions of all ships found so far
- ships left to find
- automatic solver hint text

The author does not have experience in this important area, and would appreciate hearing from anyone interested in such a version.

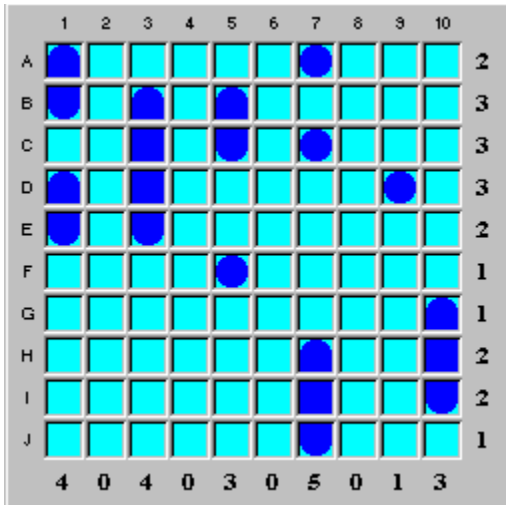
Ambiguous Solutions

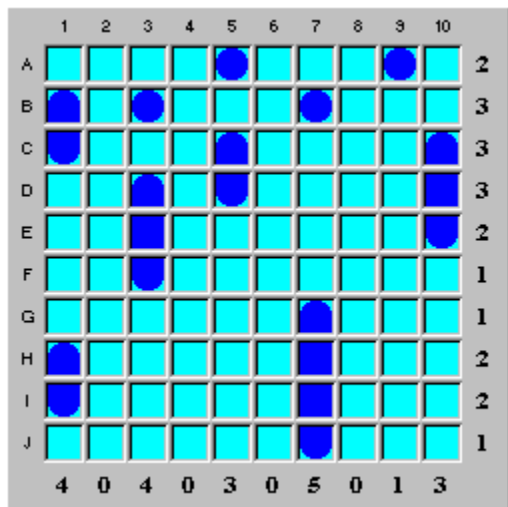
For a given set of row and column tallies, there may be more than one way of placing the ships that will solve the board. By providing carefully selected hints, Fathom It! ensures a unique solution for each board in its database.

The following 10x10 board has 93,124 possible solutions. This is the largest number of solutions for a 10x10 board found to date.



Here are two out of the 93,124 possible solutions for this board.





Fathom It!'s main window caption displays the version, board level and the board number.

The column coordinates identify each column with a number from one (1) until the number of columns.

Double-clicking a coordinate number with the togglng mouse button fills all non-finalized squares in the column with water guesses.

The number beneath each column (the "column tally") tells you how many ship segments are found in the column.

Double-clicking a coordinate tally with the toggle mouse button fills all non-finalized squares in the column with water guesses.

Click this button to finalize all temporary guesses on the board.

Finalizing temporary guesses is your way of telling Fathom It! that you are sure about the identity of certain board squares. When you finalize, Fathom It! will automatically finalize other obvious squares as water, if possible.

To finalize a single square, position the cursor over the square and click the finalizing mouse button.

This is Fathom It!'s menu bar.

This is Fathom It!'s playing board. It is a grid of squares, with typical sizes of 7x7 or 10x10.

The object is to locate the hidden fleet of ships. This is done by discovering the identity of the underlying squares, where a square can be water or any one of the following ship segments: top, right, bottom, left, middle or circle.

Use the toggle mouse button to change the square from its unknown state to your guess. When you are certain of the identity of the square, click the square with the finalizing mouse button.

The row coordinates identify each row with a number from one (1) until the number of rows.

Double-clicking a row number with the toggle mouse button fills all non-finalized squares in the row with water guesses.

The number to the right of each row (the "row tally") tells you how many ship segments are found in the row.

Double-clicking a row tally with the toggle mouse button fills all non-finalized squares in the row with water guesses.

Displays the ships to be found in the board.

Each line of the ship display consists of the name of the ship, followed by the number of ships to find. The ships yet to be found are colored dark blue (or black), while the ships already found are colored gray (or white). You can configure Fathom It! so that ships found are removed entirely from the ship display.

Click this button to start the automatic solver.

After analyzing the current board, the solver will suggest a hint. The solver will always suggest a hint, although not necessarily the best one. However, you may even wonder why you didn't think of the move yourself!

While the solver is thinking, this button will display the text "Cancel Solver". You may click on the button to stop the solver at any time.

This is a hint to start you off. These may show water, a complete submarine (a circle), or the middle (a square) or the end (a rounded-off square) of a longer vessel.

Click this button to remove all temporary guesses from the board.

This counter consists of two numbers:

- The left-hand number shows the number of moves (squares finalized) by the player until this point.
- The right-hand number shows the total number of moves needed by the automatic solver to solve the board.

One way of playing Fathom It! is to solve a board with the smallest number of moves (try to beat the automatic solver!).

This is the running board score which is incremented throughout a board-solving session. One way of playing Fathom It! is to solve a board with the smallest score possible.

The running score is incremented:

- every second
- when the user is presented with a hint
- as a penalty for a wrong finalization

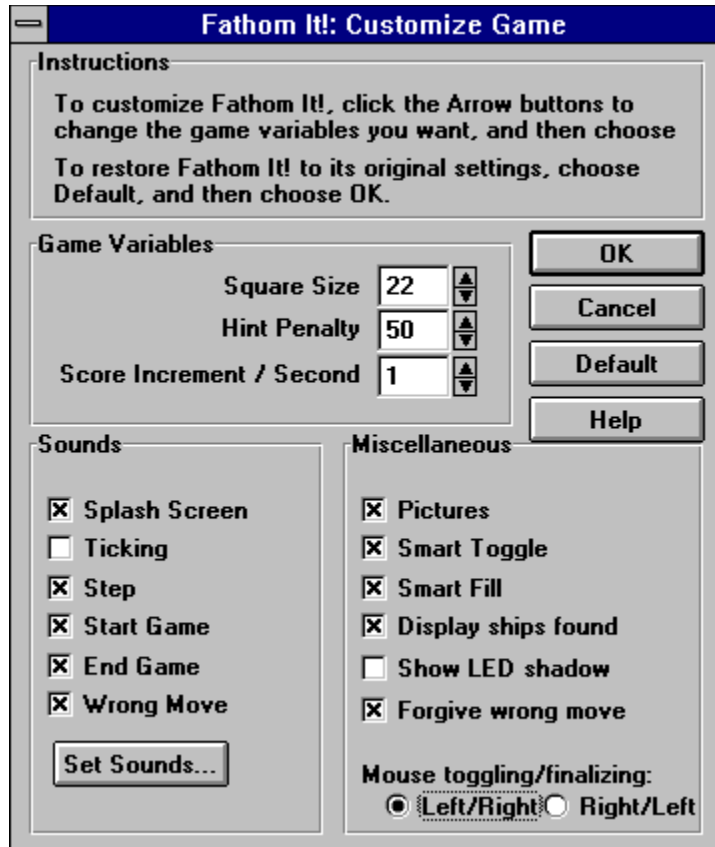
Click this button to exit the dialog box without modifying the current settings.

Click this button to restore all settings in the dialog box to their default values.

Customize Game Dialog Box

Click the colored, underlined words to see a definition or jump to another topic.

This section contains information about the Customize Game dialog box. For specific information, point the mouse cursor at a portion of the picture below and click the left mouse button.



Clicking this button displays this help screen.

Click this button to save the settings in the dialog box.

What is a virtual ship?

A virtual ship is a ship of a specific size or larger. Here are some examples:

- A virtual cruiser is a ship having three or more ship segments. Therefore, a virtual cruiser can represent either a battleship or a cruiser. The number of virtual cruisers to be found is the number of battleships and cruisers left to find.
- A virtual destroyer is a ship having two or more ship segments. Therefore, a virtual destroyer can represent either a battleship, a cruiser or a destroyer. The number of virtual cruisers to be found is the number of battleships, cruisers and destroyers left to find.

Because a virtual ship can be one of several different-sized ships, it can be thought of as a sequence of segment wildcards. For example, a virtual cruiser can be thought of as three wildcards; a virtual destroyer can be thought of as two wildcards.

Virtual ships can be very helpful when solving Fathom It! boards, occasionally enabling you to solve an otherwise difficult board. They can be used for finding ships and ship segments.

Contains variables and numbers that can be customized. Click on a specific variable for further information.

Specifies the scoring penalty incurred if a hint is requested from Fathom It! (by default 50 points). A wrong finalization incurs one half of this amount (by default 25 points).

See Scoring for additional information.

Specifies the amount added to the score every second.

See [Scoring](#) for additional information.

Specifies the size of a board square in pixels.

All visual features in Fathom It! are determined by the square size, and are entirely scalable for your convenience.

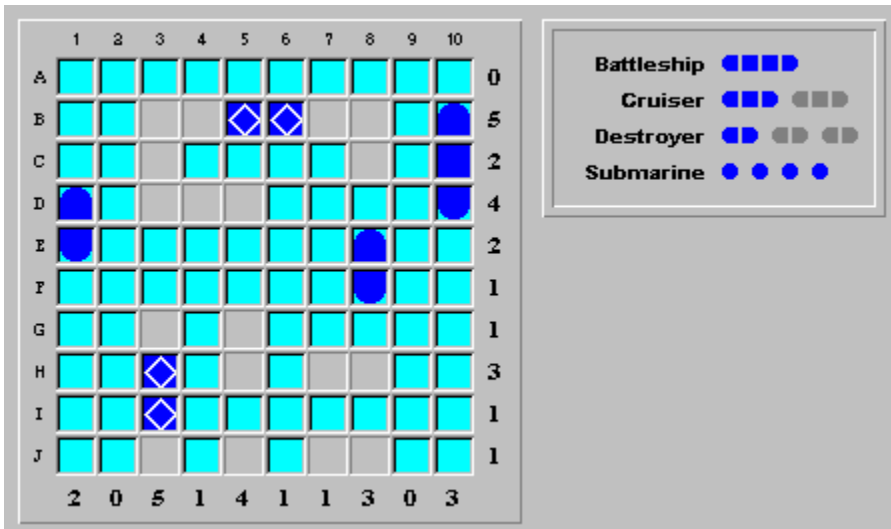
The largest permissible square size is determined by the screen resolution.

Using Guess Toggle Levels: An Example

The following is an example of how you could use guess toggle levels to solve a Fathom It! board. The example uses guess toggle levels to keep track of a logical train of thought.

The board position

Our example begins while solving a real-life Fathom It! board. (The board used is Expert Board #3 in the Shareware version, or Expert Board #4 in the registered version.)



A brief examination uncovers the following facts:

- The battleship cannot be placed at (G,3)-(J,3), as this would leave too few empty squares in column 5. Therefore, the battleship belongs somewhere in the sequence (B,3)-(B,8).
- The last remaining cruiser cannot be placed at (B,3)-(D,3), as this would completely close off column 4 with water squares.
- The last remaining cruiser cannot be placed at (D,3)-(D,5). Doing so would force a water square in (C,3), which would force a ship segment in (C,8), which would force a water in (B,7). This would leave nowhere on the board to place the battleship.

The facts above lead us to the conclusion that the remaining cruiser must be placed at either (G,3)-(I,3) or (H,3)-(J,3).

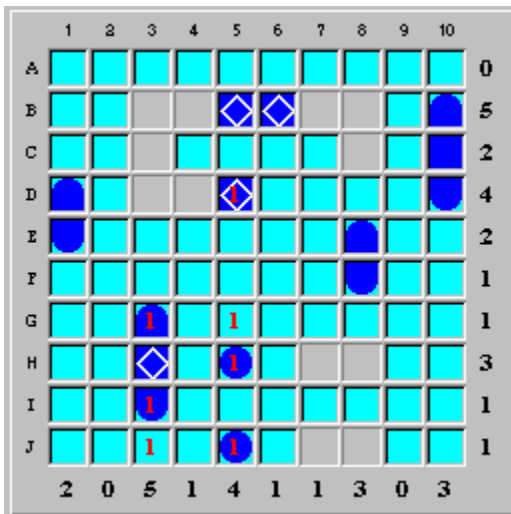
Assume cruiser is at (G,3)-(I,3)

Let's assume the remaining cruiser is positioned at (G,3)-(I,3). Since we are not sure about our assumption, we will toggle the relevant squares, but will not finalize them. Should our assumption prove logically wrong, we'll erase the guesses.

Toggling square (G,3) to be a ship segment infers the following square identities:

- 1 The rest of row G is water, so (G,5) is water.
- 2 This means the remaining squares in column 5 are ship segments. Therefore, (D,5) is a ship segment, while (H,5) and (J,5) are submarines.
- 3 With (J,5) a submarine, the rest of row J is water.

Here's what the board looks like now:



You'll notice that the squares displaying our guesses have the numeral "1" (one) inside. These are level one guesses, and are meant to record our initial guesses. They are temporary, are invisible to the automatic solver, and can be erased at any time. It is like writing our guesses in pencil; we may end up erasing the guess if it leads to an inconsistent result.

Let's put it this way: the level one guesses are what the board would look like in answer to the question "what if the remaining cruiser were placed at (G,3)-(I,3)?".

Fork in the logic: up to guess level two!

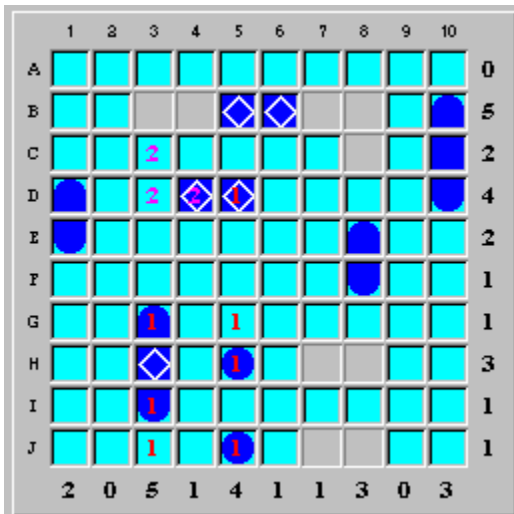
Now we come to a fork in the road: (D,4) can be either a ship segment or water. Like the cruiser assumption above, we'll toggle (D,4) to a ship segment, toggling other inferred squares. To keep the two assumptions separate, we'll step up to guess toggle.

level two by pressing CTRL+2. Now, any square toggled will have a numeral "2" inside the square.

Assuming (D,4) is a ship segment infers the following square identities:

- 1 The remaining squares in row D are water, specifically (D,3).
- 2 Square (C,3) is water (diagonally adjacent to (D,4)).

Here's what the board looks like, with both level one and level two guesses displayed:



Note that column 3 has only one empty square left, but needs two more ship segments. The conclusion is that our last assumption, that square (D,4) is a ship segment, is wrong. Let's erase the guesses in (D,4) and all affected squares by clicking the "Undo Guesses" button on the playing board (or selecting the menu option Guess|Undo Level 2 guesses).

We now see why stepping up to a level two guess is good: it keeps different logical trains of thought separate, enabling you to erase (or backtrack) any one assumption without affecting others.

Continuing the first assumption: (D,4) is water

Let's summarize our logic until now: if the remaining cruiser is placed at (G,3)-(I,3), then (D,4) must be water. Since (D,4)'s being water follows logically from the cruiser placement, we can go back to level one toggling. Press CTRL+1 to reset the guess toggle level to one, and toggle (D,4) to water.

Assuming (D,4) is water infers the following square identities:

- 1 (B,4) is a ship segment, because column 4 has a tally of one.

2 (C,3) is water, because it is diagonally adjacent to (B,4).

3 (D,3) is a submarine, because row 4 has a tally of four.

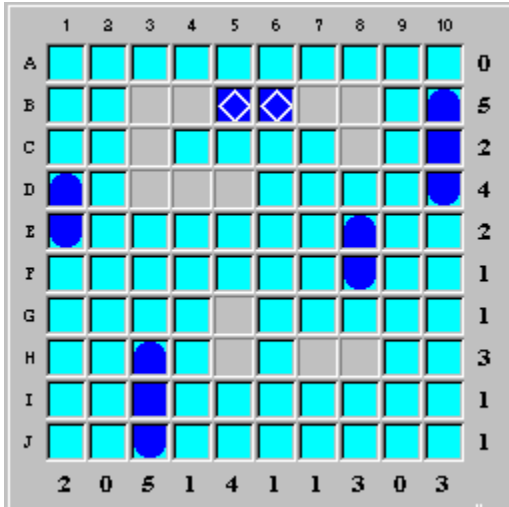
Here's what the board looks like now:

	1	2	3	4	5	6	7	8	9	10	
A											0
B				◊	◊	◊				◊	5
C			1							◊	2
D	◊		◊	1	◊					◊	4
E	◊							◊			2
F								◊			1
G			◊		1						1
H			◊		◊						3
I			◊								1
J			1		◊						1
	2	0	5	1	4	1	1	3	0	3	

Here we hit a contradiction: there are four submarines visible on the board. However, row H must contain a fifth submarine at either (H,7) or (H,8).

Conclusion: cruiser at (H,3)-(J,3)

We've just shown that assuming the cruiser is placed at (G,3)-(I,3) leads to a contradiction: (D,4) can be neither a ship segment nor water. Therefore, our original assumption that the remaining cruiser is placed at (G,3)-(I,3) is wrong: the cruiser is actually positioned at (H,3)-(J,3). Undoing all guesses and finalizing the cruiser at (H,3)-(J,3) leaves us with the following board:

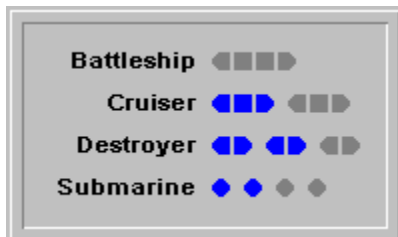


Summary: Using guess toggle levels

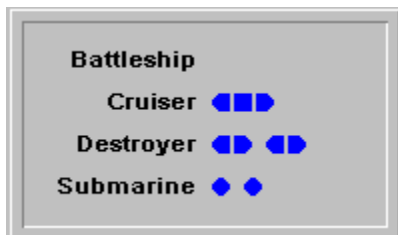
In the example above, we used guess toggle levels as follows:

- 1 We attempted to place the remaining cruiser with level one toggles. Inferred squares were also level one toggles.
- 2 We explored the consequences of (D,4) as a ship segment, using level two toggling. This kept the second assumption separate from the first.
- 3 When the second assumption proved wrong, we easily removed all level two guesses and returned to level one toggling.
- 4 When assuming (D,4) to be water also proved wrong, we knew the cruiser had been incorrectly placed.
- 5 We easily undid all guesses and finalized the cruiser in its correct position.

If checked, ships that have been found will appear in a different color in the Ship Display area.



Otherwise, found ships will be removed completely from the display.



If checked, Fathom It! will display a message when a square is incorrectly finalized. This allows you to continue playing the game after incurring a score penalty (one half of the hint penalty).

Otherwise, Fathom It! will "blow up", displaying the correct solution and ending the board.

Mouse toggling/finalizing:

Left/Right **Right/Left**

Select Left/Right if you wish to toggle a square with the left mouse button and finalize with the right button.

Select Right/Left to toggle with the right button and finalize with the left button.

If checked, a picture will be displayed when a board is successfully solved.



If checked, the digits in the score box will show a background shadow.



Otherwise, digits and leading zeros will have their shadows suppressed.

If checked, a correct square finalization will cause Fathom It! to finalize all obvious water squares, simplifying the solving process.

Obvious water squares are squares that must be water. For example, if you finalize a square as a submarine (a circle), all squares around the submarine must be water. By letting Fathom It! finalize these trivial squares, you reduce the drudgery and are free to concentrate on the puzzle aspects of the board.

If checked, toggling a board square will only display valid square elements. Otherwise, all possible elements will be displayed while toggling, whether the element is valid or not.

Contains a potpourri of features that may be turned on and off, letting you configure Fathom It! to your personal taste.

Click on a specific check box for further information.

This Fathom It! board position is the subject of the automatic solver's hint. The text in the hint window below should be applied to this board position.

A solver hint may be made up of a sequence of logical deductions. Each step of the sequence displays the board for which the step applies.

Click this button to close the automatic solver's window.

Closing a solver window will not cancel an active solver. To cancel the solver, click the Cancel Solver button on the main board, or press F8.

Click on this button to perform the solver's hint on the main Fathom It! board.

Click this button to jump to the first step of the automatic solver's hint.

Click this button to request a new hint from the automatic [solver](#).

Click this button to see an explanation of the hint shown in the rule/hint window.

Solver Help All Placed

Solver Rule:

Unimplemented yet!

Click this button to jump to the last, or final, step of the automatic solver's hint.

Click this button to jump to the next step of the automatic solver's hint.

Click this button to jump to the previous step of the automatic solver's hint.

This window displays the automatic solver's logical deductions that make up its hint. Logical steps are displayed one at a time, with the board display above the window showing the board before applying the logical step.

To see the previous or next logical step of the hint, click the Previous or Next button below the window.

If checked, the corresponding sound will be played each time a board is finished (either successfully or unsuccessfully).

Contains specific sounds can be customized. Each sound can be individually turned on and off. To specify a different WAV file, click on the "Set Sounds" button below.

Click on a specific sound check box for further information.

Clicking this button will open a dialog box for assigning sounds to Fathom It! events. You can assign sounds only if you have a sound card installed in your computer. If you don't have a sound card installed, the lists of sounds and events appear dimmed.

Here are the Fathom It! sound options and their corresponding sound events (all Fathom It! sound events begin with the string "Fathom It!:".):

- Splash Screen Fathom It!: Banner Start Up
- Ticking Fathom It!: Tick
- Step Fathom It!: Step
- Start Game Fathom It!: New Game
- End Game Fathom It!: Win Game
- Wrong Move Fathom It!: Wrong Move (used if "forgive" mode is ON)
- Wrong Move Fathom It!: Lose Game (used if "forgive" mode is OFF)

If checked, the corresponding sound will be played when Fathom It!'s splash screen is displayed at program start-up time.

If checked, the corresponding sound will be played each time a board begins.

If checked, the corresponding sound will be played each time a square is finalized.

If checked, the corresponding sound will be played each second.

If checked, the corresponding sound will be played each time a square is incorrectly finalized.

This sound will only be sounded if the Forgive Wrong Move feature is enabled. Otherwise, the board will "blow up" and the End Game sound will be sounded.

Shows the number of the board solved.

Clicking this button will clear all entries in the "Best Moves" section.

Clicking this button will clear all entries in the "Best Scores" section.

Displays full information about the three best "moves under par" for the current board size (e.g. 7x7, 10x10) and level (e.g. Easy, Intermediate, Hard, Expert).

Shows, for each of the three top "move records", the number of moves the solver needed to solve the board. This is known as the "solver's par". Subtracting the player's moves from this number gives the "under par" number.

Shows the "moves under par" for each of the three top "move records" (the larger the "under par" number, the better).

The "moves under par" is the difference between the number of moves ("finalizations") the automatic solver needed to solve the board and the number you needed. The term "under par" is borrowed from golf, and tells you by how many moves you bettered ("beat") the automatic solver.

Example: Suppose the automatic solver needs 19 moves to solve a board, and you solve it in 18 moves. You solved the board in $19-18=1$ under par.

Example: Suppose the automatic solver needs 20 moves to solve a board, and you solve it in 20 moves. You solved the board in $20-20=0$ under par.

Shows the name of the person that holds the best score/moves.

Displays full information about the three best scores for the current board size (e.g. 7x7, 10x10) and level (e.g. Easy, Intermediate, Hard, Expert).

Shows the score for each of the three top scores (the lower the score, the better). See help on [scoring](#) for an explanation on scores.

Statistics Dialog Box

Click the colored, underlined words to see a definition or jump to another topic.

This section contains information about the Statistics dialog box.



For more information, position the cursor over any portion of the above board and click the left button.

Best Scores for 10 × 10 (Intermediate)				
	Score	Board #	Name	
1st Place	18	139	Steve	
2nd Place	65	1708	Alex	
3rd Place	75	1511	Steve	

Best Moves for 10 × 10 (Intermediate)				
	Under Par	Solver's Par	Board #	Name
1st Place	3	21	2223	Alex
2nd Place	1	19	12	Steve
3rd Place	0	22	3635	Jack

finalizing mouse button

The mouse button that finalizes board squares. Use the Customize Game dialog box to configure the mouse buttons.

Forgive Wrong Move

See the Miscellaneous group box in the Customize Game dialog box.

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Tel. (800) 426-3768

statistics about boards

etc.,(Global), 0,<Interesting Statistics>

statistics about boards

etc., Technical Details, 0, <Interesting Statistics>

toggling mouse button

The mouse button that toggles board squares. Use the Customize Game dialog box to configure the mouse buttons.

underlined words

Find out more information or transport yourself to another topic that interests you.

