

## Black Box Help Index

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This index lists the help topics available for Black Box.

### **How to Play**

[Overview](#)

[Playing the Game](#)

[Rules of the Game](#)

[The Behavior of Rays](#)

[Scoring](#)

[Tools of the Trade](#)

[Strategy and Hints](#)

### **Commands**

[Game Menu Commands](#)

[Options Menu Commands](#)

[Menu Bar Commands](#)

## How to Play

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This section contains information about how to play Black Box.

[Overview](#)

[Playing the Game](#)

[Rules of the Game](#)

[The Behavior of Rays](#)

[Scoring](#)

[Tools of the Trade](#)

[Strategy and Hints](#)

## Overview

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The object of Black Box is to locate all of the marbles which are hidden somewhere in the game board. You do this by firing invisible "rays" into the board. These rays bounce off the marbles according to strict rules. By analyzing where these rays enter and exit the game board, you can determine their path and thus the locations of the hidden marbles. The faster you find the marbles and the fewer rays you use to do so, the better your score.

## Playing the Game

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### To Start a New Game:

From the Game menu, choose New. Or press F2.

### To Fire a Ray:

Click with the left mouse button on any empty marker slot on the perimeter of the game board.

### To Fire a Test Ray:

Click and hold the right mouse button on any space on the perimeter of the game board which contains a marker. The test ray disappears when you release the mouse button.

### To Find a Matching Marker:

Click the left mouse button on any marker. Clicking on a deflection marker will highlight the other marker with the same symbol. Clicking on an absorption or reflection marker will highlight only that marker.

### To Place a Marble:

Click the left mouse button on any empty space or sealed space in the grid. Placing a marble in a sealed space automatically unseals that space.

### To Remove a Marble:

Click the left mouse button on the marble, or seal the space the marble is in.

### To Seal or Unseal a Grid Space:

Click the right mouse button on the grid space to seal or unseal. You can affect multiple spaces at once by dragging the mouse while holding the right mouse button down. If you seal a space which contains a marble, the marble is automatically removed before the space is sealed.

### To Guess the Locations of Marbles:

Choose Guess! from the menu bar. You must place the correct number of marbles on the board (as indicated in the status bar at the bottom of the window) before guessing.

### To Give Up and Reveal the Hidden Marbles:

Choose Give Up! from the menu bar.

## Rules of the Game

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### Black Box Rules:

The playing area is a grid of empty spaces surrounded by marker slots. Marbles are hidden somewhere in the grid. You're trying to find those marbles by firing invisible rays from the marker slots into the grid and deducing the path of the ray.

- Marbles hidden in the grid affect the paths of rays according to a strict set of rules. Rays will either not be able to enter the grid at all, enter and be absorbed by a marble, enter and be reflected back to its entry point, or enter and be deflected, exiting at a different marker slot along the perimeter of the board.
- By examining the entry and exit points of these rays, you can deduce the locations of the hidden marbles.
- When you think you know where a marble is, mark the spot by placing a marble in that space in the grid. The number of marbles unaccounted for is always displayed in the status bar beneath the game board. If you place more marbles on the board than there are hidden, the status bar will display the number of extra marbles you need to remove.
- When you think you've found all the hidden marbles, select Guess! from the menu bar to see if you are correct. If you're wrong, each incorrect marble will cause a penalty to be added to your score.
- If you can't figure out where the hidden marbles are, select Give Up! from the menu bar to reveal all the marbles you haven't discovered.
- You have a number of tools to assist you during the game. You can locate a ray's entry and exit points. You can fire test rays to see whether the marbles you've placed cause any inconsistencies with the real rays. And you can seal grid spaces which you believe do not contain a marble, thus helping to find the hidden marbles by process of elimination.

## Rules of the Game (continued)

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### The Behavior of Rays:

Rays fired into the grid are influenced by the marbles in their vicinity. Normal rays are only affected by the hidden marbles; test rays are only affected by the visible marbles (placed by the player). Marbles can affect rays in three ways: absorption, deflection, or reflection.



- **Absorption:** When a ray hits a marble head-on, the marble absorbs the ray. The ray does not continue moving and does not exit the grid. A red marker at the ray's entry point indicates that the ray was absorbed.



- **Deflection:** When a ray would pass alongside a marble, the marble instead deflects the ray ninety degrees in a direction away from the marble. Rays continue moving after deflections. Orange markers at the ray's entry and exit points indicate that the ray was either deflected or was not affected by marbles at all. The symbol on the marker at a ray's entry point always matches the symbol on the marker at the ray's exit point. No two rays will ever share an entry or exit point.



- **Reflection:** There are two ways a ray can be reflected. Rays can never pass alongside a marble. If a ray would need to pass alongside a marble in order to enter the grid, it cannot enter the grid. Instead, it is considered to have been reflected. If a ray would be deflected by two marbles simultaneously (that is, if it would pass between two marbles), it is reflected. Reflected rays exit the grid at the same point at which they entered. A yellow marker at the ray's entry point indicates that the ray was reflected.

## Scoring

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In Black Box, you're trying to get the lowest possible score. Score is displayed at the left of the status bar beneath the game board. Score is determined as follows:

- **15** points for every marker used
- **50** points for every incorrectly placed marble when you take a guess
- **1** point for every second it takes you to locate all the hidden marbles

## Tools of the Trade

In addition to the normal rays, you have a number of other tools at your disposal to aid you in locating the hidden marbles. Using any of these tools does not affect your score.

### Test Rays:

Test rays are special rays which ignore the hidden marbles, affected instead by only the marbles which you have placed in the grid. Unlike normal rays, these rays are visible. Test rays are useful for making sure you haven't made any mistakes in placing your marbles. If your marbles are positioned correctly, test rays will follow the same paths as normal rays. Test rays may only be fired from spaces with markers. To fire a test ray, click and hold the right mouse button on any marker. Note that for reflections caused by a ray's inability to enter the grid, no test ray will appear.

### Matching Entry and Exit Points:

As the game progresses, it can become difficult to locate the match for orange markers. Clicking and holding the left mouse button on any orange marker will highlight the matching marker elsewhere on the grid's perimeter. Clicking on a red or yellow marker (which have no matches) will merely highlight that marker.

### Sealing Grid Spaces:

As you uncover information and deduce the locations of some hidden marbles, it becomes possible to eliminate some grid spaces from consideration. You can seal these spaces, helping you to discover the remaining marbles' locations by the process of elimination. Clicking on a grid space with the right mouse button seals that space. Clicking again reopens it. You may seal or unseal a group of spaces by dragging the cursor over them while the right mouse button is down. Sealing a space which contains a marble automatically removes the marble. Likewise, placing a marble in a sealed space automatically unseals that space.



## Strategy and Hints

This section contains helpful hints for playing Black Box successfully.

- Deflections are usually more useful than absorptions or reflections, because they most often allow you to pinpoint a marble immediately. Be warned, however, that the simplest path is not always the correct one.
- When a ray exits the grid directly opposite from its point of entry, it's fairly safe to assume (though not guaranteed!) that the ray did not encounter any marbles. Thus, you can seal all the spaces along the ray's path as well as all the spaces immediately adjacent to its path (if a marble had been in its path, the ray would have been absorbed; if a marble had been on either side of its path, the ray would have been deflected).
- Nine times out of ten, a reflection is due to the ray being unable to enter the grid. This means there is probably a marble in one of the two grid spaces diagonally adjacent to the reflection marker.
- It is quite possible for the positions of marbles to create "dead zones" in the grid-- grid spaces which rays simply cannot reach. If a marble is within a dead zone, there is no way to conclusively determine that marble's precise location (unless the dead zone contains only one grid space and all other grid spaces have been eliminated from consideration).
- Sealing spaces can show you areas of the grid which you can eliminate from consideration, thus preventing you from firing rays (thereby worsening your score) which wouldn't provide you with new information.
- Since incorrect marble placements cost you points when you take a guess, spend a few extra seconds before guessing to check your placements with test rays.
- If you find your marble positions are contradicting the ray markers, remove all the marbles and replace only the ones about which you're absolutely certain. Then look for other possible locations for the remaining marbles.

## Commands



This section contains information about the commands in Black Box.

[Game Menu Commands](#)

[Options Menu Commands](#)

[Menu Bar Commands](#)

## Game Menu Commands

This section contains information about the Game menu commands in Black Box.

### **New**

Start a new game. Current game is aborted.

### **Replay**

Start over, keeping the hidden marbles' positions. Useful for competitive play.

### **Exit**

Exits Black Box. You can exit at any time, even in the middle of a game.

## Options Menu Commands

This section contains information about the Options menu commands in Black Box.

### Grid Size

Set the width and height of the game board. The board must be at least eight spaces wide and eight spaces high. Black Box will not allow you to make the board larger than will fit on your display-- larger values are automatically changed to the maximum allowable size.

### Number of Marbles

Set the number of hidden marbles. You must always have at least one hidden marble. The maximum number of hidden marbles is equal to half the grid's width plus half the grid's height. Too many marbles increases the possibility of dead zones.

### Automatic Setup

When selected, marbles are automatically hidden by the computer at the start of each game.

### Manual Setup

When selected, the user hides the marbles manually at the start of each game. Place the marbles in the grid and select Hide! from the menu bar to hide them and start the game.

## Menu Bar Commands



This section contains information about the commands appearing on the menu bar in Black Box.

### Guess

Find out if the marbles on the board match the locations of the hidden marbles. Each incorrectly placed marble results in a penalty to your score.

### Hide

Hide the current marbles. This command only appears when a new game is begun and the Manual Setup option is checked. It replaces the Guess command. When the marbles are hidden, this command disappears and is replaced by the Guess command.

### Give Up

Reveal the hidden marbles. Any incorrectly placed marbles are marked with an X, and any undiscovered marbles appear in green. Selecting this option ends the current game.

**Ray:** An invisible beam similar to radar which helps you locate the marbles hidden in the game board. Like radar, rays bounce off of or are absorbed by objects (hidden marbles) they encounter. Rays are only affected by hidden marbles, ignoring any visible ones. By examining the entry and exit points of rays, you can determine the locations of the hidden marbles.



**Marker Slot:**

The spaces lining the perimeter of the game board. When a ray is fired from a marker slot, a marker is placed there to indicate what happened to the ray. If the ray exited the board at another location, a matching marker is put in the marker slot at that location.

**Marker:** Markers indicate the behavior of a ray fired from that location. A red marker indicates the ray was absorbed by a marble. A yellow marker means the ray was reflected, entering and exiting the board at the same location either because it tried to pass between two marbles or because it could not enter the grid at all. An orange marker indicates the ray was deflected, exiting the grid at the location with the same orange marker symbol.



**Test Ray:** A visible beam which behaves exactly like normal rays, except that it ignores hidden marbles and is only affected by the visible marbles placed on the board by the player.

- **Deflection Marker:** An orange marker with a symbol, indicating that a ray from that location was deflected, exiting the game board at another location (marked by another orange marker with the same symbol). Every deflection marker has exactly one identical twin elsewhere on the board's perimeter. Rays which do not encounter any marbles are also denoted by these markers.

• **Absorption Marker:** A red marker indicating that a ray fired from that location hit a marble head-on and was absorbed.

- **Reflection Marker:** A yellow marker indicating that a ray fired from that location was reflected, exiting the grid at the same point at which it entered. This is either because it attempted to pass between two hidden marbles, or because it was unable to enter the grid.



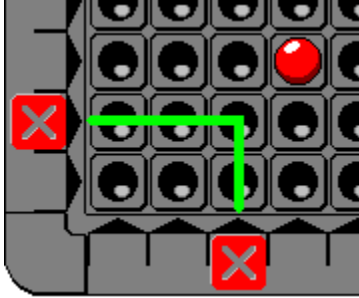
**Empty Space:** An space in the grid which is not sealed and does not contain a marble.



**Sealed Space:** A space with its depression filled in. Sealed spaces are optional and have no special properties, but are merely used to mark spaces which the player has determined do not contain marbles.

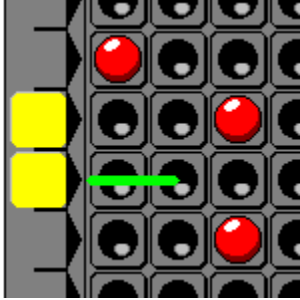


**Absorption:** Here is an example of a ray which is absorbed.



**Deflection:** Here is an example of a ray which is deflected. Identical orange markers denote the entry and exit points of the ray.





**Reflection:** Here is an example of each type of reflection. The top ray is a reflection because it could not enter the grid-- to do so it would have had to pass alongside the marble diagonally above the yellow marker, which is not allowed. The bottom ray is a reflection because it tried to pass between two marbles.



