Polyominoes 7.2 for Mac OS Classic

Contents

Downloading, Installation, and Registration gives you basic info on obtaining Polyominoes and registering it (Polyominoes is not free!).

Getting Started and **4 Games In One** gives you the basic info you need to play Polyominoes.

Choosing Boards and **Choosing Piece Sets** tells you how to choose from the many built-in boards and piece sets to increase your fun!

Advanced Features provides help on even more features which you may find helpful or fun, but you probably won't need to understand at first to enjoy Polyominoes.

Administrivia tells you how to file a bug report and lists credits and references.

Last revision: January 19, 2004.

Downloading and Installation

System Requirements

Polyominoes for Mac OS Classic will run on any Macintosh running Mac OS 7.0 through 9.2.x.

There are also versions of Polyominoes available for Mac OS X, as well as Microsoft Windows . Check http://www.polyominoes.com/ for updates.

Downloading

You can download Polyominoes from the Polyominoes web site (http://www.polyominoes.com/) using any browser.

Installation

Once you have downloaded, your browser will probably automatically convert the .sit file. If not, double-click the .sit file to decode it and create the Polyominoes application folder. Drag the folder to wherever you want to keep it on your hard drive.

Uninstalling

To uninstall, simply drag the Polyominoes folder to the trash.

Registration

Polyominoes is not free. It is shareware; the price is $12 (US dollars).
Please register your copy of Polyominoes by using the Kagi payment processing system:

- Register online at http://order.kagi.com/?XY5. You can also get to the online ordering page by selecting **Register Online...** in the **Command** menu from within Polyominoes.
- If you need more information, visit http://www.kagi.com/.

For your convenience, Kagi accepts payment in the following forms:

- Major credit cards – including VISA, MasterCard, American Express, Diners Club, Discover, and Eurocard.
- Check or money order
- Cash of all kinds -- US dollars and over 30 other different types of

currency including the euro and Japanese currency; currency conversion is done automatically

You will be sent a registration code which will allow you to register your copy. To enter your code, select **Enter Registration Code...** in the **Command** menu.

Benefits of Registering

Besides being the right thing to do, registering will:

- prevent the splash screen (with 10-second delay) from showing at start-up.
- prevent the dialogs from coming up every 8 games asking if you want to register.

Upgrade Policy

This version of Polyominoes is free to all users who registered for previous versions of Polyominoes.

Registering for version 7.2 means that all future versions are free to you. Future versions will be available on the web, but they will not be sent to you directly.

Future Features

Here are some possible future features. If you have any ideas, feel free to tell me at kevin@kevingong.com.

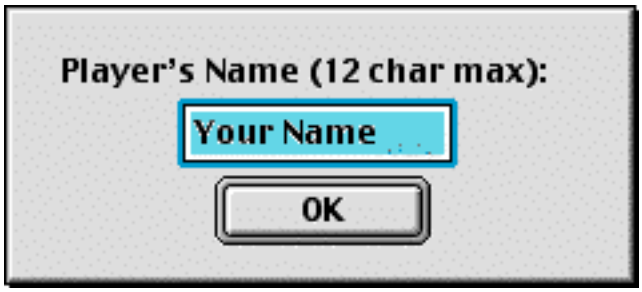
- 3-dimensional pieces
- more boards
- more piece sets
- tiling puzzles
- a puzzle solver
- improved board and piece editors
- other shapes, such as triangles or hexagons

Getting Started

Players

Polyominoes keeps track of statistics, such as games played, won, and lost. More than one user can use the same Polyominoes, and it will keep track of separate statistics for each player.

When you first run Polyominoes, it will ask you for your name.

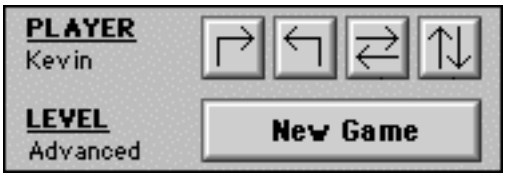


Enter your name. There is a maximum of 12 characters.

The next time you run the program, it won't ask for your name. If someone else plays, they should change the player and enter their name. Go to the **Command** menu and select "Change Player..." This will bring up the following dialog:

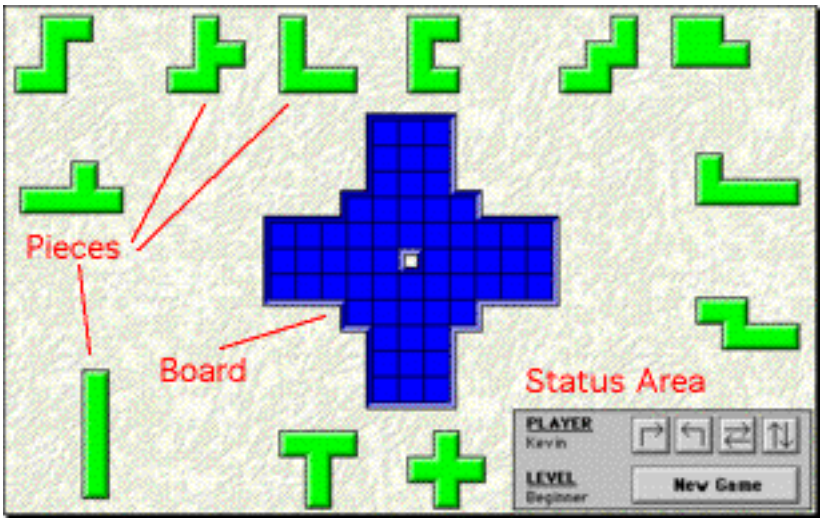
Select "New Player" and enter your name. You can switch between players by using the pop-up menu in this dialog.

The current player's name is always shown in the status area in the bottom right hand corner of the game window:



Game Play

The game window has three main areas:



By default, the pieces are green and the board is blue (you can change this; see the Options help section). The status area at the bottom right tells you the current player name, level, and provides buttons for common operations.

How to move pieces

Play consists of placing the pieces on the board.
To move a piece, simply click and drag it onto the board, releasing over the desired spot (you do not have to be exact).

Shortcut 1: If you drag a piece and release the mouse over a square, and the piece only fits onto the board on that square in one way, then it will make the move. If the move is not possible, or can be done in more than one way, it will not make the move and the piece will snap back to its original position.

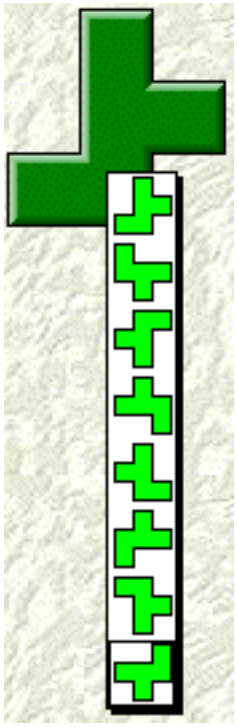
Shortcut 2: If you click on a square on the board, and one (and only one) piece can cover that square and in only one way, then it will make that move.

How to flip and rotate pieces

You do not have to move pieces onto the board in whatever orientation they're currently in. Before moving a piece, you can flip or rotate it to your heart's content.

There are a variety of methods to rotate or flip a piece. Choose the one or combination which you feel most comfortable with. Here are the different methods, the first one being the suggested method:

Click on a piece while holding down the Control or Option key.
You will be presented with a pop-up menu containing all the different orientations of that piece; select one and let go of the mouse.



You can also show this pop-up menu by double-clicking a piece (keep holding the mouse down after the second click).

Click the buttons in the status area.
First, select a piece by clicking on the piece. Then click on the desired button in the status area. Doing so will perform the given operation on the selected piece.

Press the arrow keys on the keyboard
right-arrow = clockwise rotation
left-arrow = counter clockwise rotation
up-arrow = vertical flip

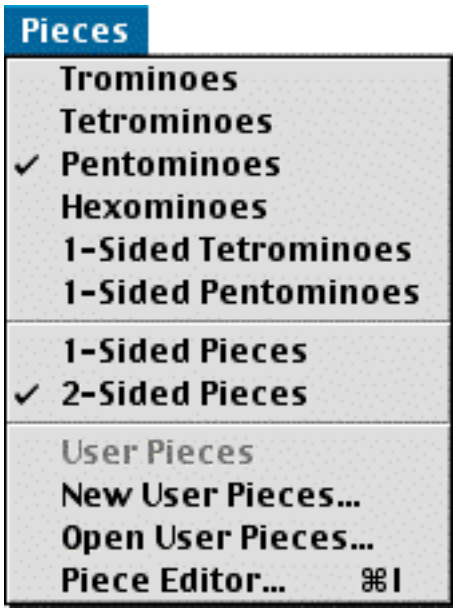
down-arrow = horizontal flip
The operation will be performed on the selected piece.

Press the 'a', 'd', 'w', or 's' key.
Pressing these keys is equivalent to pressing the left, right, up, and down arrow keys, respectively. Select **Preferences...** under the **Options** menu to change these keys.

Press the space bar.
The selected piece will rotate or flip. Continue to press the space bar to cycle through all possible orientations of that piece (there are 2, 4, or 8 orientations depending on the piece).

When you can't flip pieces

You can't flip pieces if the **1-Sided Pieces** option is currently selected. By default, **2-Sided Pieces** is selected.



Strangely enough, selecting **1-Sided Tetrominoes** or **1-Sided Pentominoes** does not prohibit flipping pieces. Although it makes more sense to select the **1-Sided Pieces** option if you use those piece sets.

4 Games In One

Game

To play the game, select **Game** in the **Options** menu.

The rules of the **Game** are very simple. Each player takes a turn placing one piece on the board. If a player cannot place a piece on the board, the game is over. The player who put the last piece on the board wins.

Man vs. Machine

You can play against another person -- either locally, or over the network (see the Network Play help section for details). Or you can play against the computer.

Choose the **2 players** option to play against another person. Choose the **1 player** option to play against the computer.

If you're playing against the computer, select the computer's level.

The **Beginner** level should be fairly easy to beat. The **Master** level is very hard to beat. I can beat it only about 15% of the time. The computer will keep track of how you fare against each level (see the Statistics help section).

Options

The game may be played on any of the boards, and with any of the piece sets. See the help sections on choosing boards and piece sets.

Use the **Options** menu to select whether you go first, or the computer goes first. By default, the **First Alternates** option is turned on. This means that the first player toggles between you and the computer after each game. Select **Preferences...** under the **Options** menu to change this selection.

By default, the pieces placed by the first player are green and the pieces placed by the second player are red. You can change this in the preferences. Change the **First Piece Color...** and **Second Piece Color...**

Jigsaw Puzzle

To play the puzzles, select **Jigsaw Puzzle** in the **Options** menu.

The puzzle game is a solitaire puzzle. The object is simply to place all the pieces on the board.

The pentominoes fit precisely in all the included boards except the 8x8 square board. In that board, the pieces still fit, but there are 4 extra squares.

Once you place a piece on the board, you can still move them within the board or move them off the board. If you try to move the piece to somewhere it can't fit, the piece will return to its original off-board position.

Saving Puzzles

You can save your progress on a jigsaw puzzle (whether you've finished it or not) by selected **Save Puzzle** in the **File** menu.

If you've already saved it, you can use **Save As...** to save to a different file name.

If you want to go back to a previously saved puzzle, simply select **Open Puzzle...** and open the old puzzle file.

You can also save and open spanning puzzles.

Spanning Puzzle

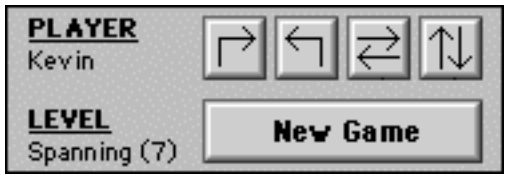
To play the spanning puzzle, select **Spanning Puzzle** in the **Options** menu.

The object of this puzzle is to place pieces onto the board so that no additional pieces can be placed on the board. Such an arrangement of pieces is a spanning. The fewer the pieces you place on the board to achieve this, the better the spanning.

The spanning puzzle can be played on any board and with any piece set. As with the jigsaw puzzle, after you have placed a piece on the board, you can move it to another position on the board.

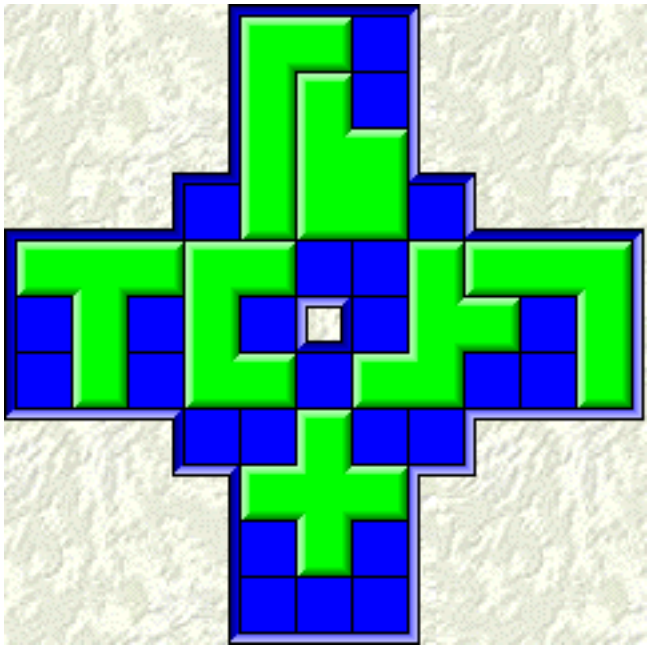
Feedback

The computer will tell you when you have achieved a spanning. It will also alert you if you've created a personal best spanning. It displays your best spanning in parentheses in the status area. It also displays this number in the statistics window.



Still Confused?

If you're still unsure of the concept, let the computer find a spanning for you. Select **Find Spanning** in the **Commands** menu. It will always find the same spanning, and it will usually be 7 or 8 pieces. You should be able to do better. For most of the boards, you should be able to span the board with 6 pentominoes.



Here's a sample spanning. Notice that the C-shaped pentomino could fit on the bottom of the board, but since it's already being used on the board, that's not possible -- so this is still a spanning (although not an optimal one).

Saving Puzzles

You can save your progress on a spanning puzzle (whether you've finished it or not) by selected **Save Puzzle** in the **File** menu.

If you've already saved it, you can use **Save As...** to save to a different file name.
If you want to go back to a previously saved puzzle, simply select **Open Puzzle...** and open the old puzzle file.

You can also save and open jigsaw puzzles.

Challenge

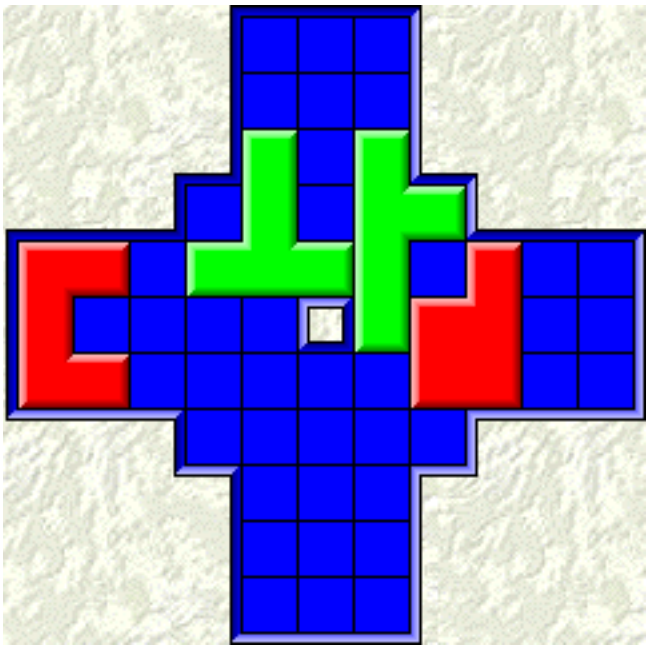
To play the challenge, select **Challenge** in the **Options** menu.

The computer will place pieces on the board to create a situation in the polyominoes game (see the Game help section for details on the game). This is a situation in which you are guaranteed to have a winning move. The challenge is to find it!
It's very similar to a mate-in-3 chess problem. You know you can checkmate your opponent -- you just have to find out how.

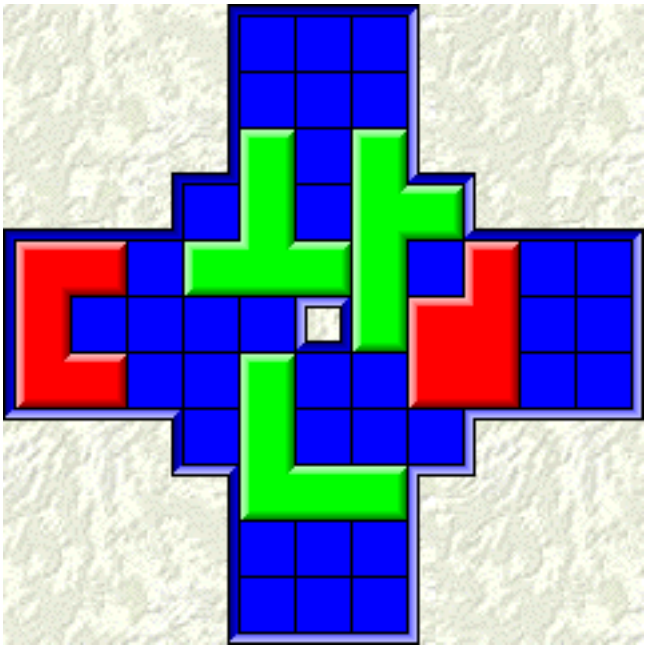
Generally, the solution requires more than one move. After you make a move, the computer will respond, and you have to make another move, etc., until the game is over.

If you make a wrong move, the computer will tell you. You have the option of trying again or giving up. If you give up, the computer will show you the correct move, and then you play the losing side. You can also give up at any time by selecting **Give Up Challenge** in the **Commands** menu.

Here's a sample challenge problem:



The solution is to place the L-shaped pentomino on the board as follows:



There are now only two places to put a piece -- the upper part of the board, and the left part of the board. Only one piece can fit into either section, so if the opponent puts a piece in one, then you can put a piece in the other and win. Note that the other sections of the board are large enough to fit the C-shaped and block pentomino, but they're both already on the board so they can't be used

again.

Choosing Boards And Piece Sets

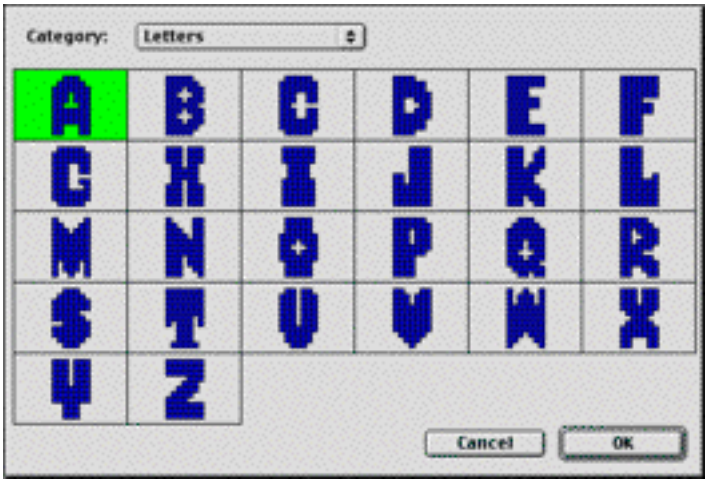
Choosing Boards

Polyominoes includes 100 different boards to choose from, and you can make your own, as well.

Using the Board Browser

Select **Select Board...** in the **Boards** menu to use the Board Browser to a board to play on.

This brings up a window with a pop-up menu for board category, and pictures of all the boards in that category.



Use the pop-up menu to select the category, then click on a board to select it. The currently selected board is highlighted in green.

When you have selected your board, click **OK** to use it, or click **Cancel** to continue to use the current board.

As a shortcut, you can use the hierarchical menu **Select By Category** to open the Board Browser with the category you want. Even after you do so, you are still free to switch between categories within the board browser.

Cycle Boards Option

If the **Cycle Boards** option is selected, and **Game** is also selected in the **Options** menu, then every time you start a new game the board changes. The boards are cycled through in order.

The boards do not cycle if you are playing the Challenge, Jigsaw Puzzle, or Spanning Puzzle.

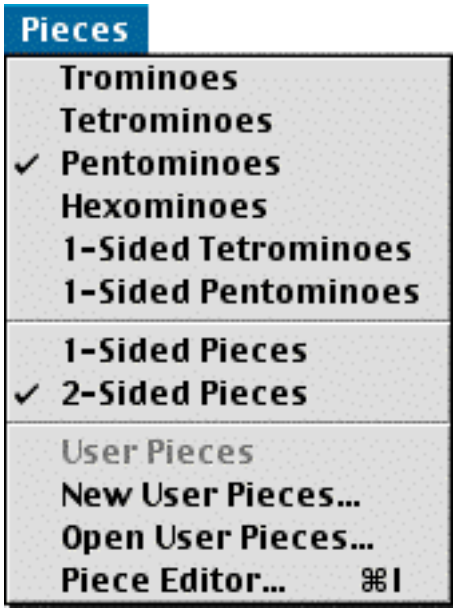
By default, **Cycle Boards** is selected. You can turn this option off by selecting **Preferences...** in the **Options** menu.

Creating Your Own Boards

If 100 boards isn't enough for you, you can create your own! See the help section on **Creating Boards**.

Choosing Piece Sets

Polyominoes includes 6 different piece sets to choose from.



Statistics and high scores are only kept for the Pentominoes.

Trominoes are all the polyominoes made of 3 squares.
Tetrominoes are all the polyominoes made of 4 squares.
Pentominoes are all the polyominoes made of 5 squares.
Hexominoes are all the polyominoes made of 6 squares.

1-Sided Tetrominoes are all the polyominoes made of 4 squares, where mirror images are counted as separate pieces. In other words, a left hand and a right hand would be thought of as two different pieces, whereas normally they're thought of as the same.

1-Sided Pentominoes are all the polyominoes made of 5 squares, where mirror images are counted as separate pieces.

1-Sided and 2-Sided Pieces

If **1-Sided Pieces** is selected, then you cannot flip pieces -- you can only rotate them. Generally, you will want to select **1-Sided Pieces** when using the 1-Sided Tetrominoes or 1-Sided Pentominoes. Though there is no rule that this has to be so.
If 2-Sided Pieces is selected, then you can flip and rotate pieces.

Creating Your Own Piece Sets

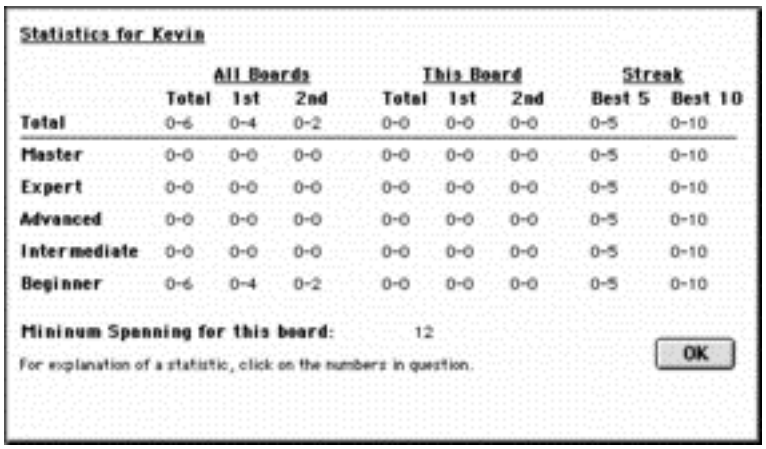
If the included piece sets aren't enough for you, you can create your own piece sets! See the help section on **Creating Piece Sets**.

Advanced Features

Statistics and High Scores

Select **View Statistics** in the **Commands** menu to view game statistics.

The computer will keep track of how many times you have won or lost -- for every board, and for each difficulty level. It will also keep separate results for when you move first, or the computer moves first.



The computer keeps track of your best performances in 5 or 10 consecutive games.
The computer keeps track of your best spanning for each board.

If the chart of statistics is confusing to you, simply click on the numbers you would like more information on. The text at the bottom of the window will explain exactly what it means.

Note that if you stop a game before it is finished (for example, by selecting New Game), then that is counted as a loss in your statistics.

High Scores

Select **View High Scores** in the **Commands** menu to view the high scores.

The program keeps high scores for each level of play -- best performance in 5 or 10 consecutive games, and winning percentage. Winning percentages only count if you have at least 10 wins.

If you beat the **Master** level 10 or even 5 consecutive times, I'm very impressed

-- if it's too easy, let me know!

Select **Clear High Scores...** in the **Commands** menu to clear the high scores.

Limitations

Only games using pentominoes are counted in your statistics.

Also, games on user boards are not counted.

Network Play

Network play is a feature that is only available in the Mac OS Classic version of Polyominoes. To enable network play, you must have Apple Game Sprockets installed. Usually, this is installed by default. If you are running older versions of Mac OS (8.5 or earlier), you may need to manually install Apple Game Sprockets, which you may be able to obtain from the Apple web site.

You can play against another person over the network -- either using TCP/IP (the Internet) or AppleTalk. There is currently no center Polyominoes game server. Therefore, to find someone on the network to play with, you must know their network address.

Hosting A Network Game

If you want to host a network game, choose **Host Network Game…** from the **Commands** menu.

You'll be presented with a dialog in which you can enter your network information. Select AppleTalk and/or TCP/IP. If you are planning to play using the Internet, use TCP/IP. Don't change the port number from 9876 unless you know what you are doing. The other fields are optional. Click OK. Now you just wait until someone joins your network game.

Joining A Network Game

If you know someone who is hosting a game and want to join them, choose **Join Network Game…** from the **Commands** menu. You'll be presented with a dialog in which you enter your network information.

Select TCP/IP if you are using the Internet. Type in the name or IP address of the host machine you are trying to join. Use port 9876 unless you know what you are doing. The other fields are optional. Click OK. If successful, you'll see a dialog telling you that you've been connected.

The other person will see a similar dialog. If you enter an incorrect TCP/IP address, or the wrong port number, you will robably get an error -30399 dialog.

Playing A Network Game

Once you are connected, just start playing! The computer decides who goes first. You can tell whose move it is by looking at the status area at the bottom right. The << symbol shows up next to the player whose move it is.

Play the game as you normally would play against the computer. The only difference is that your human opponent is making the moves instead of a computer.

Chat During A Network Game

Polyominoes includes an integrated text chat feature. So you can chat with your opponent as you play. Simply type in your text into the chat window and press return. The text will be sent to your opponent, and a running dialog of the chat will show up in your chat window, much like an instant messaging client.

By default, the computer will speak out loud any text sent to you through the chat window. You can turn this feature off by unselecting the **Speak Chat Text** item in the **Preferences** dialog.

You can close the chat window at any time by choosing **Close Window** in the **Windows** menu, or re-open it by choosing **Chat Window** in the **Windows** menu.

Leaving A Network Game

Certain features of Polyominoes are temporarily disabled while you are in a network game. For example, you can't use the board or piece editors, or play the jigsaw, challenge, or spanning puzzles.

When you are finished with the network game, choose **Leave Network Game** from the **Commands** menu.

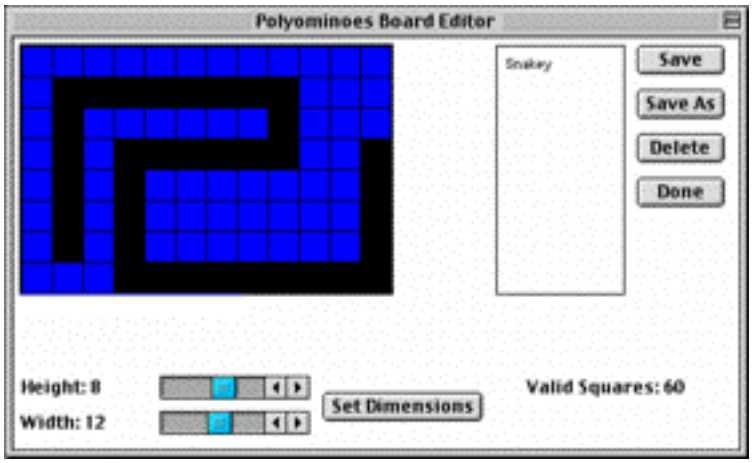
Creating Boards

You can create your own boards on which to play the polyomino game and/or puzzles by using the Board Editor. You can store several such boards in a single file.

Creating New User Boards

First, you should a create a file to contain your boards. Select **New User Boards...** from the **Board** menu and choose a name for the file.

After you have chosen a file name, you'll automatically enter the board editor. A new window will come up where you can create the boards for your new file.



The first step is to select the dimensions of the board using the scroll bars. Then select **Set Dimensions**. This will create a rectangular board of that size.

The next step is to click on individual squares to toggle them as valid/invalid. An valid square is one that is part of the board; an invalid square is not. You may click and drag the mouse to mark or unmark many squares at once. It's just like using the pencil tool in many drawing programs.

Finally, select the **Save** or **Save As** button to give the board a unique name. You can add more boards as you desire. Select a board's name and click **Delete** to delete it. Click **Done** when finished.

Editing Existing User Boards

If you have an existing file of boards you'd like to edit, first choose **Open User Boards...** from the **Board** menu and open that file. Then choose **Board Editor...** from the **Board** menu to start editing the boards.

Using User Boards

User boards will appear in the hierarchical menu **User Boards...** To use a user board, simply select it from the menu.

User boards behave exactly like built-in boards, except that statistics and high scores are not kept for them.

Become Rich and Famous...well, maybe famous

If you create a board which you would like to see built-in to a future version of Polyominoes, let me know. Just e-mail me a copy of the board. Or, if it's more convenient, you can send me a paper copy. Include a pentomino jigsaw puzzle solution if there is one.

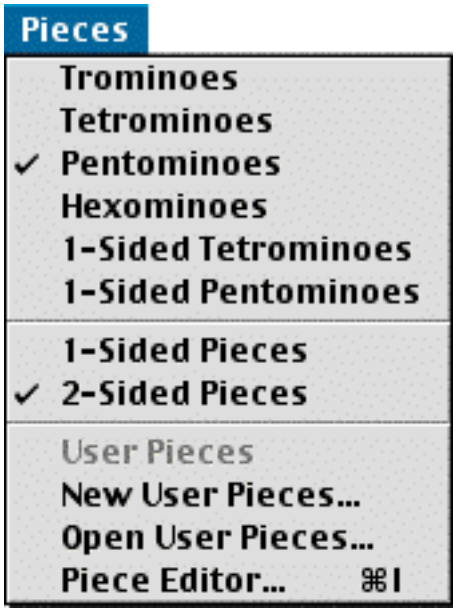
Even if I don't include your board in a future version of Polyominoes, I'll at least put it up on the Polyominoes web site.

Creating Piece Sets

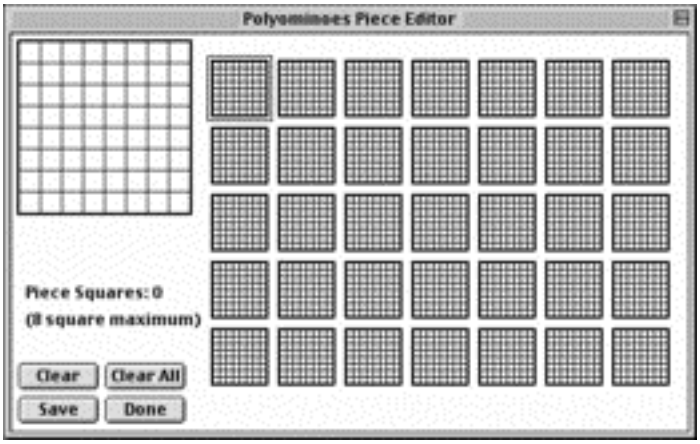
If the included piece sets aren't enough, you can create your own set of pieces using the Piece Editor.

Creating New User Piece Sets

First, you should a create a file to contain your piece set. Select **New User Pieces...** from the **Pieces** menu and choose a name for the file.



After you have chosen a file name, you'll automatically enter the piece editor. A new window will come up where you can edit your pieces.



The small boards to the right show all the pieces in your set. There is a maximum of 35 pieces in your piece set.

The large board on the left shows the current piece you are editing. A piece can be no larger than 8 squares, and must fit inside an 8x8 square. There is no rule that the squares have to be next to each other -- you can create discontinuous pieces. These pieces, as far as I know, work okay -- except that they "disappear" while dragging. Needless to say, this is a bug which isn't high on my priority list.

Note: the computer may not play the game very well if you create a set containing pieces of varying numbers of squares (e.g., if some pieces have 5

squares and others have 6 squares).

Click on the small boards to change the piece you are editing. Click on the large board to draw the shape of a piece.

Select **Clear** to clear the current piece you are editing. Select **Clear All** to clear all the pieces in your piece set.

Select **Save** to save your work. Select **Done** when you are ready to use your piece set.

Editing Existing User Piece Sets

If you have an existing piece set you'd like to edit, first choose **Open User Pieces...** from the **Pieces** menu and open that file. Then choose **Piece Editor...** from the **Pieces** menu to start editing the pieces.

Using User Piece Sets

The user piece set will appear in the piece menu. To use the piece set, simply select it as you would a normal piece set.

Become Rich and Famous...well, maybe famous

If you create a piece set which you would like to see built-in to a future version of Polyominoes, let me know. Just e-mail me a copy of the piece set. Or, if it's more convenient, you can send me a paper copy.

Even if I don't include your piece set in a future version of Polyominoes, I'll at least put it up on the Polyominoes web site.

Auto-Update

The auto-update feature is only available in the Mac OS X version of Polyominoes.

Other Features

Here's information on some of the other features found in Polyominoes 7.2.

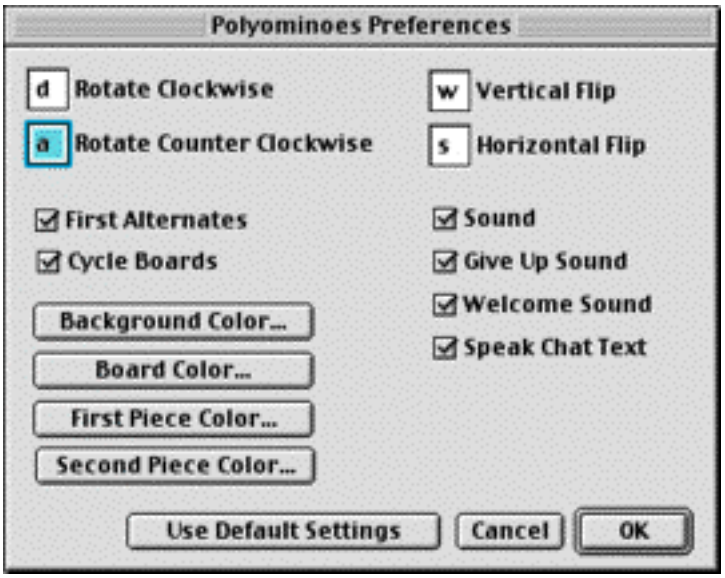
Printing

You can print the board by selecting **Print Board...** in the **File** menu. It might even print in color if you have a color printer (to be honest, since I don't have a color printer, I haven't tried).

You may get mixed results trying to print large windows, depending on the board and piece set you are trying to print. You will generally get the best results if you first select **512x342** in the **Window** menu before printing, then selecting your original window size after you are done printing.

Sounds

You can turn the sounds on or off by selecting **Preferences...** in the **Options** menu.



Sound applies to all sounds, including the snapping sound when a piece is placed on the board, and the sounds made at the end of a game.

Give Up Sound is the sound the computer makes when it knows it's won.

Welcome Sound is the first sound you hear when you run Polyominoes.

Speak Chat Text - the computer will speak all the chat text in a network game.

Colors

You can change the colors in by selecting **Preferences...** in the **Options** menu. You can change the piece color, board color, and background color.

Piece 2 Color refers to the color of the pieces on the board when placed by the second player in a game.

Piece 1 Color refers to the color of the pieces at all other times (either on the board or off).

Windows

Use the **Windows** menu to control the windows.

The **Game Window** is the main window with the board and pieces. Select this menu item to open it and bring it to the front (if it isn't already open and frontmost).

The **Chat Window** is only available during a network game. It lets you chat with your opponent. Select this menu item to open it and bring it to the front (if it isn't already open and frontmost).

Use **Close Window** to close the frontmost window.

The **Game Window** does not have a grow box that you can drag to resize the window to an arbitrary size. However, you can select any of 4 preset sizes. By default, Polyominoes chooses the largest one which fits your screen. But you can make it smaller if you choose to.

Use **Show Title Bar** and **Hide Title Bar** to show/hide the title bar of the **Game Window**. By default, there is no title bar. You will need to show the title bar if you want to drag the window around your screen.

Miscellaneous Shortcuts

To start a new game (or clear the board in the jigsaw puzzle or spanning puzzle), you can either click on the **New Game** button in the status area or type command-N.

To select the next piece, press the tab key (you'll have to press it to find out what "next" means, but it's fairly intuitive). To select the previous piece, press shift-tab.

Administrivia

Bug Reports

If you would like to report bugs, request new features, or give user interface suggestions, please visit http://polyominoes.com/.

Once at the page, click on **Bug Report** and fill out the form. Thanks!

Alternatively (but less preferred), you can e-mail the report to me. Please include the model of the computer you are using, the version of the operating system, and any other details you think might be relevant.

Credits

Polyominoes 7.2 was written by Kevin L. Gong. It is copyright 1990 - 2004 by Kevin L. Gong

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Pentominoes Game

The game with pentominoes on the 8x8 board is based on the game created by Solomon W. Golomb. The word "pentominoes" is a registered trademark of Solomon W. Golomb.

Boards

The 'digit' and 'alphabet' boards were taken from "Pentomino Alphanumerics" by Judd/Zosel in the Journal of Recreational Mathematics 3 (1978-79).

The 'animal' boards were taken from "Pentominoes" by Jon Millington (1987, Tarquin Publications).

Sounds

Give Up sound recorded by Reza Sirafinejad

Sounds recorded using MacRecorder (Farallon Computing). Extra effects added using SoundEdit.

Testers

Many thanks to all the people who tested this and previous versions of

Polyominoes: Gary Anderson, Adly Azamin Azman, James Best, Dean Blackketter, Leslie Chan, Jean Chang, Julian Chang, Holger Detering, Garrett Fitzgerald, Richard A. Fowell, John Geiser, Jennifer Gong, Andy Grignon, Sven Guckes, Christopher M. Haar, Brian Hall, Bob Harris, Lefteris Kalamaras, Lynn Lanning, Kristin Lawson, Bob Martino, Nicholas Monitto, David Porter, Sylvain Rouzé, Michael Sheldon, Walter Sun, Kevin Tieskoetter, Kam Tsang, Dameon Welch, Jeremy Wyld, and Jean Yeo.

Thanks

Thanks to all the people who registered for earlier versions of Polyominoes. I wouldn't have done this without you!

References

For a more detailed and comprehensive listing of references on polyominoes, see http://polyominoes.com/.

Some of the more interesting references:

- Golomb, Solomon. **Polyominoes**. Charles Scribner's Sons, New York, 1965.
- Martin, George E. **Polyominoes -- A Guide to Puzzles and Problems in Tiling**. The Mathematical Assocation of America, 1991.
- Klarner, D. A. "My Life Among The Polyominoes" in **The Mathematical Gardner**, 243-262. Wadsworth International, Belmont, CA 1981.
- Lunnon, W. F. "Counting Polyominoes" in **Computers in Number Theory**, 347-372, Academic Press, London 1971.