

Laser Chess Game Description

Laser Chess is a chess-like strategy game for two players. The goal is to manipulate a laser-firing piece and various reflective objects to eliminate your opponent's king.

There are eight basic types of pieces in Laser Chess.

A description of the pieces:

Figure 1: These are the basic pieces in Laser Chess.

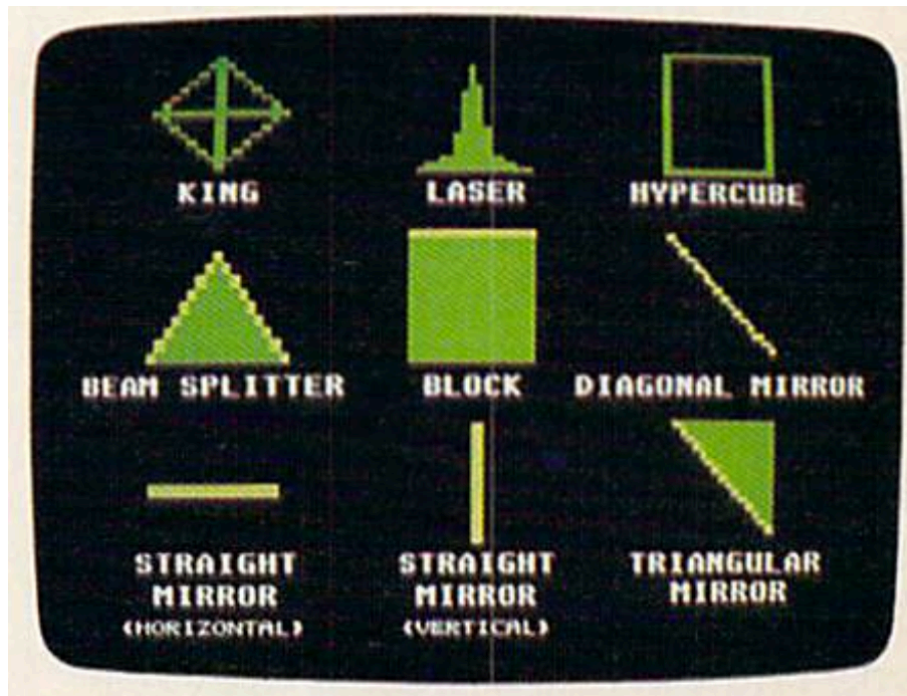


Figure 1 shows each piece and its name. Notice that some sides of certain pieces are highlighted with a different color. This indicates a reflective surface. When a laser beam strikes a reflective surface, it bounces off without harming the piece. But if a piece is hit by a laser on a non-reflective surface, it is destroyed.

A piece can also be removed from the board if it is captured by an opposing piece. This is similar to traditional chess; to capture a piece, you simply move one of your own pieces onto its square.

In addition to their ability to move from square to square, pieces with reflective surfaces can also be rotated in place in 90-degree increments. This lets you orient the piece to protect it against opposing laser shots, or to set up bounce shots with your own laser.

The king is the most important piece in Laser Chess. When the king is eliminated, the other player wins the game. Since it has no reflective surfaces, it can be destroyed by a laser from any angle. It can also be captured by an opposing piece. The king is not totally defenseless, however. It can capture any opposing piece by moving onto its square.

But you can use it for a capture only once per turn.

The second most important piece is the laser. This piece is your primary offensive weapon; it's the only piece which can fire a laser shot. To take aim, you can rotate it in place at 90-degree angles. Like the king, the laser is completely vulnerable to enemy laser strikes, because it has no reflective surfaces. If you lose your laser, the game is not over, but only the most skillful (or incredibly lucky) player can overcome its loss.

The hypercube is an interesting piece. It can't harm an opposing piece directly, but may very well do so indirectly. When the hypercube is moved onto another piece (even your own), that piece disappears from its original position and reappears on a randomly selected empty square. This can happen only once per turn. The hypercube can be a two-edged sword; it may relocate a piece to a vulnerable position, or it may make it possible for the piece to capture an important opposing piece on the next move. The hypercube has no reflective surfaces and cannot be rotated. It is invulnerable to laser shots, however, because it's made of transparent material—a laser beam passes right through it. Remember that.

The beam splitter is another tricky piece. When a laser beam strikes a splitter's vertex (the point opposite its base), the beam splits in two. The two new beams travel in opposite directions, perpendicular to the original beam's path. (See Figure 2.) When a laser shot hits one of the beam splitter's reflective surfaces, it bounces off at a 90-degree angle without splitting. If the beam splitter's base is hit by a laser shot, it is destroyed. The beam splitter can be rotated.

Figure 2: As seen in this magnified view, a beam splitter's vertex reflects a laser shot in two perpendicular directions.



The blocks are fairly simple pieces. However, they may impose some complex situations. A block can capture any opposing piece by moving onto that piece's square, much like a king. But unlike a king, a block has one reflective side and can be rotated as the situation demands. Therefore, blocks can be used either offensively or defensively. A laser beam that hits the reflective surface of a block is deflected 180 degrees—bouncing the beam back where it came from.

A diagonal mirror cannot be destroyed by a laser, because both of its surfaces are reflective. Diagonal mirrors can be removed from the board only when captured by a block or a king. When a laser beam strikes a diagonal mirror, the beam is deflected 90 degrees. Diagonal mirrors can be flipped to their opposite diagonal, but cannot be rotated to face horizontally or vertically.

The horizontal mirrors and vertical mirrors (known collectively as straight mirrors) are also invulnerable to lasers due to their reflective surfaces. When a laser hits a straight mirror on its flat surface, the beam is deflected 180 degrees. If the laser hits a straight mirror edgewise, the beam passes straight through it. (Look closely at Figure 2; a laser beam is passing through a horizontal mirror just to the left of the red beam splitter.) Straight mirrors can be rotated to become either horizontal or vertical mirrors, but not diagonal mirrors.

The triangular mirrors deflect laser beams just as diagonal mirrors do, but they are vulnerable to hits on their two nonreflective sides. A triangular mirror can be rotated in 90-degree increments.

Making Moves

As in the conventional game of chess, a move in Laser Chess consists of moving or otherwise manipulating a game piece. There is a color change of some sort to indicate whose turn it is; for instance, in this version, the border of the game board changes color after each turn.

The same player always moves first in Laser Chess. There's no particular advantage or disadvantage to moving first.

A turn consists of two moves. The number of moves remaining in a turn is indicated visually on the screen. (See Figure 3.)

Figure 3: This full-screen view of Laser Chess shows its 9 X 9 board grid and game controls.



Before you move or rotate a piece, you must select it.

To select a piece: move the mouse to the square where the piece is and click the mouse left button.

To deselect the piece, click on it a second time while the piece is still in the same square.

If you accidentally select the wrong piece, you can deselect it by the same means used to select it, as long as you're still in the same square.

After you've selected a piece, your next decision is whether to move or rotate it. Moving a distance of one square takes one move; moving two squares takes two moves (although you can move a piece two squares in one step). Since you have only two moves per turn, the maximum distance a piece can be moved in one turn is two squares.

Pieces can be moved down, up, left, or right, but not diagonally. You can effectively move a piece diagonally by using two moves—down and right, for instance.

You cannot move a piece onto a square occupied by another piece. The only exceptions are captures with blocks and kings, and moves of the hypercube as described above.

Rotating A Piece

Press the key 'R' to rotate a piece. The computer does not allow you to rotate a piece that's incapable of rotation. Otherwise, the piece rotates 90 degrees (one-quarter turn) clockwise. You may continue rotating the piece to any desired position before deselecting it. Rotating a piece to face any direction takes only one move, and the move is subtracted after the piece is deselected. If you deselect the piece in its original position, no move is subtracted.

You can combine a rotation and a move in a single action.

First, select the piece. Then rotate it to the direction you wish it to face.

Finally, move to any adjacent square (except a diagonal) as you would normally do.

The piece moves to that square and faces in the direction you've chosen. Since rotating a piece and moving a piece each takes one move, this uses up your turn.

Special Features

At the center of the 9 X 9 board is a special square called a hypersquare.

It absorbs laser beams and acts like a stationary hypercube. That is, if you try to move a piece onto it, the piece disappears from its original position and reappears on a randomly selected empty square. This can happen only once per turn, however.

Along the board on the left side of the screen are some geometric button shapes. The button labeled Q allows you to quit playing at any time. When selected, this option requires that you confirm your decision.

The restart button (R) lets you start a new game without finishing the current game. (For instance, a player may be so hopelessly behind that he or she wants to resign.) Again, the program asks that you confirm this choice.

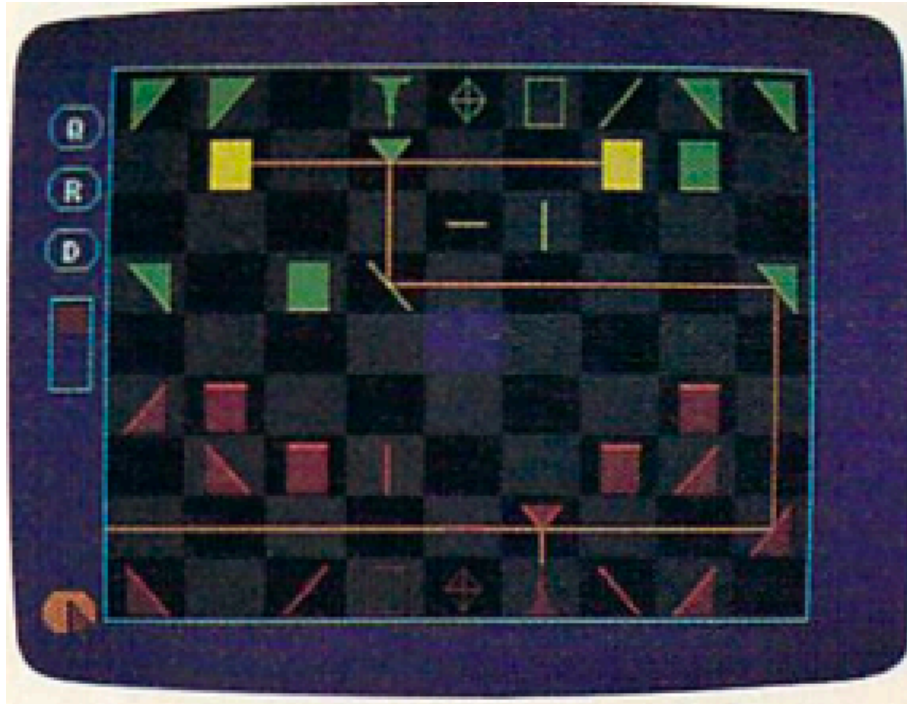
Firing The Laser

The last button is the laser trigger.

When it's your turn, you can select this button to fire your laser. If your laser piece has been captured or destroyed, the laser button won't appear on the screen during your turn.

Figure 4 illustrates the general effect of firing the laser

Figure 4: The combination of reflective and transparent surfaces of the various pieces can result in complex bounce patterns. Here, the red laser takes advantage of the green beam splitter to destroy two blocks.



Firing your laser takes only one move, but can be done only once per turn. Therefore, you may want to use your first move in a turn to aim the laser, rotate a reflecting piece to set up a bounce shot, or move another piece into position. Of course, you won't necessarily be firing the laser on every turn.

Much of the strategy in Laser Chess involves moving and rotating your pieces to set up complex shots. It's important to realize that any laser hit on a piece's non-reflective or nontransparent surface will destroy that piece. You can destroy your own pieces just as easily as you can destroy your opponent's. You can even zap your own laser, particularly if you fire directly into the 180-degree reflective surface of a straight mirror or block, or if you fail to anticipate the effects of a beam splitter. Be forewarned.

Laser Chess Strategy

As in the conventional game of chess, much of the strategy in Laser Chess revolves around thoughtful placement of your pieces. However the character of the game differs from that of chess in many ways.

The laser, for example, can strike at long distances and in more than one direction at once. And the hypercube adds an extra element of uncertainty. The best strategy for any particular game depends to a great extent on the skill and personality of your opponent. However, here are some general tips you may find helpful.

Get your mirrors out early. Use them to gain the fullest potential of your laser. Try to position mirror networks on both sides of the beam splitter so you can inflict as much damage as possible.

Take advantage of the blocks.

Since they "control" an area around them with their threat of capture, no other pieces can safely move within their range. Make your opponent work to displace them. Remember to rotate the reflective side of a block to the most probable direction of laser fire. If you can prevent a laser from destroying the block, your opponent will most likely have to gang up on it with two or more of his or her own blocks.

Use mirrors to protect your king. If you surround your king with straight and diagonal mirrors, there is no way it can be hit by a laser. Therefore, your opponent will have to break through your defense with blocks. (This is a pretty dirty

trick, because when all of your opponent's blocks have been used, your king is almost invulnerable. Defending your king with blocks is also a good strategy.

The hypercube should be used sparingly, since you have no idea where a relocated piece will reappear. Most players use the hypercube as a last resort—if another piece is going to be destroyed anyway, it doesn't hurt to take a chance and relocate it with the hypercube.

Also, if your opponent's king is encircled with mirrors, you can march right in with your hypercube, followed by a block. This tactic may displace your opponent's defense, forcing him to evacuate the king from its mirrored fortress. Escorting the hypercube with an adjacent block prevents the opponent from attacking the hypercube with his or her king. Your opponent's only options will be to flee or be displaced.