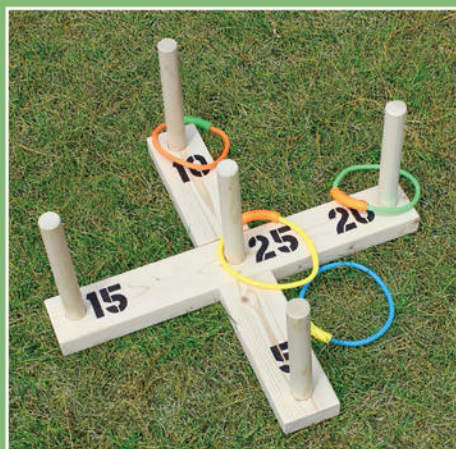


Outdoor WOODWORKING GAMES

17 FUN PROJECTS TO MAKE



DISPLAY UNTIL 07/17/23 US \$13.99



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Welcome

Playing games is a very sociable thing to do—we all get great pleasure from competing, and even more from winning a game.

Randall and I have taken a selection of marvellous games and adapted them so they can be played outdoors; some have been scaled up to make them more suitable for al fresco entertainment. All the games in this book can easily be made using wood, tools, and hardware from your local DIY store, plus a few other items that can be found in a sports store or online. For some of the projects we use power tools, but if you don't have them then hand tools can be used instead; such as a handsaw instead of a circular saw. Pretty much anyone who can cut a piece of wood will be able to make all these exciting games, and creating them will be as much fun as playing them.

A few of the games use parts of other games: for example, chess and checkers use a common board, so if you want to make both games you need only make the one board and get two games for the price of one and a half.

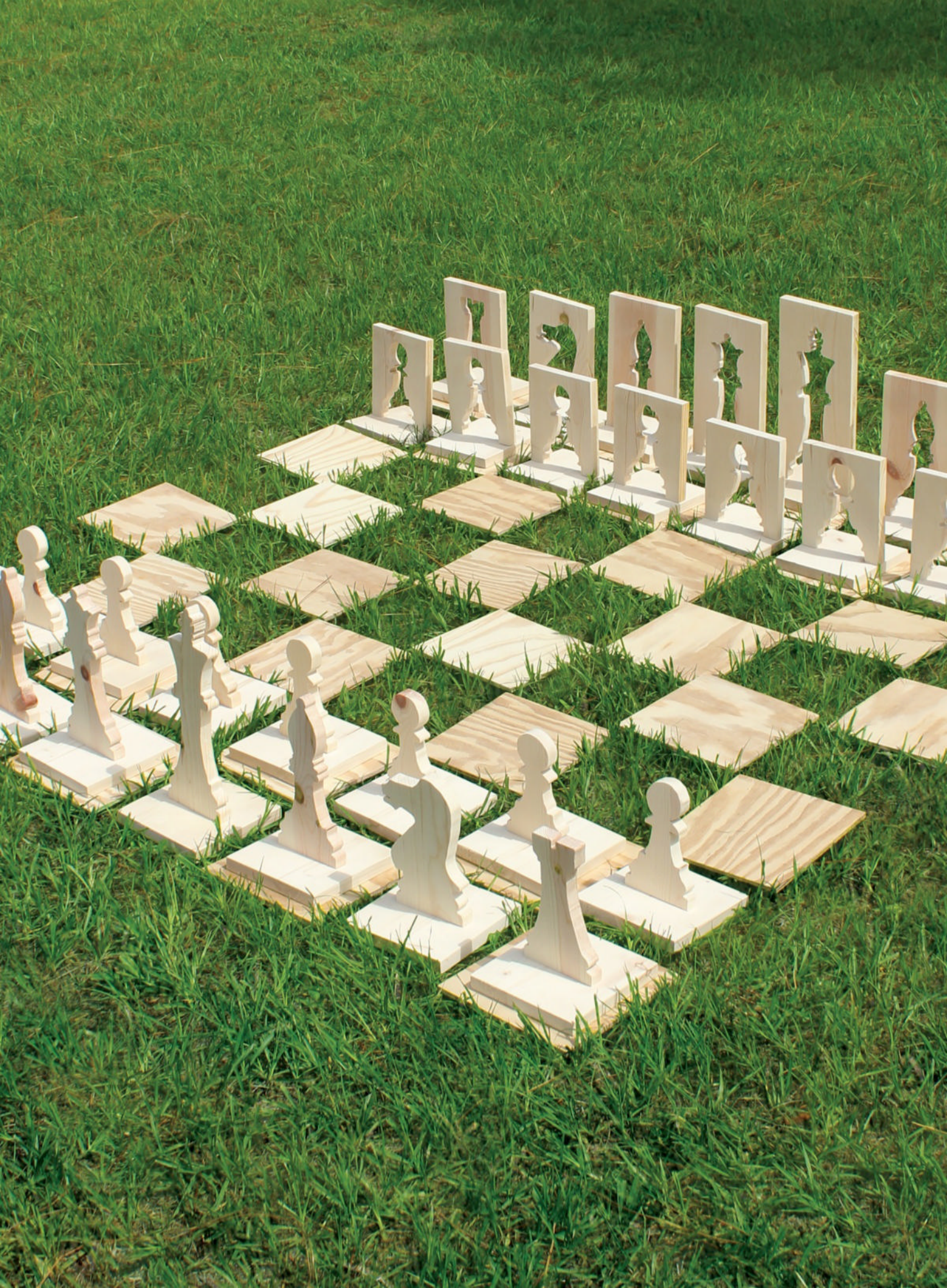
The games are designed to be played outdoors, so make sure you have enough space, and take sensible precautions such as keeping children and pets away from the throwing and falling games. If you live in a sunny climate, make sure you wear sun protection even if it is cloudy, as the sun's rays can penetrate the clouds.

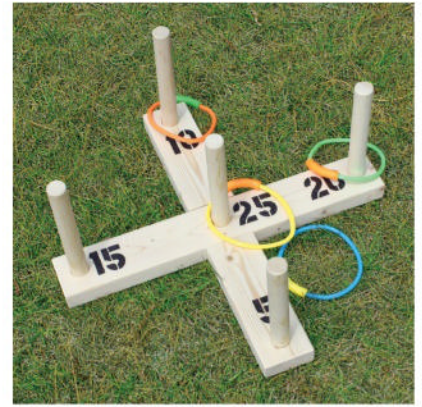
In this book we give step-by-step directions on how to make the games as well as including the most common rules for playing each game. You might know or find other versions of the rules, and we encourage you to explore these. Many games have an interesting history and originated in surprising ways, which we found fascinating and hope you do too. While performing a limbo, you might think of its mysterious origins in the Caribbean—or a chess game might release your long-dormant battle instincts.

The most important thing to keep in mind is that the making and playing of these games is designed to be an enjoyable experience. So, get out your tools and have a pleasurable and creative time crafting a selection of games for your next cookout, birthday party, or festive gathering. Then invite all your family and friends round for a challenging and competitive day of fun. You might have to set a cutoff time, or they will want to play and play and play.

Happy making and playing!
Alan Goodsell

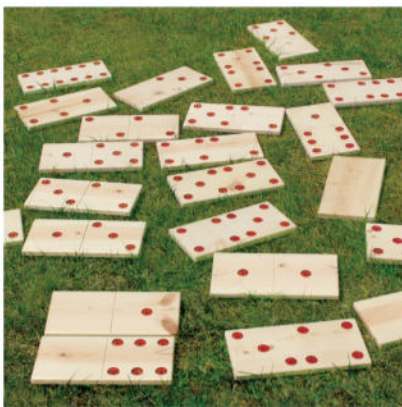






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Cornhole

This throwing and scoring game has gripped people of all ages and walks of life for many years and playing it will almost certainly generate some lively competition. You get three points for tossing the corn-filled bag into the hole. Looks easy, doesn't it?

WHAT YOU NEED

- **Tops:** 2 @ 24 x 48 x ½in (610 x 1220 x 12mm)
- **Frame sides:** 4 @ 48 x 4 x 2in (1220 x 100 x 50mm)
- **Frame crosspieces:** 6 @ 20 x 4 x 2in (510 x 100 x 50mm)
- **Leg supports:** 2 @ 24 x 4 x 2in (610 x 100 x 50mm)
- **Legs:** 4 @ 10 x 4 x 2in (255 x 100 x 50mm)
- **Corner blocks:** 4 @ 5 x 2 x 2in (125 x 50 x 50mm)
- **Hinges for leg assembly:** 4 @ 3in (75mm) + screws to suit
- Paint or varnish
- **Bags:** 4 @ 6in (150mm) square of each colour, 8 bags in total (see page 7)
- **Screws for frames:** 40 @ 3in (75mm), no. 8
- **Screws for tops:** 56 @ 1½in (38mm), no. 8
- Wood filler
- Miter saw, or handsaw with mitre box
- Holesaw, padsaw, jigsaw, or router with circle-cutting jig
- Powered sander or sanding block with 80-grit sandpaper
- Drill
- Screwdriver

Table from above

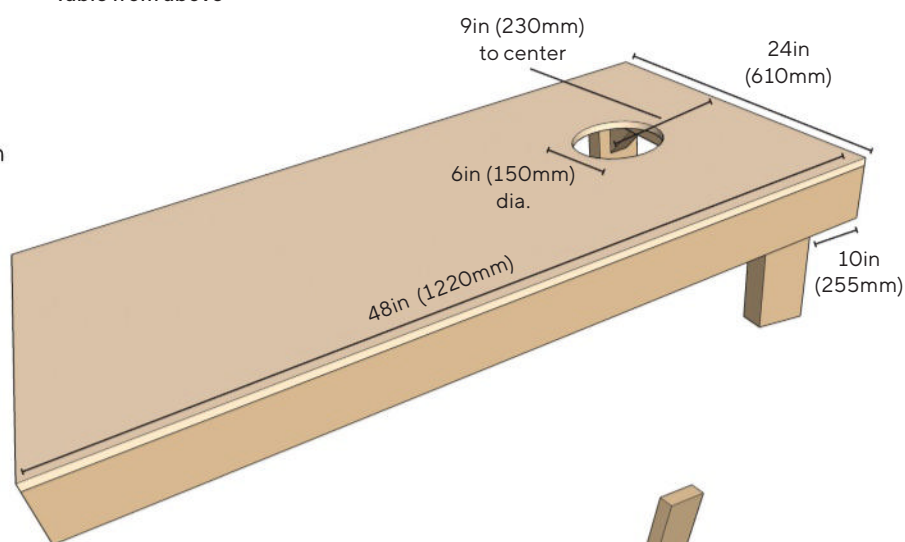
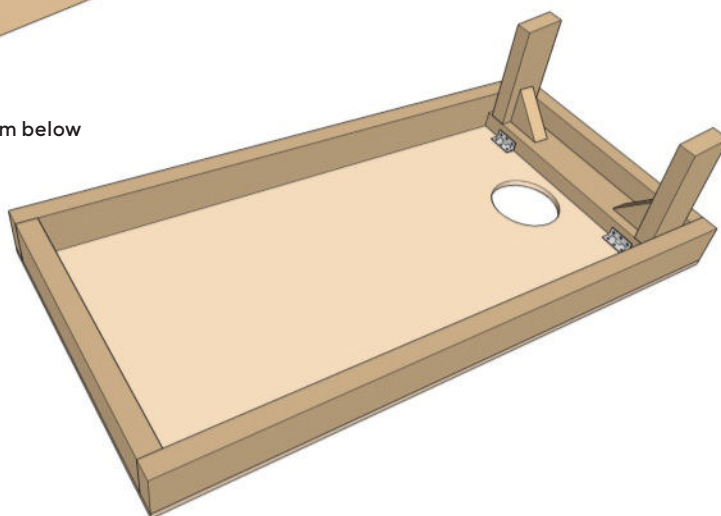


Table from below







MAKING THE TABLES

The wood used is in standard sizes that are readily available from your local wood supplier or hardware store. The game table frames are made from nominal 4 x 2in (100 x 50mm) planed wood, cut to length then screwed together. Cut the two long parts first; they will be 48in (1220mm) long. Then cut the crosspieces, three for each table; they will be 20in (510mm) long so that when they are screwed to the inner sides of the long pieces the assembly will be 24in (610mm) wide to match the top board (you may need to make some adjustment in length according to your wood size). Screw all the pieces together to make the frame.

The top is the cornhole standard size of 24 x 48in (610 x 1220mm) and is made of ½in (12mm) plywood. Sheet material generally comes in 96 x 48in (2440 x 1220mm) sizes; if you can't cut it yourself the supplier will usually be able to cut the parts to size for you—some charge to cut and some don't. When you have your 24 x 48in (610 x 1220mm) top boards cut to size, screw them to the upper side of the frame. A 6in (150mm) diameter hole needs to be cut in the top board; its center is 9in (230mm) from the end of the board's top and centered in the width of the top. This can be cut with a holesaw, padsaw, jigsaw, or, better still, using a circle jig with a router. To finish, thoroughly sand the top and all the rough edges.



1 Cut all the frame parts to length.



2 Screw all the frame parts together.



3 Screw the top board onto the frame.



4 Mark and cut the hole in the top, then sand the rough edges.

The leg assembly is next. Cut the crosspieces just shy of 20in (510mm) so they will fit inside the frame and be free to move when closed. Then cut the legs to length; they will be 10in (255mm) long, with the bottom end cut at an angle to match the angle of the top of the board when it is raised 11in (280mm) off the ground. Screw the legs to the crosspieces and brace them by screwing the angle blocks in place. Lastly, screw the hinges to the leg assembly as shown and then to the underside of the top board; this will allow them to close inside the table to make it easier to transport.

MAKING THE BAGS

If you are adept at sewing you can make your own 6in

(150mm) square bags and fill them with dried sweetcorn, lentils, or synthetic beads, but bags are readily available inexpensively from sports stores or online.

FINISHING

The bags need to be able to slide on the top of the table, so the top will need to be painted or varnished with a gloss finish. This will also help protect the game from the elements and any beverages that may be spilled on it. You can get creative with a design if you wish: some people like to paint a triangle with its apex at the hole, and others like to paint the logo of their favorite sports team on the top.



5 Mark the angles on the legs, then cut them.



6 Cut four corner blocks to brace the leg assembly.



7 Screw the leg assemblies together.



8 Place the leg assembly in the underside of the frame and attach the hinges. Repeat to make a second table.

This throwing and scoring game has gripped people of all ages and walks of life for many years and playing it will almost certainly generate some lively competition.

PLAYING THE GAME

Cornhole can be played with two players or with two teams of two players each. Each side has four bags. Set up your boards on a level surface facing each other, with 27ft (8.2m) between their lower edges (you might need to reduce the distance if children are playing). Begin by choosing which side of the board to throw from, and who goes first. In a four-player game, your partner's throwing position (the area to the left or right of the board, known as the "pitching box") will be diagonally across from you. In a two-player game, if you start throwing from the left side

of the board, your opponent then throws from the opposing board's right side.

Each player in turn throws one bag each. If a player's feet go past the front edge of the board, a foul is called. A tossed bag may not touch the ground, so if it hits the ground and bounces up onto the board, remove it before other bags are thrown. If it's hanging off the board and touching the ground, remove that as well. When all eight bags have been tossed, add up the score.



LET'S PLAY

1 Position the tables to create the play area.

2 Toss the bags from one side of the table to hopefully land on the other table and, even better, go through the hole. At the end of each round, change ends with the other players.

SCORING

- A bag remaining on the board is worth 1 point.
- A bag that went in the hole is worth 3 points.
- Add up how many points each player or team earned; the highest scorer starts play in the next round.
- An equal score cancels the round and the player who threw first in that round will throw first again in the next.
- After successive rounds, the first player or team to reach 21 points is the winner.



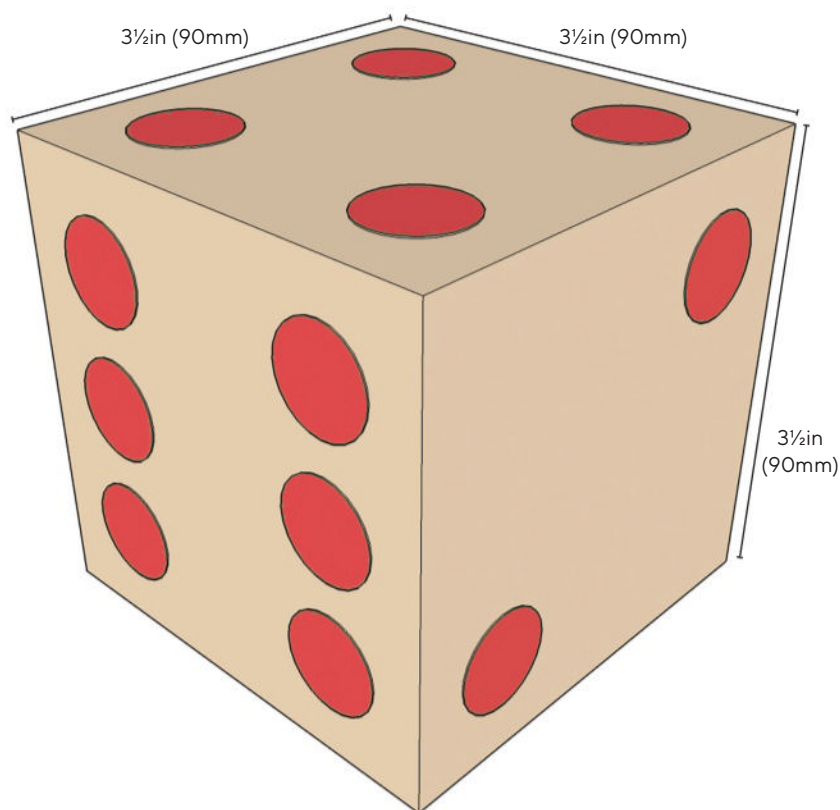
Giant Dice

Throwing dice is one of the oldest games in history, dating back to thousands of years BCE. It is one of the few games where you can make up your own rules for endless fun. This is probably one of the easiest projects to build. We used a nominal 96 x 4 x 4in (2440 x 100 x 100mm) post from the hardware store. Since these posts actually measure around 3½in (90mm) square, you only have to cut 3½in (90mm) sections to create cubes. This size fits perfectly in both large and small hands.

WHAT YOU NEED

- Softwood post long enough to make 5 dice blanks @ 3½ x 3½ x 3½in (90 x 90 x 90mm)
- Miter saw
- Paint and polyurethane varnish
- Handheld router or router table with ¼in (6mm) radius roundover bit
- Power sander or sanding block with 80-grit sandpaper
- Craft paint

Overall dimensions





MAKING THE DICE CUBES

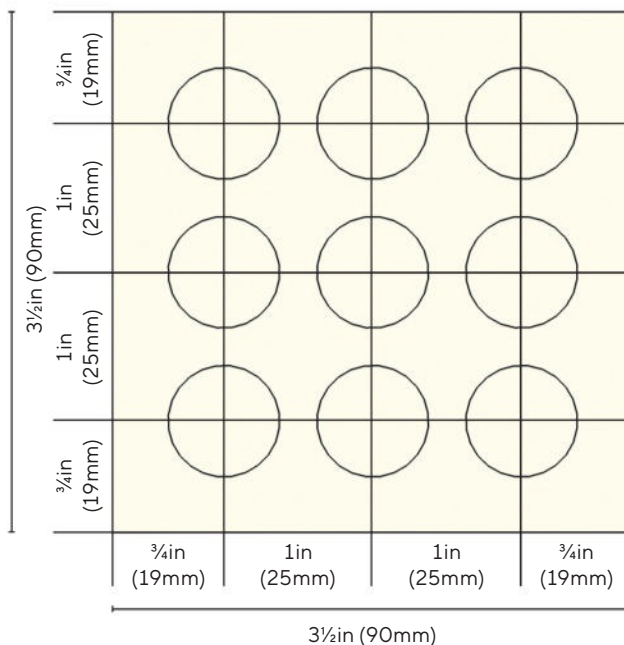
You can find 4 × 4in (100 × 100mm) posts at a hardware store or at any timber yard. The problem is that most of them will have been treated with chemicals to enable them to withstand exposure outdoors. Be sure to wear a dust mask and gloves when working with treated wood, and wash your hands thoroughly. Once the dice are complete, we recommend applying a couple of coats of a durable polyurethane finish.

Treated wood is usually pretty wet when you bring it home. It's best to let the wood sit out in the sunshine for several days before working with it. You'll notice that as it dries, it may form cracks. You can usually cut around these or use a wood filler before painting and applying a finish.

To cut the cubes that form the dice, trim one end off the post using the miter saw to ensure you start with a square cut. Use the cut-off piece to set up a stop on the miter saw. This automatically creates a cube when you make the remaining cuts. Slide the post until it contacts the stop and make the next cut; repeat to create five cubes. (You can make a couple extra if you wish.) Next, use your router to round over all the edges. You can use a small handheld router or do this task at the router table.

Use the template or measurements shown to paint the pips or dots on each face of the cubes. A dice from another game can be used as a guide to the placement and orientation of the pips; the key point is that the pips on opposite sides add up to seven. You can use a circle template to trace the $\frac{3}{4}$ in (19mm) diameter circles. The drawings show how to locate the centers of the pips.

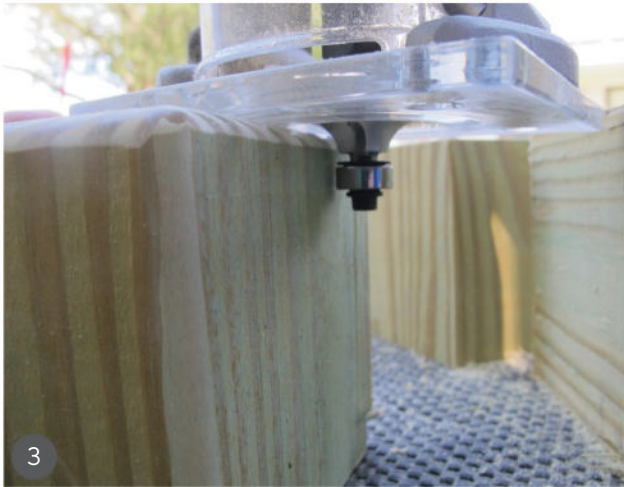
LAYING OUT THE PIP LOCATIONS



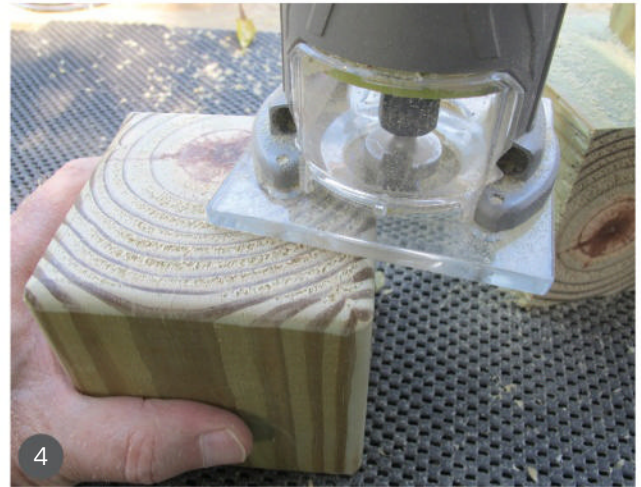
1 Cut a scrap piece from the end of the post and, using this as a guide, clamp a piece of wood to your miter saw to act as a stop.



2 The stop ensures consistent cuts to form identical cubes.



3 Use a 1/4in (6mm) roundover bit in the router to round the edges.



4 Turn the cube to make sure all the edges are rounded over. Now add the pips using the template on page 12. Finish by sanding all the faces and rough edges.

PLAYING THE GAME

There are many games that use dice and almost any of them can be played with the giant dice. You can even use the dice with your indoor board games to make them more fun to play outdoors. Here are a couple of sample games that just use dice:

CATCH THE PIG

You will need two dice for this game and six to eight people. Everyone sits in a circle and the dice are given to two people sitting opposite each other. Everyone shouts “Catch the pig!” (or other animal of your choice) and the game starts. The players with the dice throw them as quickly as possible, taking as many throws as needed to get a one. Once a one is thrown, the player who got it passes the dice to their neighbor on the right.

The object of the game is to catch the next person to your right (the “pig”) while they are still throwing the dice and waiting for a one. When this happens, the game stops and the person caught has to pay a forfeit. One of the dice is given to the person sitting across from the loser, and the game starts again with everyone shouting “Catch the pig!”

BUNCO

Bunco is played by a group of four to twelve players, in teams or individually, using just three dice. The game is played in four sets and each set consists of six rounds. Each round has a target number from one to six. Players who roll the designated target number—for example, three fours in round four or three sixes in round six—score a “bunco.” The player who achieves

this must call out “Bunco!” to get 21 points on their score card. Other ways of scoring can be used: for example, rolling three of a kind, other than the target number of the round (say, three sixes in round four), scores five points. In the event of a tie, a roll-off is played, which is one complete turn around the circle of players. The team or player with the most points after the roll-off is the winner.

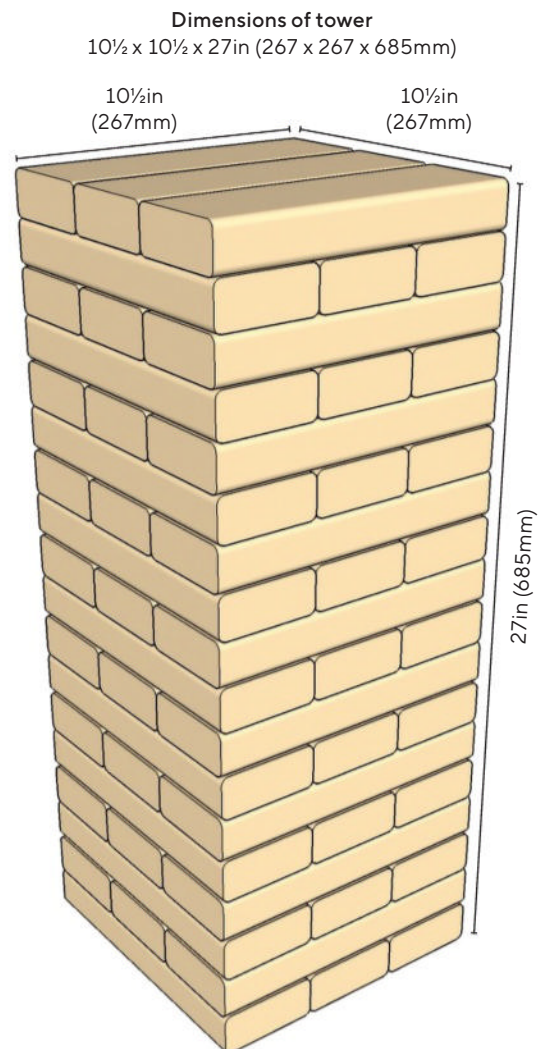
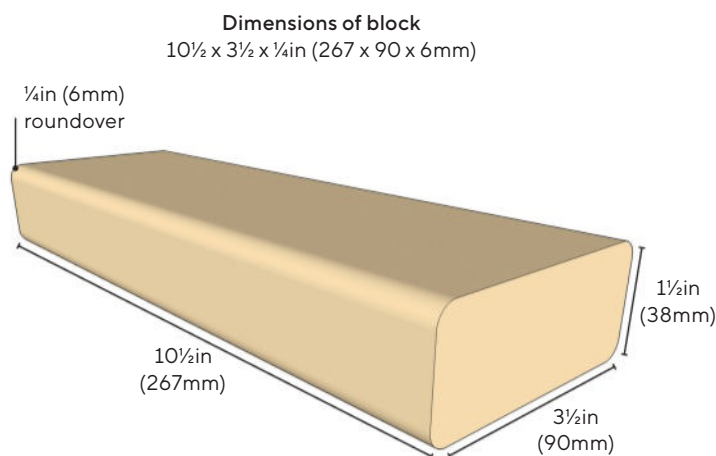


Tumbling Timbers

In this game of patience and dexterity, which is known by several different names, blocks are first stacked in a tower. Players then take turns to remove a block and place it on top until the tower becomes unstable and falls over. The clatter of the tower falling down is a climactic end to the game and the noise will draw attention from the whole household. Here, this popular indoor game is scaled up and taken outdoors to make the fun even greater.

WHAT YOU NEED

- **Blocks of planed wood:**
54 @ $3\frac{1}{2} \times 1\frac{1}{2} \times 10\frac{1}{2}$ in
(90 x 38 x 267mm)
- Miter saw, or miter box and handsaw
- Router with $\frac{1}{4}$ in (6mm) roundover bit, or handplane
- Powered sander or sanding block with 80-grit sandpaper



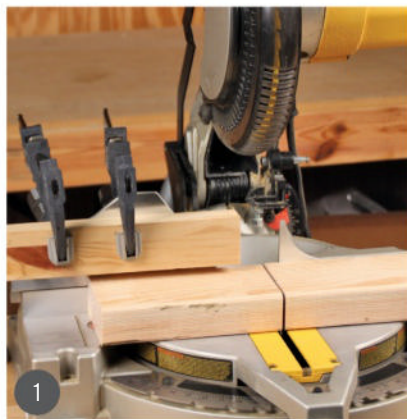


MAKING THE SET OF BLOCKS

The game consists of 54 blocks that are all the same size, stacked in rows of three and in 18 layers. This prepared (preplaned) wood came from the local hardware store and the blocks were cut from that. A miter saw makes fast work of this; if you don't have one, a miter box and handsaw will do the same job but take a bit longer.

The wood used here comes in 96in (2440mm) lengths and it is listed as 4 × 2in (100 × 50mm). This refers to the size of the wood before it is planed, and the actual size when

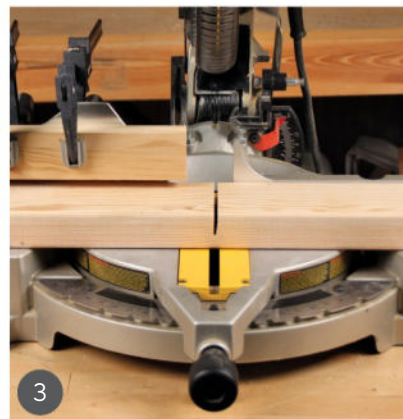
you buy it is nearer 3½ × 1½in (90 × 38mm). The length of the blocks is three times the width of the wood; use this formula if your wood differs in size. Clamp a length stop to the miter saw to ensure all the blocks will be the same length, then keep cutting them until you have 54 blocks. It's a good idea to give the blocks a chamfered or round edge to soften their corners. Our wood came like this; if yours doesn't, it's easily done with a handplane or router. The next thing to do is to sand all the faces and rough edges—and then you are done.



1 Cut the end off your length of wood to make sure the first cut is square.



2 Measure the width of three blocks side by side.



3 Set a length stop to this measurement on the miter saw.



4 Start cutting all pieces to length.



5 Make a test stack to check that all is well.



6 When there are 54 blocks, you have a complete set.

The clatter of the tower falling down is a climactic end to the game and the noise will draw attention from the whole household.



7 Lightly sand the faces of the wood; this may result in slight differences in thickness, which will make the game more interesting by making some blocks easier to remove than others.



8 Finish by sanding off the rough edges.

PLAYING THE GAME

Find a flat area. If you are playing on grass then you could use a doormat to give a more stable platform for the tower to sit on. Build the tower with each layer at right angles to the previous one. Make sure that

there is plenty of space around the tower for when it falls over, and for safety's sake make sure animals and children are kept away from the falling blocks.



1 Stack the blocks in a tower to start the game.



2 Take turns to remove blocks and replace them on the top of the tower, using one hand. You are not allowed to remove blocks from the top two layers—this would be too easy. If you move a block only partway and then change your mind, you have to put it back before you move another one.



3 Timber! Stand back when the tower topples. The game ends when any part of the tower falls, even if it is only one block. The winner is the last person to remove and replace a block without making anything fall.

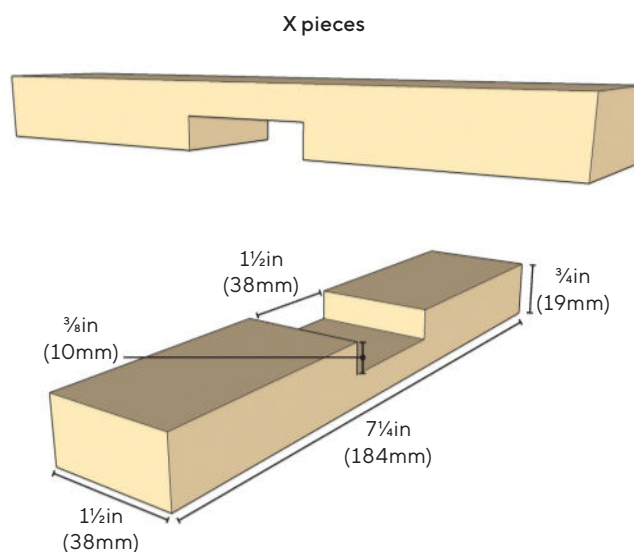
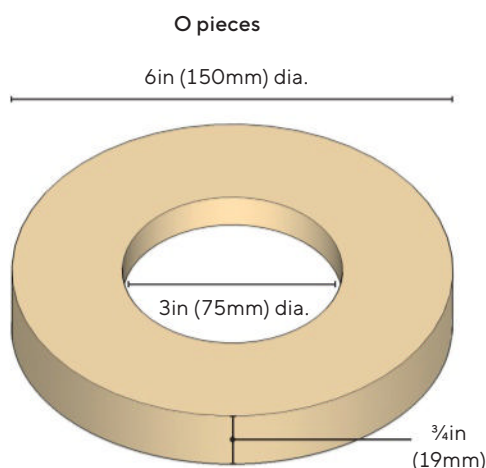
Giant Tic-tac-toe

This simple strategy game for all ages is a staple of the game world.

Our version is upsized for outdoor play and will avoid having to redraw a grid each time.

WHAT YOU NEED

- **X game pieces:**
10 @ 7¼ x 2 x 1in (184 x 50 x 25mm)
 - **O game pieces:**
5 @ 6in (150mm) dia. x 1in (25mm)
 - Nylon rope, ¾in (10mm) dia. x 25ft (11m)
 - 16 plastic cable ties
 - Miter saw, or miter box, handsaw, and chisel
 - Tablesaw
 - Pencil
 - Double-sided tape
 - Scrap wood
- One of the following for cutting the circular pieces to shape:
- Router with circle-cutting jig
 - Bandsaw with circle-cutting jig and drill press with 3in (75mm) dia. holesaw
 - Jigsaw, scrollsaw, or coping saw
 - Powered sander or sanding block with 80-grit sandpaper
 - Wood glue
 - Clamps
 - Small round or lost-head nail (finish nail)





MAKING THE GAME PIECES

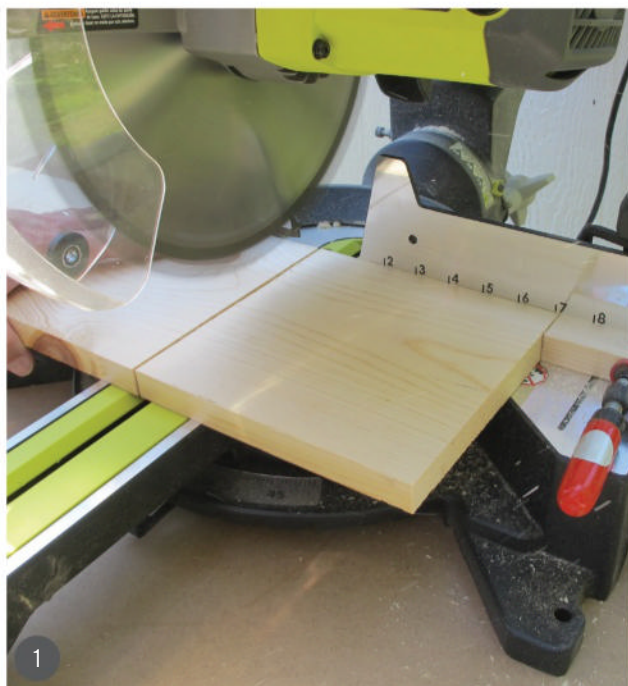
For this game, you'll need to make five O pieces and five X pieces. We used nominal 8 x 1in (200 x 25mm) boards from the hardware store to make the Os. For the Xs, you can usually find 2 x 1in (50 x 25mm) boards at the hardware store or timber yard; we were able to cut the pieces for the Xs from leftover scraps of the 8 x 1in (200 x 25mm). The wood used comes in 96in (2440mm) lengths. The boards labeled 8 x 1in are actually sized at $7\frac{1}{2}$ x $\frac{3}{4}$ in (190 x 19mm). The 2 x 1in (50 x 25mm) boards are actually $1\frac{1}{2}$ x $\frac{3}{4}$ in (38 x 19mm).

The X game pieces consist of two parts that are identical and overlap to create the X shape. To make the ten parts required for five Xs, clamp a stop on the miter saw to ensure that all the parts are cut to the same length. If you use wider stock, as we did, you'll need to rip these wide parts into $1\frac{1}{2}$ in (38mm) strips on the tablesaw. Cut a notch or housing $1\frac{1}{2}$ in (38mm) wide in each part, halfway through the thickness of the workpiece, to allow them to lie flush when glued together. A tablesaw will do the trick: simply mark the notch location on the edge of the workpiece and make several passes over the blade to remove the waste. If you don't have a tablesaw, use a handsaw to make several cuts across the width, $\frac{3}{8}$ in (10mm) deep, then use a sharp

chisel to remove any remaining waste and ensure the bottom of the notch is flat. Glue the parts together in pairs to form Xs with the notches interlocking, and then apply a clamp. When set, sand the sharp edges and corners to soften them.

The Os are made from squares of 8 x 1in (200 x 25mm) stock. Use a tablesaw or miter saw to cut five 6in (150mm) squares. Draw diagonal pencil lines from corner to corner to find the center of the square. There are several ways you can go about cutting the 3in (75mm) inside and 6in (150mm) outside diameters. We used a homemade circle-cutting jig for a small router. Using double-sided tape, secure the workpiece to a piece of scrap wood that will serve as a backing board to protect your work surface. Drive in a small round or lost-head nail (finish nail) at the center of the workpiece to act as a pivot for the circle jig.

You can instead use a 3in (75mm) holesaw in the drill press for the inside diameter of the Os, making sure the workpiece is clamped securely. A coping saw will also do the job. To cut the outside diameter, you can use the router jig or rough out the shape on a bandsaw or scrollsaw, then sand smooth.



1 Cut the square blanks for the X pieces to length, using a stop clamped into position.



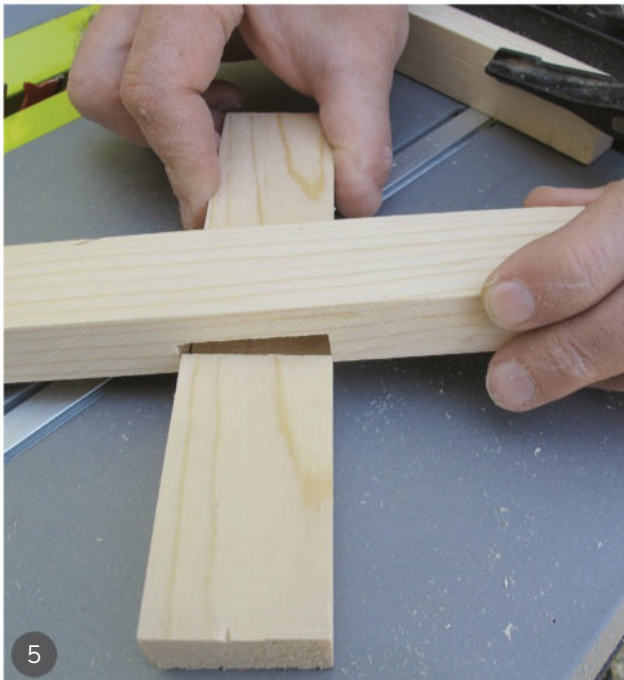
2 Rip the pieces to width.



3 Mark the location for the wide notch or housing.



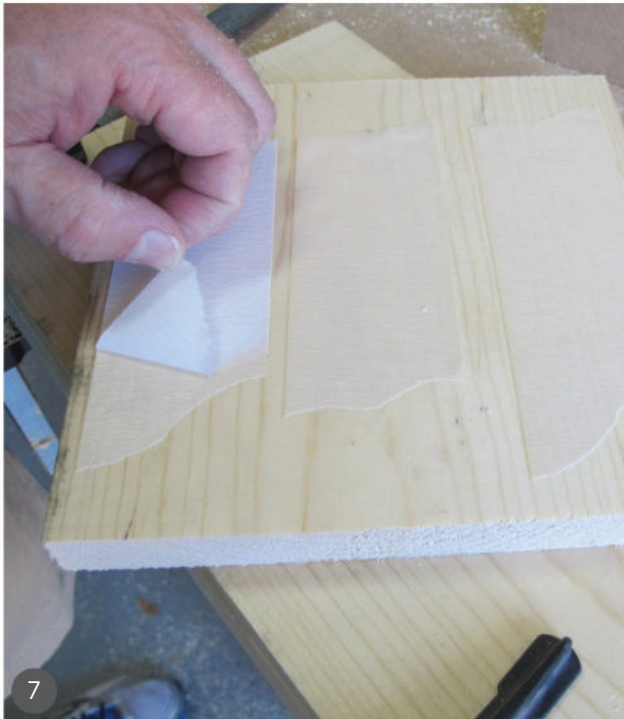
4 Remove the waste on the tablesaw. Make sure the blade guard is fitted; in the photo it has been removed for clarity.



5 Apply glue before assembling the pieces.



6 Clamp the parts together until the glue has set.



7 Use double-sided tape to secure the blank for the O game piece to a backing board.



8 Drive a small round nail (finish nail) into the center of the blank.



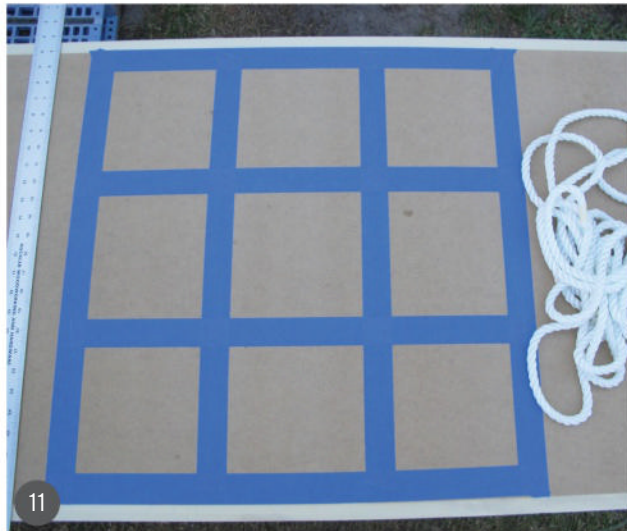
9 Rout the outside diameter, using this simple jig made from an offcut of MDF.



10 Rout the inside diameter in the same way. Finish by sanding all the faces and rough edges.

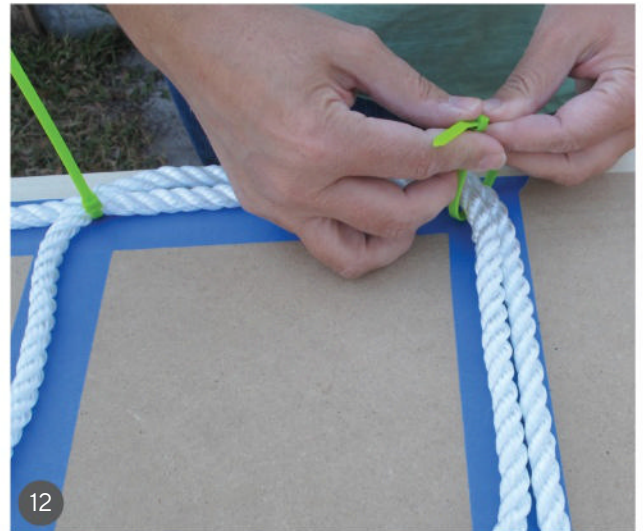
MAKING THE PLAYING GRID

The playing grid is made from nylon rope. We used painters' masking tape to lay out a 3 x 3 grid with 8in (200mm) squares on the benchtop. Use this as a guide to lay out



11 Lay out a grid with tape as a guide for making the rope playing grid.

the rope so the squares can be created from a continuous length of rope. Nylon cable ties are perfect for fastening the corners to keep the rope in place to form the squares.



12 Secure the corners with cable ties.



1 Lay out the grid and pieces and get ready to play.

PLAYING THE GAME

One player or team uses the X markers, the other uses the O markers. The strategy is for each player in turn to place their pieces in a vacant square of the 3 x 3 playing grid; the first to get three of their pieces in a row on the grid is the winner.



2 Players take turns to place a piece in the grid. Here, X has won.

Join Four Up

This strategy game, known by many different names, is scaled up here for parties or outdoor gatherings where people want to exercise their competitive spirit.

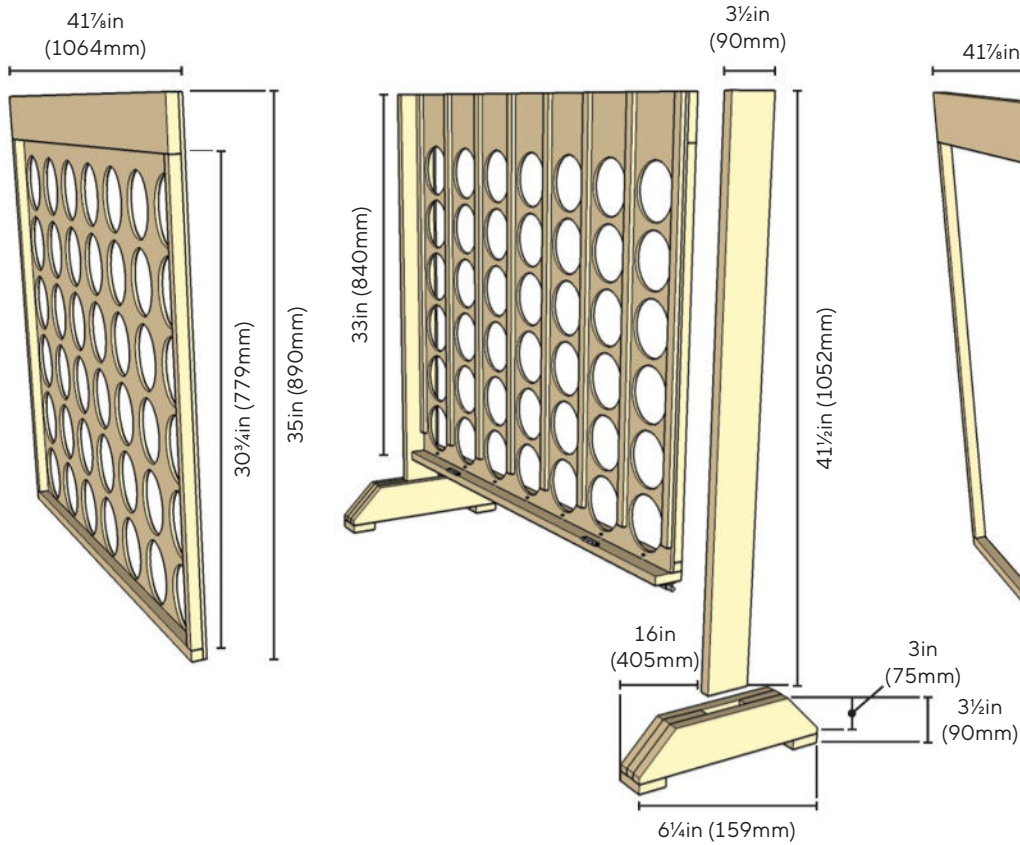
Two individuals or two teams compete to get four discs in a row.

WHAT YOU NEED

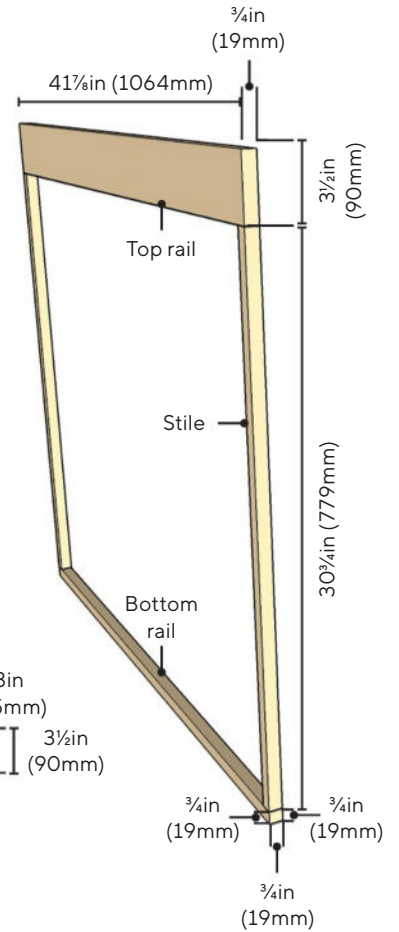
- **Board faces:** 2 @ 41 $\frac{7}{8}$ x 35 x $\frac{1}{4}$ in (1064 x 890 x 6mm) plywood
- **Top rails:** 2 @ 41 $\frac{7}{8}$ x 4 x 1in (1064 x 100 x 25mm) softwood
- **Bottom rails:** 2 @ 41 $\frac{7}{8}$ x $\frac{3}{4}$ x $\frac{3}{4}$ in (1064 x 19 x 19mm)
- **Frame stiles:** 2 @ 30 $\frac{3}{4}$ x $\frac{3}{4}$ x $\frac{3}{4}$ in (779 x 19 x 19mm)
- **Dividers:** 8 @ 33 x $\frac{3}{8}$ x $\frac{3}{4}$ in (840 x 10 x 19mm)
- **Disc release:** 1 @ 30 $\frac{3}{4}$ x $\frac{3}{4}$ x $\frac{3}{4}$ in (779 x 19 x 19mm)
- **Foot outside faces:** 4 @ 16 x 1 x 4in (405 x 25 x 100mm)
- **Foot filling pieces:** 4 @ 6 $\frac{1}{4}$ x 1 x 4in (159 x 25 x 100mm)
- **Foot pads:** 4 @ 2 x 2 x $\frac{3}{4}$ in (50 x 50 x 19mm)
- **Discs:** 42 @ 5in (125mm) dia. x $\frac{3}{16}$ in (5mm)
- Circular saw with straightedge guide
- Miter saw, or miter box and handsaw
- Tablesaw
- Bandsaw or scrollsaw
- Portable drill with $\frac{1}{2}$ in (12mm) bit
- Holesaw, 4 $\frac{1}{2}$ in (115mm) or smaller, or compact router with circle jig
- Square
- Straightedge
- Small brads
- Clamps
- Flathead woodscrews, 8 @ 1 $\frac{1}{4}$ in (32mm), no. 6 and 12 @ 2in (50mm), no. 8
- Roundhead or flathead woodscrews, 7 @ 1 $\frac{1}{4}$ in (32mm), no. 6
- Wood glue
- Hinges with screws, 2 @ 2 x 1in (50 x 25mm)
- 2in (50mm) barrel bolt with screws
- Powered sander or sanding block with 80-grit sandpaper
- Dark wood stain



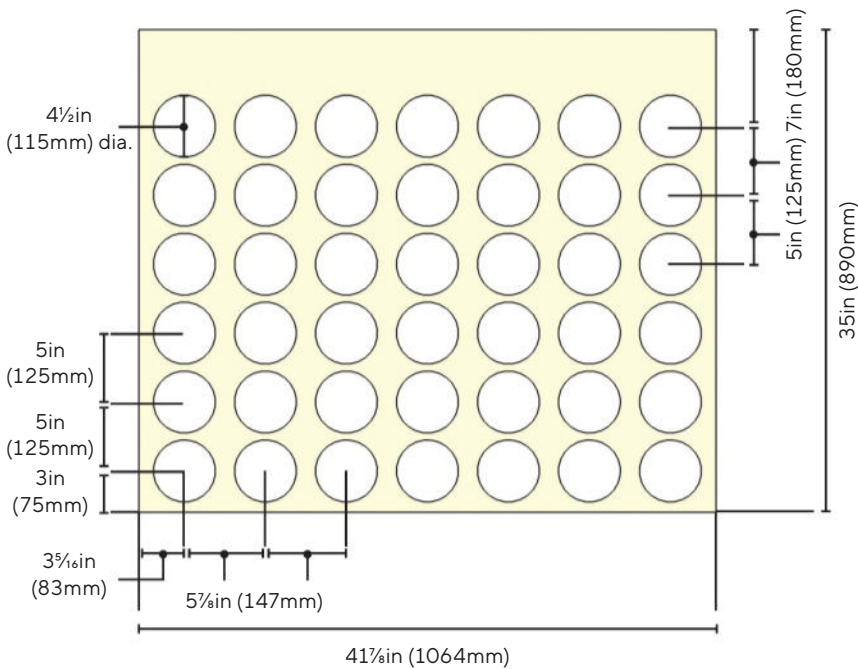
Exploded View



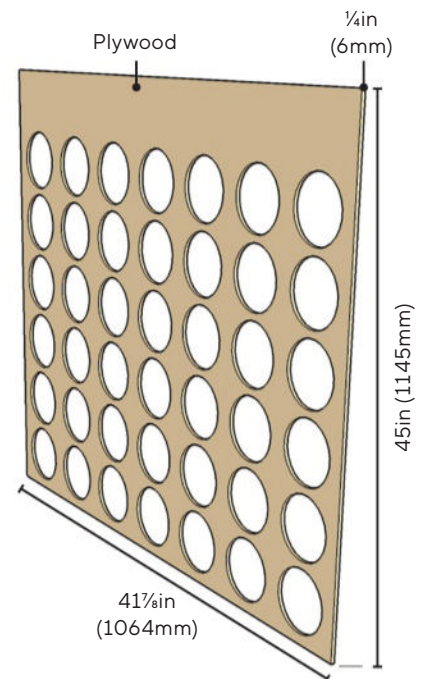
External Frame

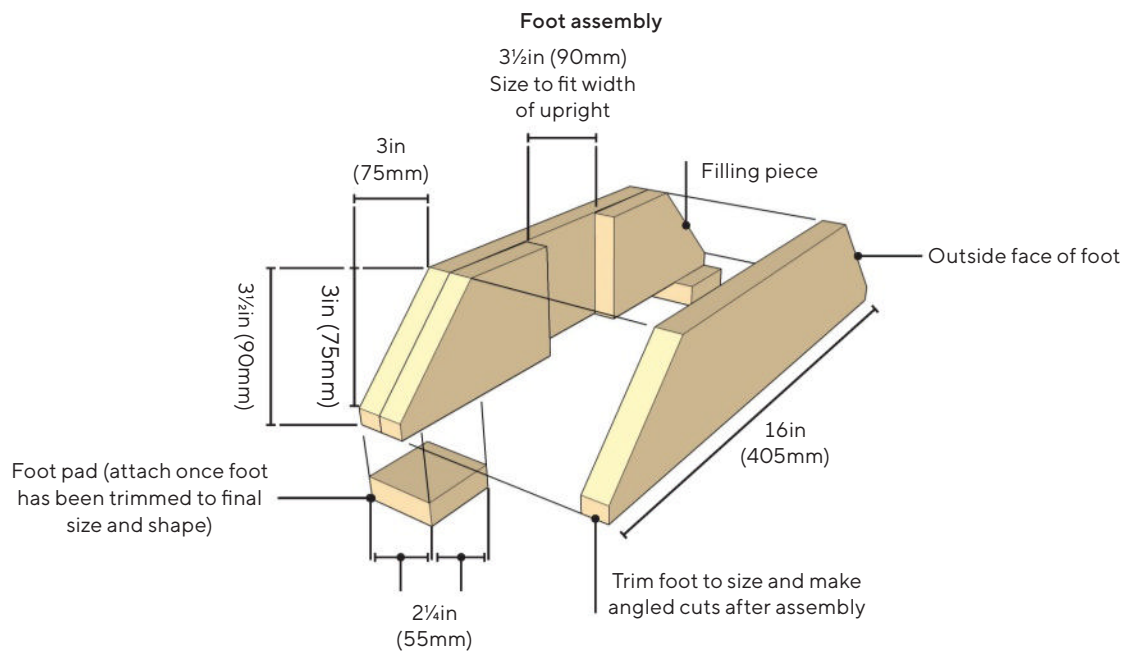


Layout of holes in plywood panels



External Frame





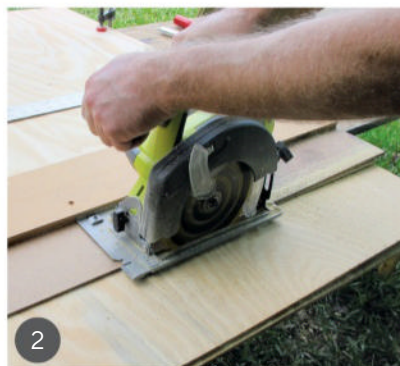
MAKING THE PANELS

Construction of the game board starts with two 1/4in (6mm) plywood “skins” that have large holes drilled through them so that the colors of the discs show through when playing the game. Each plywood panel is surrounded by an external frame to stiffen the plywood. Separating the pair of panels are thin dividers that form tracks to guide the discs as they are dropped between the panels. A trapdoor at the bottom holds the discs in place during play and provides an easy way to remove them when the game is over. This entire panel assembly fastens between two upright leg assemblies.

Start by cutting the plywood panels to their final size, using a large square and straightedge to help ensure square corners. We used half-sheets of plywood from the hardware store. Clamp the panels together with the two best-looking faces inside, aligning at least two adjacent edges so they are flush. Keep the panels clamped together while cutting them to size and drilling the holes. As a final check before sawing, measure across the diagonals; the measurements should match. Clamp a straightedge to the plywood so that the blade on the circular saw aligns with your layout marks, and then make the cuts.



1 Use a square and a long straightedge to lay out the size of the plywood panels.



2 A straightedge guide for the circular saw ensures smooth, clean cuts.



3 Use a holesaw to make quick work of the holes. Sand before continuing.

The next step is to lay out and drill the holes. Be sure to place a scrap piece of plywood under your panels to contain breakout and protect your work surface. To drill the holes, you can use a holesaw. This can be tricky to use—you need to feed it slowly into the wood while running the drill at high speed. It's a good idea to practice on some scrap stock first. It also helps to drill a $\frac{3}{16}$ in (5mm) pilot hole to help guide the holesaw. If you feel uncomfortable using a holesaw, you could drive a small brad or round-head nail (finish nail) into the center of the hole and use a router and homemade circle jig to cut out the hole. Another option is simply to drill smaller holes using an ordinary drill. Sand the plywood before continuing.

ASSEMBLING THE PANELS AND FRAMES

After the holes are drilled, you're ready to attach the outside frame pieces to the good face of the plywood. Be careful when handling the plywood, because it will bend easily and could break. All the rail pieces are made from 1in (25mm) stock with a finished thickness of $\frac{3}{4}$ in

(19mm). The top rail is made from 4in (100mm)-wide boards with a final dimension of $3\frac{1}{2}$ in (90mm). The side and bottom frame pieces are all a final dimension of $\frac{3}{4}$ in (19mm) square. Cut the top and bottom rails to length and glue them in place; it's a good idea to have plenty of clamps on hand. Cut the side frame pieces to fit between the top and bottom rails and attach them with glue.

The vertical dividers that form the slots for the discs are $\frac{3}{8}$ in (10mm)-thick strips ripped from $\frac{3}{4}$ in (19mm) stock. You can cut these at the tablesaw. You'll need eight dividers, each 33in (840mm) long. Glue the two outer dividers to the inside of one of the plywood panels, flush with the top edge and sides of the plywood. Since the dividers should ideally be centered between the rows of holes, cut several spacers from scraps that are $5\frac{1}{8}$ in (130mm) long. Use these to position the remaining dividers, without gluing them in place. You may need to trim the width of the dividers to maintain $5\frac{1}{8}$ in between them. This ensures that the 5in (130mm)-diameter discs drop easily from top to bottom.



4 Rip the frame pieces to width at the tablesaw, using a push block for safety.



5 Attach the top frame to the outside face of each panel.



6 Glue and clamp the remaining frame pieces in place.



7 Rip the dividers to $\frac{3}{8}$ in (10mm) thickness from $\frac{3}{4}$ in (19mm) boards.



8 Glue and tack the dividers in place, using temporary spacers to position them accurately.



9 If you need to, adjust the width of the dividers for consistent spacing.

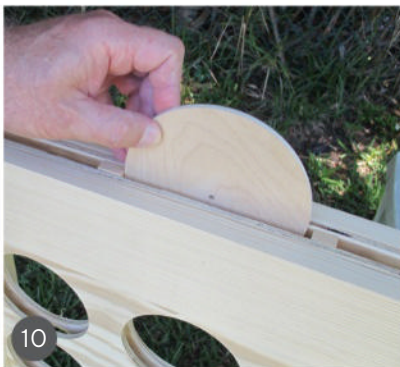
Use the spacers to ensure the proper distance between dividers while gluing the dividers to the first panel. To help position them, you can use small brads to tack the dividers in place. Use clamps to ensure a good glue bond, and wipe up any excess glue before it sets. After removing the clamps, apply a thin strip of glue to the dividers and clamp the second panel assembly in place, ensuring the edges of the two panels are flush. Once the glue is dry, sand everything smooth.

The disc-release mechanism is a simple board that acts as a trapdoor. It's attached to the bottom rail with a pair of small hinges. Small no. 6 woodscrews are strategically positioned along its upper surface to keep the discs from falling too low when dropped into the slots. The trick is to position the screws so that they clear the bottom of the frame and rotate into the slot when closing the door. Once you have made the discs, you can adjust the height of each screw to stop the disc $\frac{1}{4}$ in (6mm) below the bottom edge of the lower hole in the panels.

A barrel bolt engages a hole in the leg to hold the door closed during play. This is centered on the width of the door and placed flush with one end. The sliding bolt engages a hole drilled in the leg assembly. To mark and drill this hole, temporarily clamp the leg and panel assemblies together, making sure their top edges are flush and the panel is centered on the leg.

MAKING THE FEET

The feet are glued up from three layers of 1in (25mm) stock and incorporate an upright member to hold the panel assembly. Start by cutting the outer faces and filling pieces for the feet oversize to allow for trimming to final size later. Cut the 4 x 1in (100 x 25mm) upright to 41 $\frac{1}{2}$ in (1054mm) in length and use it to mark layout lines on the inside of one of the outer foot faces, using a square to help with alignment. Center the upright on the length of the outer foot face. Glue and screw the filler pieces in place, using the layout lines as a guide and keeping the top and bottom edges flush. Glue and screw the opposite outer face to the fillers.



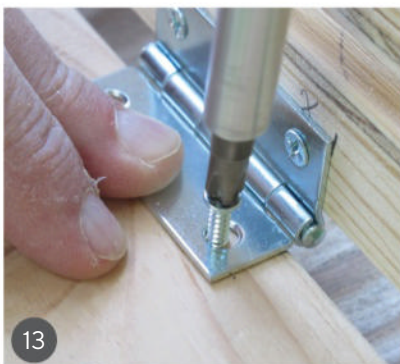
10 Temporarily clamp the panel frames together and check that the discs drop freely in each slot.



11 Apply glue to the dividers.



12 Clamp the panels together, ensuring the edges are flush.



13 Attach the disc-release trapdoor to one of the bottom rails with a pair of hinges.



14 Drive no. 6 woodscrews, centered under each row of holes, to act as stops as the discs are dropped.



15 Attach the barrel bolt at one end of the disc-release door.

Trim the glued-up blank to final length, making sure to keep the opening for the upright centered on the blank. Use the miter saw to make the 45° cuts at the ends. Insert the upright and use a square to align it while you fasten it with screws. Cut the foot pads and attach them with glue and screws.

Now you can bring everything together. Center the panel assemblies on the uprights, keeping them flush at the top. It may help to do this with the assembly upside down. Attach the panel assembly by driving 2in (50mm) woodscrews through the uprights into the top and bottom frames.

MAKING THE DISCS

Making the 84 discs can be done quickly with the right setup. We found some slightly thinner plywood at the hardware store. Since it's slightly less than 1/4in (6mm)

thickness, it will drop more easily into the slots. To cut the discs, we used a simple circle-cutting jig for the bandsaw. It's a piece of plywood with a guide that fits into the miter slot or against the edge of the bandsaw table. A small screw acts as a pivot as you rotate the blank through the blade to create the disc. The pivot is aligned with the front edge of the blade, and a stop clamped to the back of the bandsaw table stops the jig to maintain this alignment. To make the 5in (125mm) discs, drill a 1/8in (3mm) hole centered in an oversized blank, roughly 5 1/4in (135mm) square. With the circle jig pulled away from the bandsaw, place the blank over the pivot. Slide the jig and blank into the blade. When the jig contacts the stop, rotate the blank to cut out the disc. Pull the jig away and remove the blank. Sand all the discs smooth, paying special attention to the edges. Use a dark wood stain to color half of the discs.



16 Mark the bolt location on the leg assembly.



17 Drill a stopped hole 1/2in (12mm) deep in the leg assembly for the barrel bolt to engage.



18 The barrel bolt aligns with the hole in the leg assembly.



19 Center and square the leg upright on the outer face of the foot, then mark its location.



20 Attach the filler pieces, using the upright as a guide for placement.



21 Attach the outer face with glue and screws.



PLAYING THE GAME

Each player or team has 21 discs all of one color, and players take turns to slot them into the frame so that they slide down and fill one of the holes. The winner is the first player who covers four consecutive holes either vertically, horizontally, or diagonally.

The team playing the dark-colored discs has won this game.



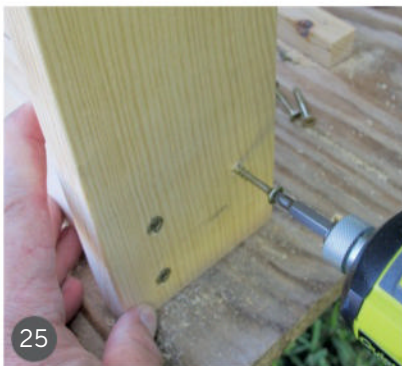
22 Lay out and cut the angled corners of the feet.



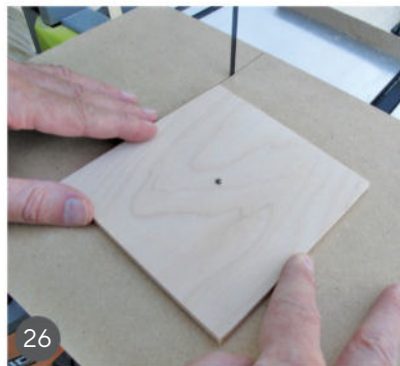
23 Insert the uprights into the feet, making sure they're square before fastening them with screws.



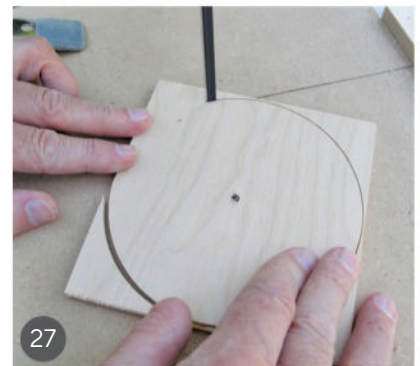
24 Attach the foot pads to the leg assemblies.



25 Fasten the legs to the panel assembly with screws into the top and bottom rails.



26 With the disc blank on the pivot pin, slide the jig forward until it contacts the stop to align the pin with the front edge of the blade.



27 Rotate the blank to cut out the disc.

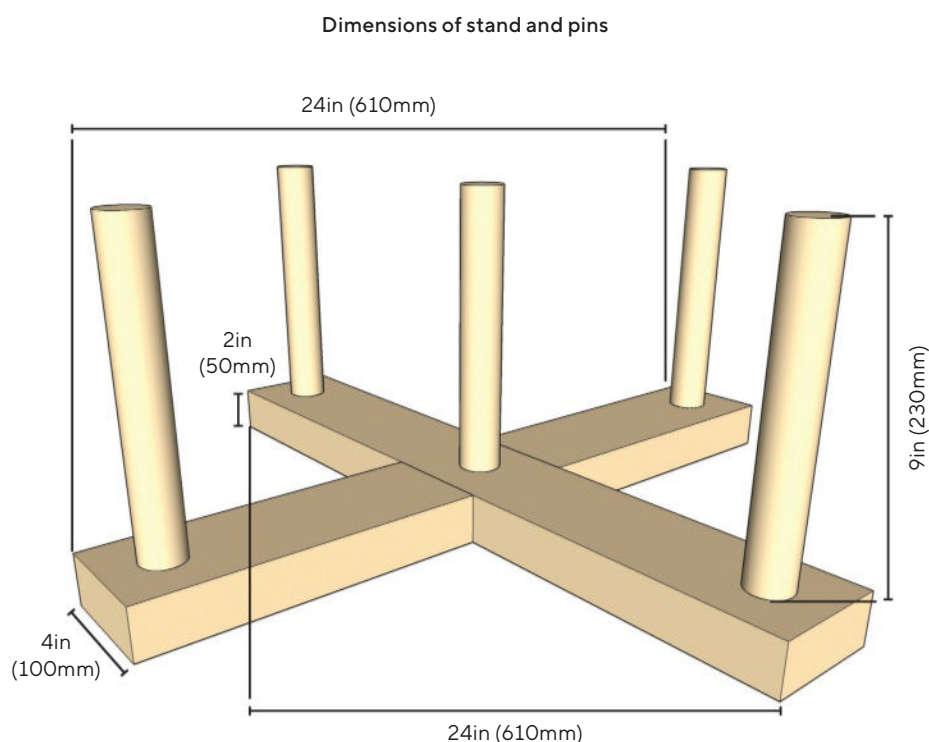
Quoits

There are many variants of this traditional game.

This simple and sturdy version is ideal for outdoor use at parties and fairs and will provide endless hours of fun.

WHAT YOU NEED

- **Stand:** 2 @ 24 x 4 x 2in (610 x 100 x 50mm)
- **Pins:** 5 @ 9in (230mm) long x 1½in (32mm) dia. dowel
- **Rings:** rope, 4 @ 14in (355mm) long; foam tubing, 4 @ 3in (75mm) long, dia. to fit rope
- **Decking screws:** 5 @ 3in (75mm)
- Miter saw, or handsaw with miter box
- Circular saw
- Chisel
- Electric drill with 1½in (32mm) spade bit and vinyl electrical tape
- Powered sander or sanding block with 80-grit sandpaper
- Screwdriver
- Clamps
- Number stencils and marker



Each player throws four quoits and each quoit caught on a peg scores according to the numbers on the base.



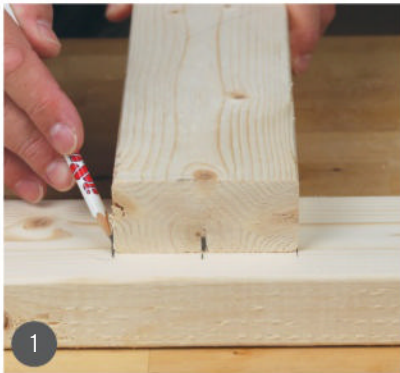
MAKING THE STAND

Cut two pieces of 4 x 2in (100 x 50mm) timber 24in (610mm) long and mark the center of each piece ready to cut the cross-halving joint that holds them together. Mark the width of the top piece on the lower and clamp a straightedge to guide the saw. (The straightedge is positioned on the pencil lines visible in some of the photos, to either side of the joint.) Set the saw to half the thickness of the wood, then make the first cut. Turn the wood around and repeat the process to make a cut at exactly the width of the piece that will mate with it. Make some additional cuts in the waste area between these first two cuts, then break out the pieces and clean up the joint with a chisel. Repeat this process on the underside of the other piece of wood. Trial-fit the joint together and shave with a chisel to fine-tune the fit if required. Next, install a 1/4in (32mm)-diameter spade bit in your drill and put some tape on it 1/4in (6mm) from the end. Using the tape as a depth guide, proceed to drill the five locating holes for the dowels on

the top surface of the stand. Next, using the mark left by the point of the spade bit as a guide, drill a pilot hole all the way through, then sand all your components to take off the rough edges. Cut five pieces of 1/4in (32mm) diameter dowel 9in (230mm) long for the pins, then screw the dowels into place from the underside of the stand; the center screw will hold the two parts of the stand together. The numbers for scoring are made using number stencils and a marker.

MAKING THE QUILTS

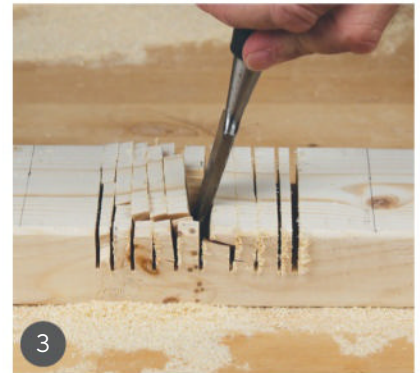
The quilts are easily made using some rope and foam tubing. Cut the rope to around 14in (355mm) long and the tube to 3in (75mm) long, then thread the rope through the tube. Tie the ends of the rope to make the ring around 12in (305mm) diameter and pull the knot into the foam tube to hide it. Make four rings. Alternatively, rings are readily available from sports stores as a pool game.



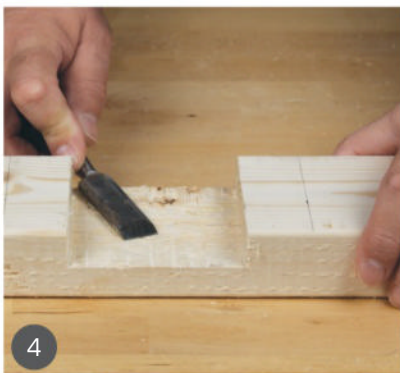
1 Cut the two crosspieces, find their centers, and mark the width of each piece on the other.



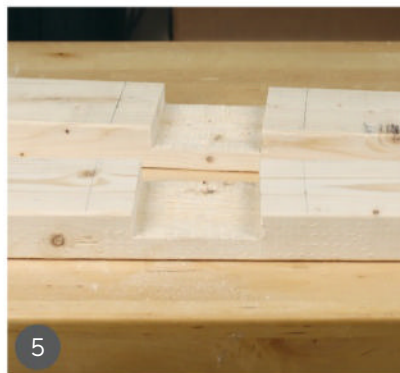
2 Using a straightedge and a circular saw set to half the thickness of the wood, make multiple cuts between the lines. (Note the pencil lines either side of the joint to locate the saw fence.)



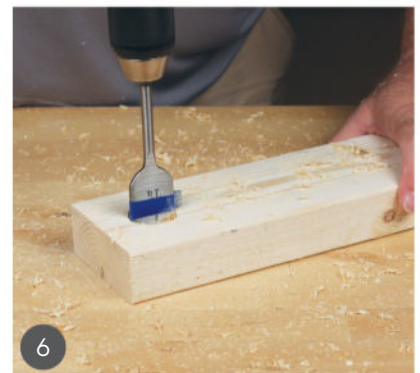
3 Use a chisel to break out the waste pieces between the sawcuts.



4 Clean out the bottom of the joint with a chisel.



5 Repeat the process on the underside of the other piece to create the cross-halving joint.



6 Bore the recesses for the pegs with the spade bit. Stop when the tape reaches the surface of the wood.



7 Screw into the pegs from the underside; the central screw will hold the joint together.



8 Use stencils to mark the scoring numbers.



9 Thread the rope through the foam tube, then tie a knot.



10 Pull the knot back into the tube.



11 You now have a completed ring ready to throw at a pin.



PLAYING THE GAME

Set up the quoits base on the ground and mark the position for the players to throw from, approx. 10ft (3m) from the center peg. Players must stand behind the starting position to play. Each player throws four quoits and each quoit caught on a peg scores according to the numbers on the base. The first player to reach 230 (or 90 for a shorter game) wins.

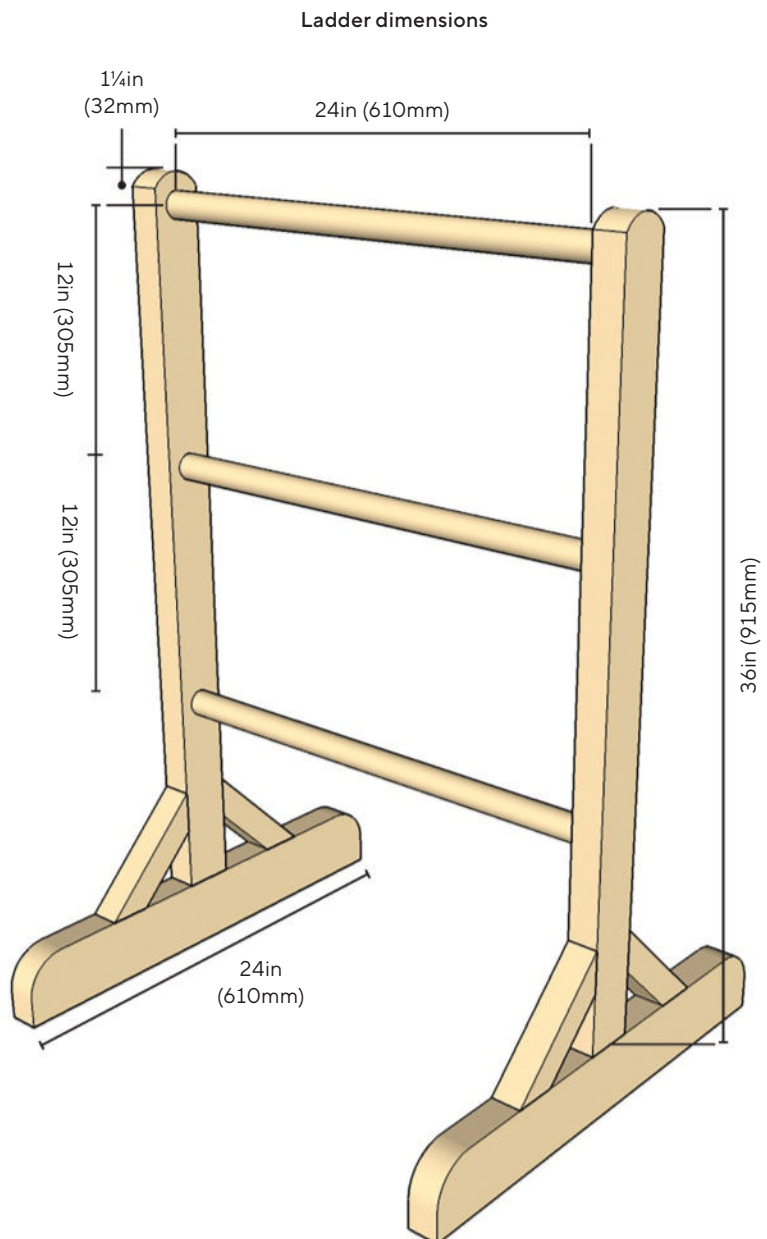


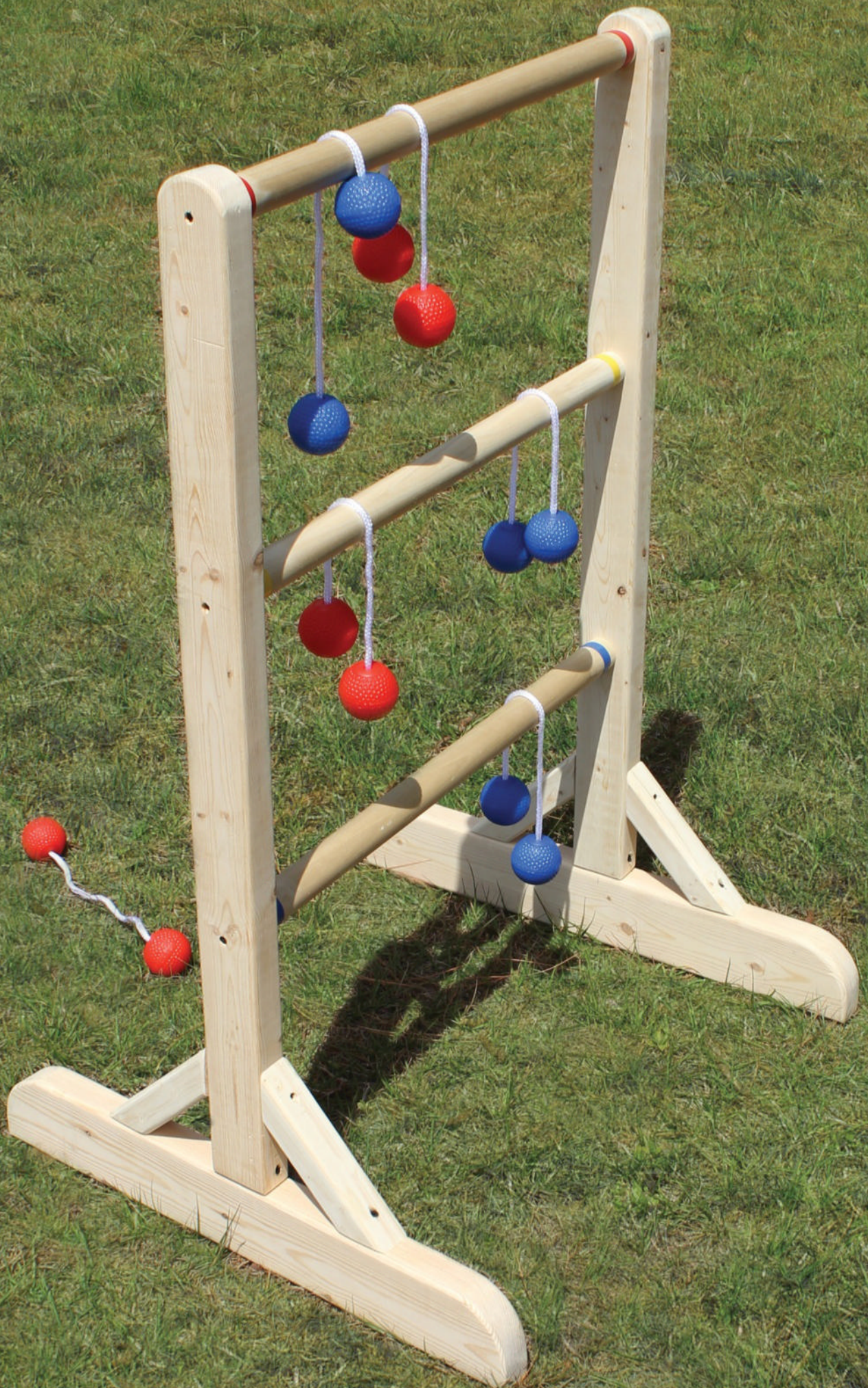
Ladder Toss

This game for two or more players calls for throwing skills and a good eye for launching bolas at a target. Unlike the original use of the bolas as a hunting weapon, no animals are harmed in the making or playing of this game!

WHAT YOU NEED

- **Uprights:** 2 @ 36 x 3 x 2in
(915 x 75 x 50mm)
- **Feet:** 2 @ 24 x 3 x 2in
(610 x 75 x 50mm)
- **Diagonal braces:** 4 @ 7 x 2 x 2in
(180 x 50 x 50mm)
- **Dowel rungs:** 3 @ 24in (610mm)
long x 1¼in (32mm) dia.
- **Bolas:** 6 balls of each color and
6 @ 24in (610mm) cord
- **Deck screws:** 18 @ 3in (75mm),
no. 8
- Miter saw, or handsaw with
miter box
- Padsaw or jigsaw
- Powered sander or sanding block
with 80-grit sandpaper
- Electric drill and ¼in (32mm)
spade bit
- Screwdriver
- Jigsaw





MAKING THE LADDER

Cut two lengths of 3 x 2in (75 x 50mm) timber 36in (915mm) long and round the tops of the uprights. Then mark these uprights for the placement of the three 1½in (32mm) diameter dowel rungs. The center of the top rung is 1½in (32mm) down from the top of the upright, the second is 12in (305mm) down from that one, and the third is 12in (305mm) down from the second. Using a 1½in (32mm) spade bit, drill locating holes ¼in (6mm) deep in the uprights for the 1½in (32mm) dowel rungs to fit into. Then, using the mark left by the point of the spade bit, drill pilot holes all the way through the uprights for screwing them to the rungs.

The feet are two pieces of 3 x 2in (75 x 50mm) cut to 24in (610mm) long; to soften their top edges, cut a radius on them with a jigsaw. After they have been sanded all over, drill through them diagonally and screw the uprights to the center of each foot. The uprights are given extra support by screwing diagonal braces between them and the feet.

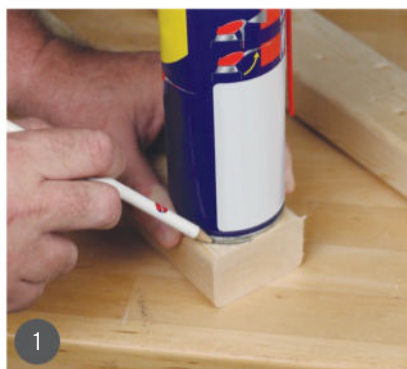
Finally, locate the dowel rails into their recesses in the uprights and screw them in place to complete the ladder.

If you want to paint the ladder, make the three rungs different colors so it is easier to spot the scores achieved. We chose to leave the apparatus in its natural wood color, and wound rings of different-colored electrical tape around the rung ends to distinguish them.

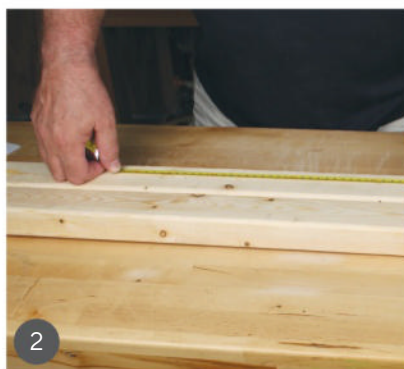
If you want to play the game with more than two people, it would be a good idea to make two of these frames so the game can be played from two ends.

MAKING THE BOLAS

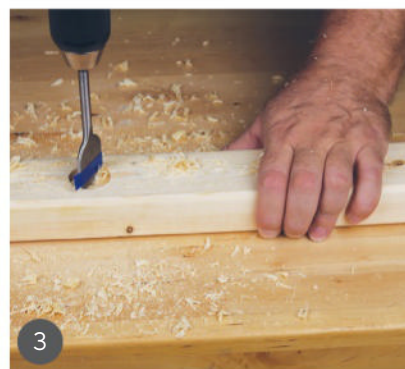
Tennis balls are good to use and are readily available. Simply pierce holes in opposite sides of the ball, then poke a wire coat hanger through the holes; thread the cord through the squashed wire coat hanger and pull it back through the holes. Tie knots in the ends of the cord, making sure the balls are 15in (380mm) apart. You will need six sets of bolas and they should be two different colors, so dip them in dye or use different-colored balls to begin with. If you don't want to make the bolas, you can buy inexpensive ones from sports stores or online.



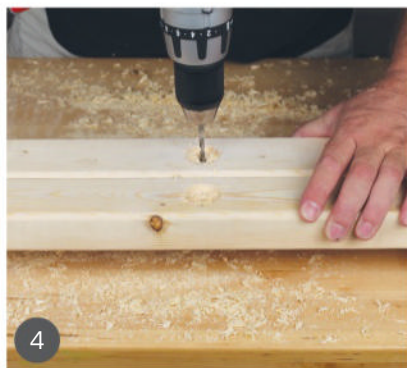
1 Mark and cut a radius on the top of each upright.



2 Measure and mark the positions for the rungs.



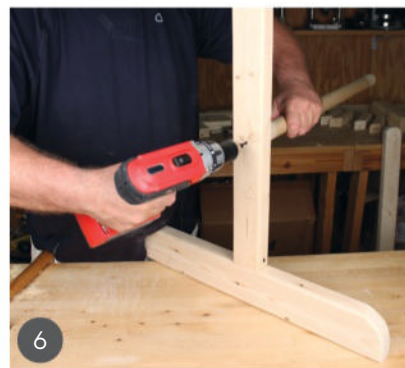
3 Using a spade bit with a tape depth stop, drill the recesses to depth.



4 Drill through the uprights in the center of each recess to permit screwing the rungs from the other side.



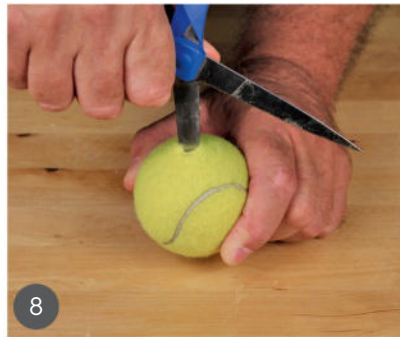
5 Drill diagonal holes for screwing the uprights to the feet.



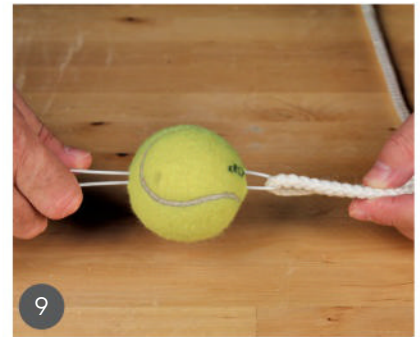
6 Attach the rungs to the uprights using screws.



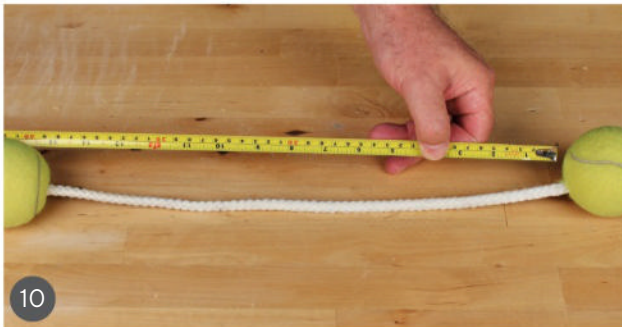
7 For added rigidity, screw on diagonal braces.



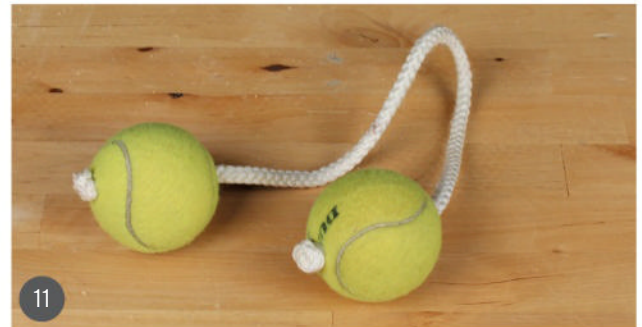
8 To make the bolas, pierce a hole through a ball; for a tennis ball, scissors should suffice.



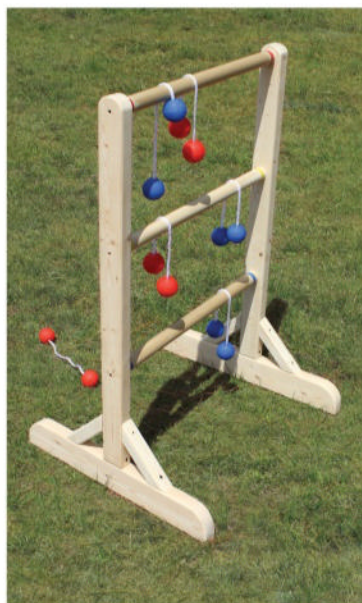
9 Bend a piece of stiff wire (perhaps from a coat hanger) and pass it through the holes, then thread the cord through it and pull it back through the ball. Repeat steps 8–9 with another ball and attach to the other end of the cord.



10 Measure the cord, tie it, and cut off the excess.



11 The bolas are now made and ready to throw.



PLAYING THE GAME

Place the apparatus about 15ft (4.5m) away from the playing line and start tossing your bolas underarm. The first player tosses their three bolas, then the next player tosses their three. The first to reach 21 points without going over is the winner.

1 Throw underarm from a distance of about 15ft (4.5m).

2 Scores are accrued depending on which rungs the bolas land on.

SCORING

- The top rung is worth 3 points.
- The middle rung is worth 2 points.
- The bottom rung is worth 1 point.

Duck Shoot

Unlike a video game, this hands-on outdoor game will test your skill and coordination in the real world, and maybe relieve some anger, too. There is nothing more satisfying than demolishing stacked-up targets—for fun only, of course.

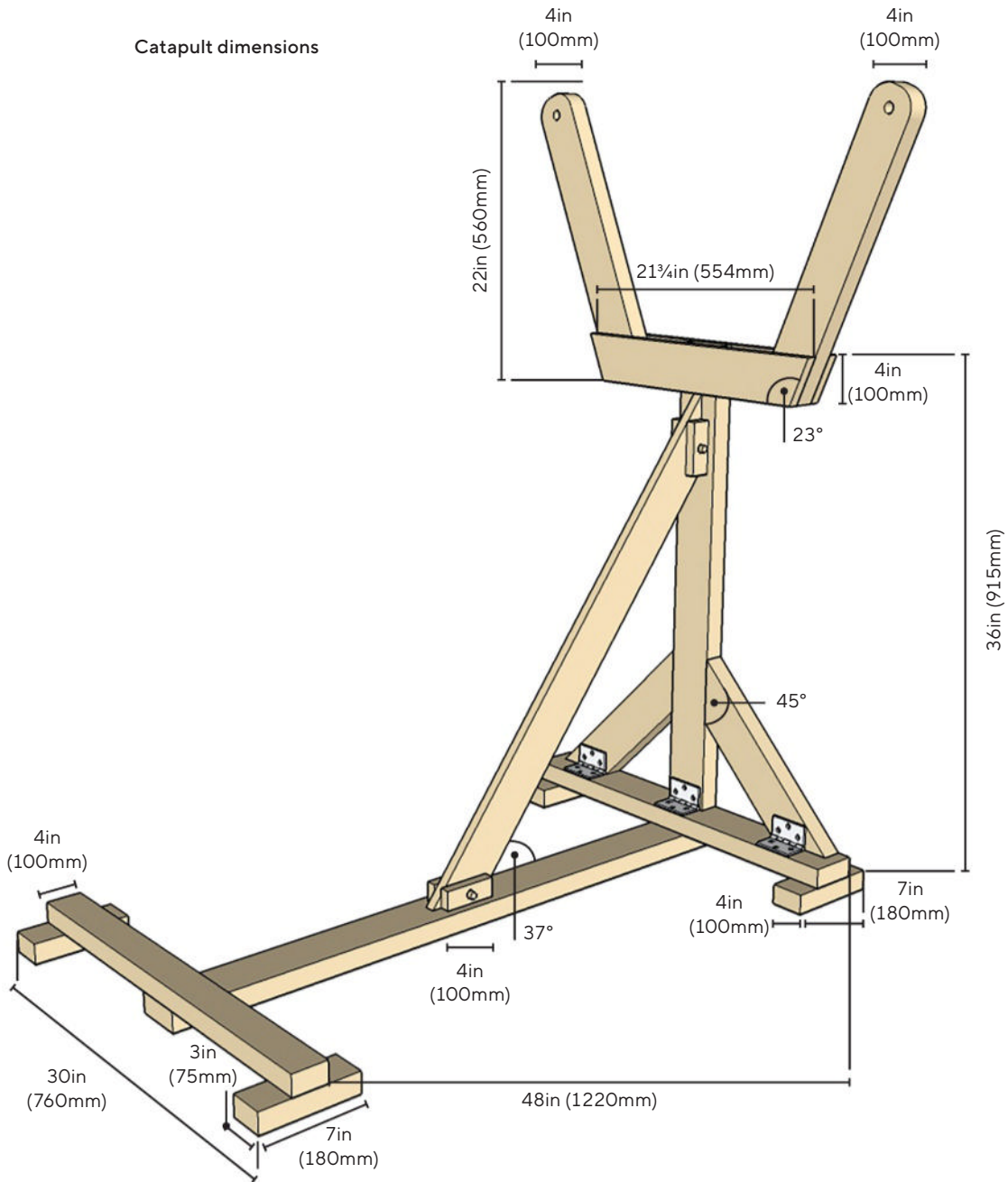
WHAT YOU NEED

- **Catapult upright:** 1 @ 36 x 4 x 2in (915 x 100 x 50mm)
- **Arms:** 2 @ 24 x 4 x 2in (610 x 100 x 50mm)
- **Crosspieces:** 2 @ 36 x 4 x 1in (915 x 100 x 25mm)
- **Diagonal braces:** 2 @ 18 x 3 x 2in (460 x 75 x 50mm)
- **Main spar:** 1 @ 48 x 4 x 2in (1220 x 100 x 50mm)
- **Front cross foot:** 1 @ 30 x 4 x 2in (760 x 100 x 50mm)
- **Front feet:** 2 @ 7 x 4 x 2in (180 x 100 x 50mm)
- **Rear cross foot:** 1 @ 30 x 3 x 2in (760 x 75 x 50mm)
- **Rear feet:** 2 @ 7 x 3 x 2in (180 x 75 x 50mm)
- **Long brace:** 1 @ 48 x 4 x 1in (1220 x 100 x 25mm)
- **Brace mounts:** 4 @ 4 x 1½ x 1in (100 x 38 x 25mm)
- **Dowel pins:** 2 @ 4in (100mm) long x ½in (12mm) dia.
- **Target stands:** 12 @ 8 x 6 x 1in (200 x 150 x 25mm)
- Various screws
- **Metal T-brackets:** 2 @ 3 x 3in (75 x 75mm)
- **Hinges:** 3 @ 3in (75mm)
- Fitness resistance tube
- **Catapult sling:** piece of tarpaulin, 12 x 3in (305 x 75mm)
- **Tarpaulin rings:** 2, and matching hole punch
- Biscuit joiner plate
- Empty containers, e.g. coffee cans
- **Ducks:** 6 large yellow bath ducks
- Scissors
- Miter saw, or handsaw with miter box
- Padsaw or jigsaw
- Powered sander or sanding block with 80-grit sandpaper
- Drill
- Screwdriver

Load up the sling with a plastic duck and fire it at the tower of stacked targets.



Catapult dimensions



MAKING THE CATAPULT

The catapult has to be able to fold to make it portable. Start by cutting the crossbars that support the arms of the catapult from 4 x 1 in (100 x 25mm) softwood; their ends are cut at an angle of 23° to give the arms a splay. Cut two of them, 21¾ in (554mm) long at the top. Next cut the arms 22 in (560mm) long on their short side with the 23°-angle at the bottom end, and round their upper ends a little. Cut the upright 36 in (915mm) long and screw on the first crosspiece, then the arms. Flip the assembly over and screw the other crosspiece on to complete the yoke of the catapult.

The next step is to screw the 3 in (75mm) hinge to the bottom of the upright then to the 30 in (760mm)-long cross foot. The screws must be long enough to go all the way through the cross foot so it also attaches to the main spar, aligning the front edge of the upright with the front of the main spar. When this is done, cut the diagonal braces and spike them at their tops to the upright with a screw to hold them in place, then screw on their hinges. Screw two T-brackets to the backs of the diagonal brackets to secure them fully. The assembly can now be folded down onto the main spar.

Attach the 7in (180mm)-long feet to the front crosspiece and then attach the rear crosspiece and feet. Place the long brace in position behind the main spar and mark the angles that will need to be cut on its ends. These should be around 37° and 53°—the ends must not be 45°, or the mounts at the opposite ends of the brace would clash and the catapult would not fold correctly. Cut the ends of the long brace once

you have double-checked the angles, and give everything a good sanding. Cut the four brace mounts 4in (100mm) long from 1½ x 1in (38 x 25mm) timber and drill holes in them to accept the ½in (12mm) dowel pins. Attach a pair to the main spar and position the long brace so a matching hole can be drilled in it, then repeat the process on the upright. The wooden part of the catapult is now complete.



1 Cut the angled ends on the crossbars.



2 Saw the radius on the end of each arm.



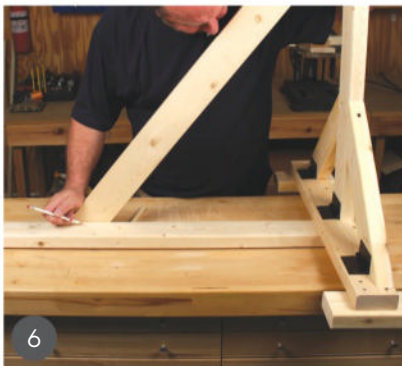
3 Screw the arms and crosspieces to the upright.



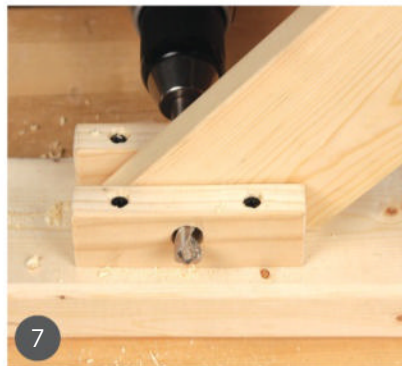
4 Attach the hinges to the upright and the diagonal braces.



5 Screw on the T-brackets.



6 After the feet have been attached, mark and cut the angles on the ends of the long brace.



7 Cut the brace mounts and drill the holes for the dowels.



8 Be sure to stagger the brace mounts so they clear one another when the catapult is folded.

MAKING THE SHOOTING ELASTIC AND SLING

The elastic used here is from a fitness band and the sling is a piece of tarpaulin. Cut the tarpaulin to 12 x 3in (305 x 75mm) and fold the ends as shown, then attach a tarpaulin ring at each end. Cut the fitness band in half and use the existing fixtures to hold the two pieces in place on

the sling. Drill holes in the catapult arms and thread the elastic through them. We secured them on the back with a pair of screws and a biscuit joiner plate; you could use a small piece of wood or a popsicle stick.



9 Gather the items you will need for the sling, including a tarpaulin eyelet kit, which can be sourced online.



10 Fold the tarpaulin and punch the holes for the rings. Add the eyelets.



11 With both rings in place, cut the fitness band and thread it through them.



12 Drill holes in the arms for the band, and secure it in place by your chosen method.

MAKING THE TARGETS

The targets are just empty coffee containers with stickers on them to make them more interesting. The structure they stand on consists of pieces of wood 6in (150mm)

wide by 8in (200mm) long. Simply stack the pieces of wood to make niches and stand the targets in them.



13 Cut the stand pieces to length.



14 Print and cut stickers to fix to the coffee-can targets.



15 Stack the stand pieces so the targets fit nicely inside them.



PLAYING THE GAME

Load up the sling with a plastic duck and fire it at the tower of stacked targets. Knocking a target over will secure the score of 15 points for a large one and 25 points for a small one. Each player should shoot all six ducks and tally up their score at the end of their turn. Should all the targets be knocked down mid-turn, the tower is reassembled and firing resumed. After each player's turn, the tower is rebuilt and the next player takes their turn. The player who reaches the predetermined score first is the winner; a good score to set as a target is 300 as this makes the game long enough but not too long.

1 Set up the targets . . .

2 take aim and . . .

3 fire your ducks at the cans.

4 Carnage! Points are scored for all the fallen targets.



Giant Dominoes

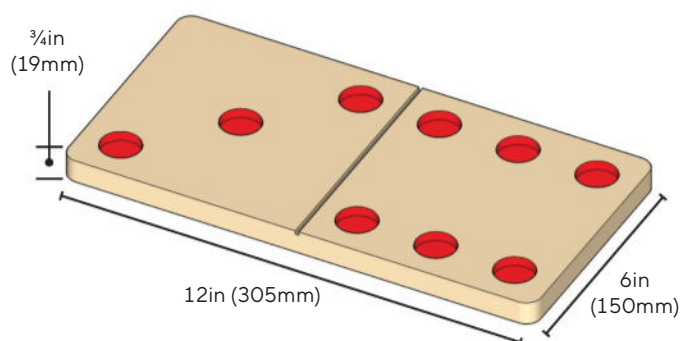
Dominoes is a simple game that has been around for hundreds of years.

This giant-size version turns a traditional handheld or tabletop game into a fun outdoor activity for friends and family.

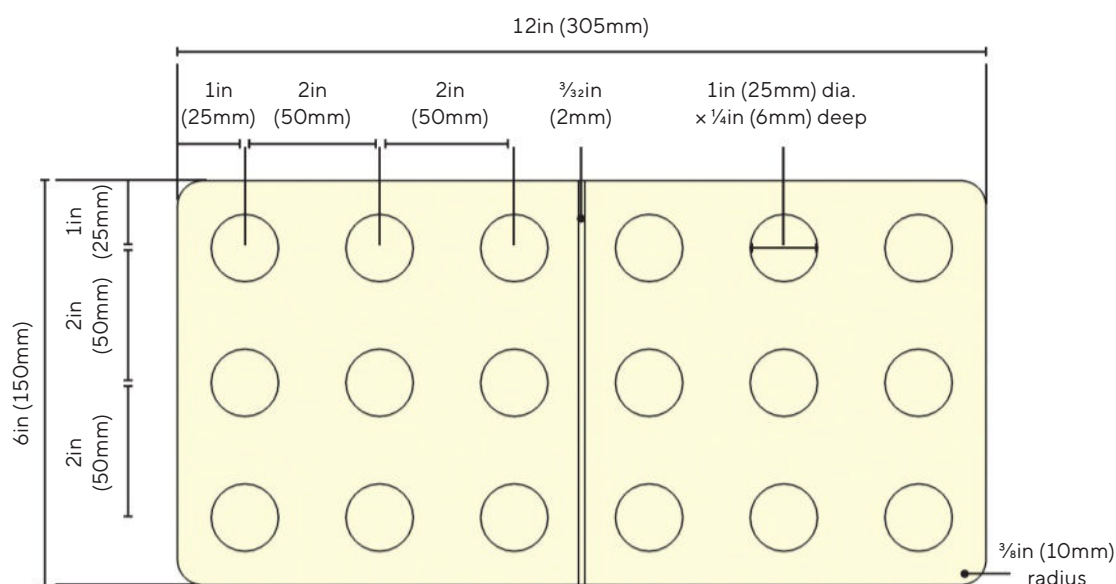
WHAT YOU NEED

- **Tiles:** planed wood, 28 @ $\frac{3}{4}$ x 6 x 12in (19 x 150 x 305mm)
- Miter saw or handsaw
- Tablesaw or handsaw
- Portable drill or drill press
- 1in (25mm) dia. spade bit or Forstner-type bit
- Poster board or cardboard, 6in (150mm) square, for use as a template for marking pip locations
- Router with $\frac{1}{4}$ in (6mm) roundover bit, or handplane
- Powered sander or sanding block with 80-grit sandpaper
- Small paintbrush and bright-colored paint

Dimensions of tile



Dimensions and positioning of pips





MAKING THE SET OF TILES

The standard “double-six” domino game consists of 28 tiles. I purchased nominal 1 x 8 x 96in (25 x 200 x 2440mm) boards from a DIY store; the actual planed sizes is $\frac{3}{4}$ in x $7\frac{1}{4}$ in x 8ft (19 x 184 x 2.44m). The final size of each tile will be 6 x 12in (150 x 305mm).

Clamp a length stop to the miter saw to ensure that all the tiles will be the same length, and cut 28 tiles. Once you have them all cut, it’s time to trim them to their final width. A tablesaw makes this an easy task; set the rip fence of the tablesaw 6in (150mm) away from the blade.

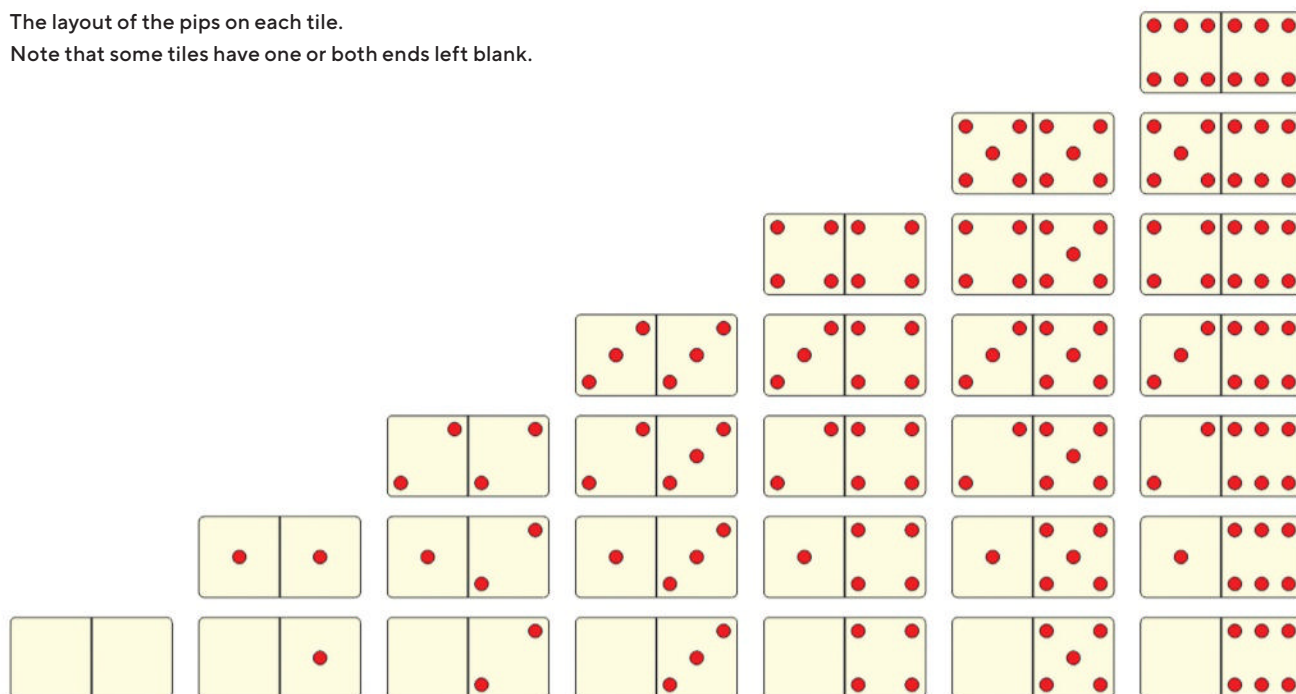
The surface of the domino is traditionally divided into two squares by a shallow incised line, about $\frac{1}{8}$ or $\frac{3}{32}$ in (1.5–2mm) wide. To do this safely, set the rip fence on the tablesaw so that the blade is centered along the length of the tile. With the end of the tile pushed against the rip fence, use the miter gauge to help guide the workpiece across the blade.

The next step is to mark and drill all the pips on each tile; the drawing below shows the correct layout of all 28 tiles. For marking the pip locations, it’s a good idea to make a grid pattern on a 6 x 12in (150 x 305mm) piece of posterboard or cardboard, as shown in the drawing on page 46. This way, you can use a nail or awl to make a dimple through the template to mark the center point of each pip. Mark only the pips that are required for each domino in turn; there is no one tile that has pips in all the positions marked on the template. Having marked the center points on the tiles, drill shallow holes, about $\frac{1}{8}$ in (3mm) deep, using a 1in (25mm) spade bit or Forstner-type bit. A Forstner bit will leave a flatter bottom to the hole, with less of a dimple at the center point.

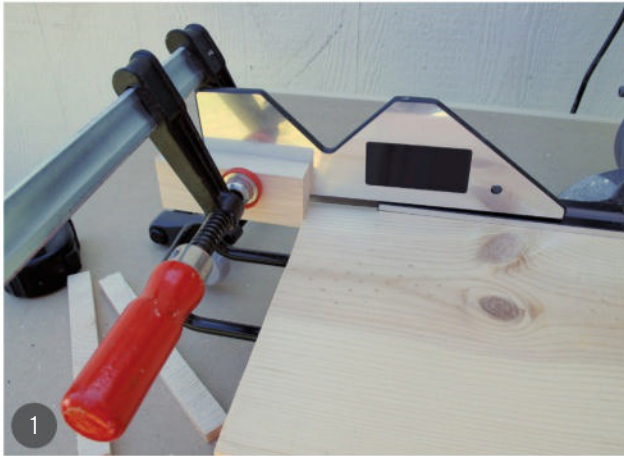
Once all the pips are drilled, use a router with a $\frac{1}{4}$ in (6mm) radius roundover bit to round over all the edges of each tile, then use a sander to round over the sharp corners at each end. Finally, use a small paintbrush and bright-colored paint to highlight each pip.

The layout of the pips on each tile.

Note that some tiles have one or both ends left blank.



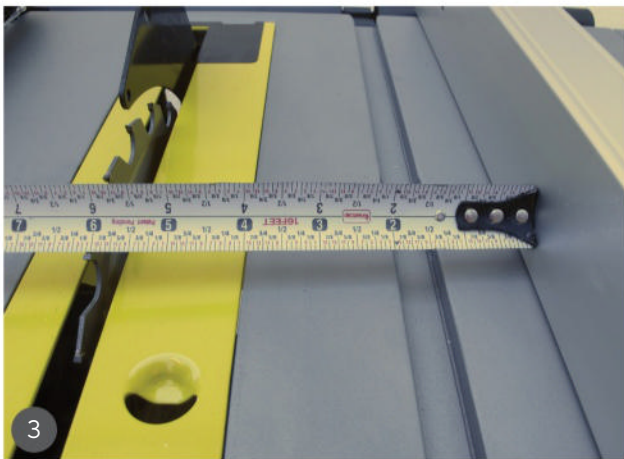
In the most popular version of this game, known as “double-six,” the goal is for each player to place their tile adjacent to a previously played tile, matching the number of pips on the end of each tile.



1 Use a stop block on the miter saw to ensure that all the tiles are the same length.



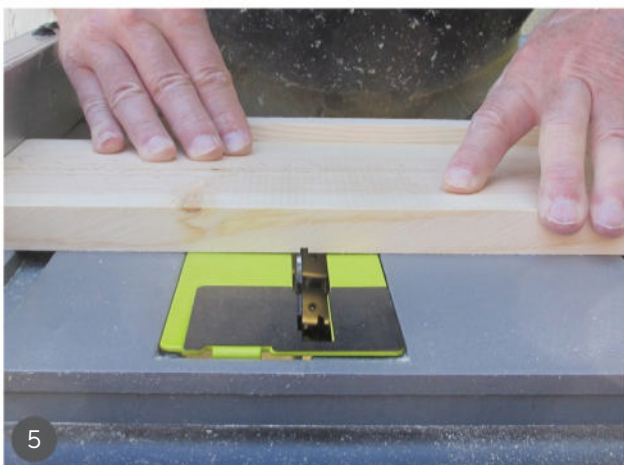
2 Cut 28 tiles, making sure the end of each tile is tight against the stop block before making the cut.



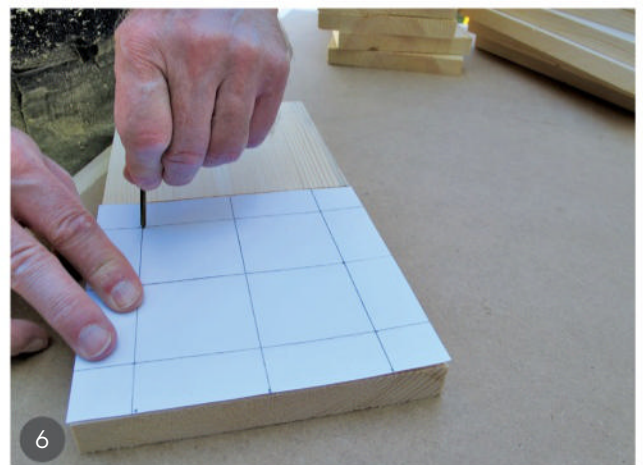
3 Set the position of the rip fence to trim each tile to final width.



4 With one of the long edges of the tile tight against the rip fence, rip each tile to final width.



5 Set up the tablesaw to make a shallow cut across each tile.



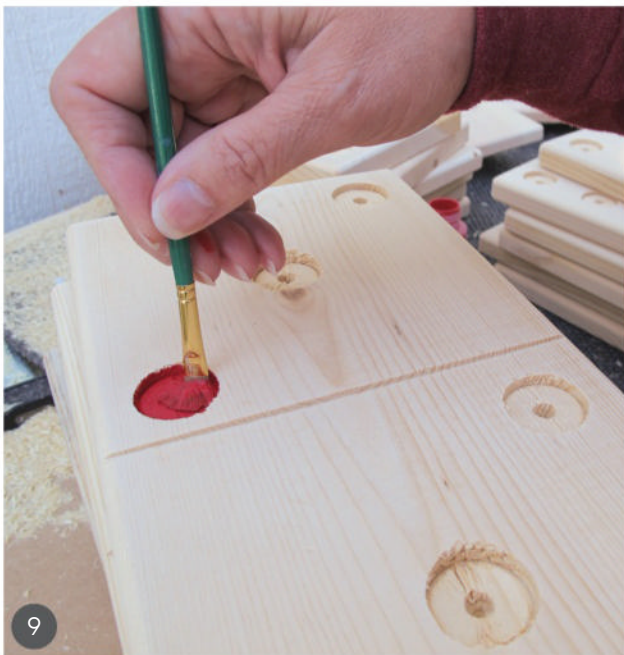
6 A template makes quick work of marking consistent locations for the pips on the tiles.



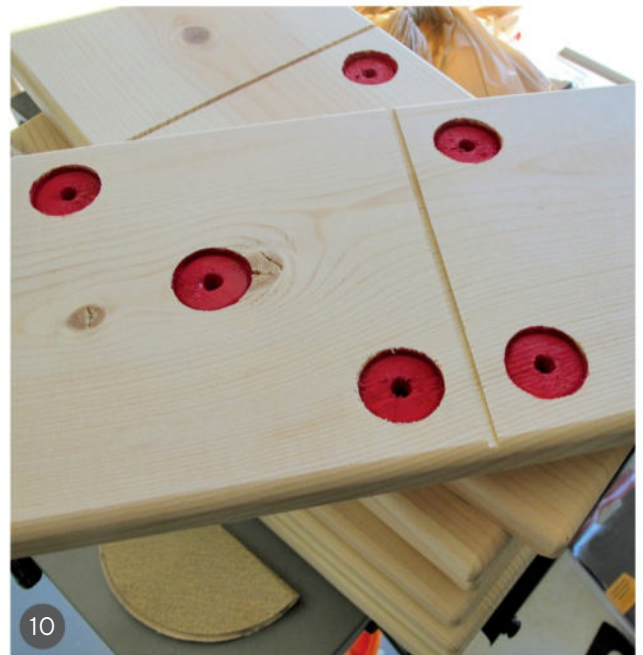
7 Drill a shallow hole to represent each of the pips. If you have a drill press, you can set the depth stop to ensure consistent depth.



8 Use a roundover bit and sandpaper to smooth all the sharp edges on both faces of each tile.



9 Painting the pips a bright color makes them stand out.



10 A stack of completed domino tiles.

PLAYING THE GAME

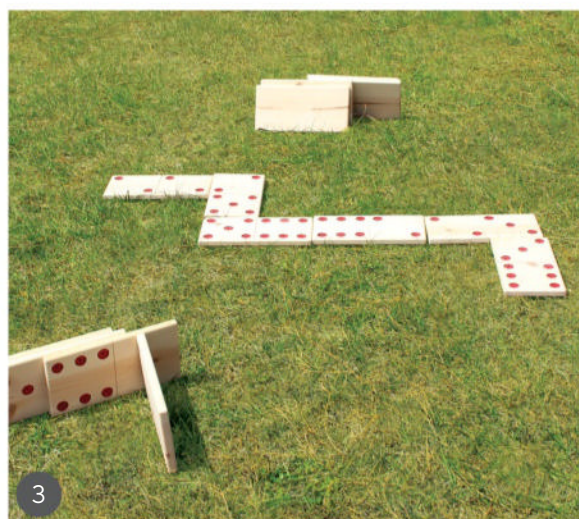
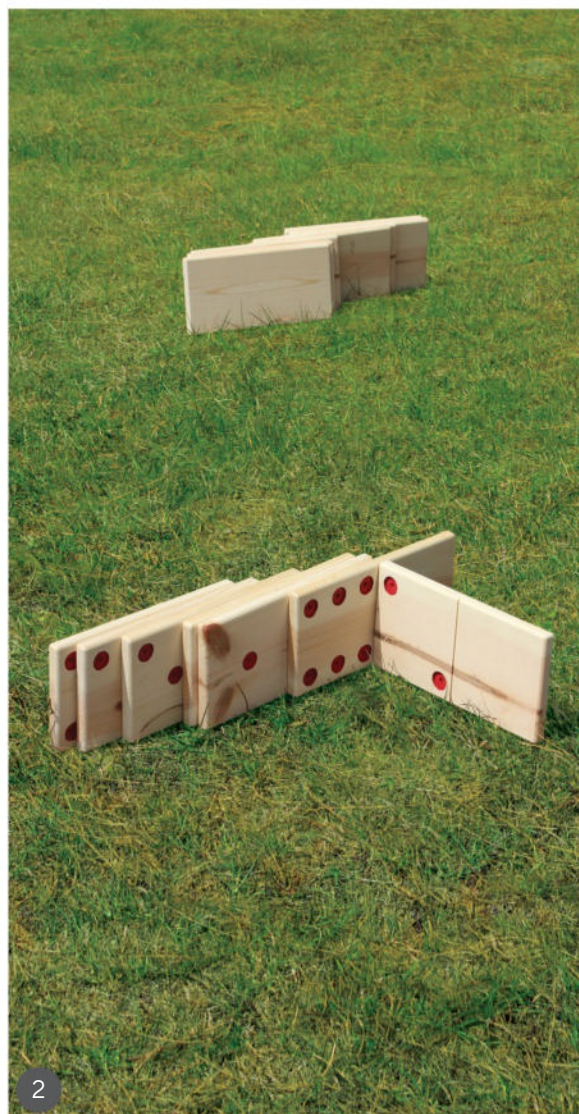
In the most popular version of this game, known as “double-six,” the goal is for each player to place their tile adjacent to a previously played tile, matching the number of pips on the end of each tile. The first player to play all their tiles wins the game.

Two, three, or four players can join in, but if there are four players they must play as two teams of two. All the dominoes are placed face down randomly and moved around to “shuffle” them. Each player picks a domino and the player who takes the highest-scoring one starts first. The dominoes are reshuffled and all the players choose seven dominoes each, placing them so opponents can’t see them. The first player places their chosen domino face up and draws another one from the face-down ones. The next player places a domino down next to the first one, making sure that the ends that touch have the same number; a double-numbered domino is placed crosswise to the existing one. Play continues with players taking turns to place dominoes down on either end of the line, each time picking a replacement from the face-down dominoes until none are left. If a player cannot go, they forfeit their turn. The first player to lay down all their dominoes is the winner.

1 Lay all the pieces face down and let each player randomly select seven dominoes.

2 Stack the dominoes so that opponents cannot see them.

3 Take turns to lay down dominoes, matching the number of pips to the previous one. The first player to use up all their dominoes is the winner.



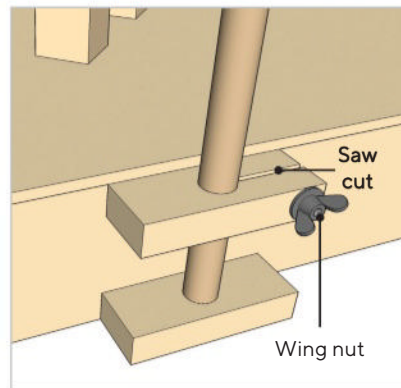
Bar Skittles

This precursor to modern-day bowling was once a popular pastime in bars. Our large version is ideal for playing in the yard. The table is easy to make and the pegs are cut from ready-made spindles that are actually intended for garden decking. Set the pins up on the table and then try and knock them over with the ball suspended on a string.

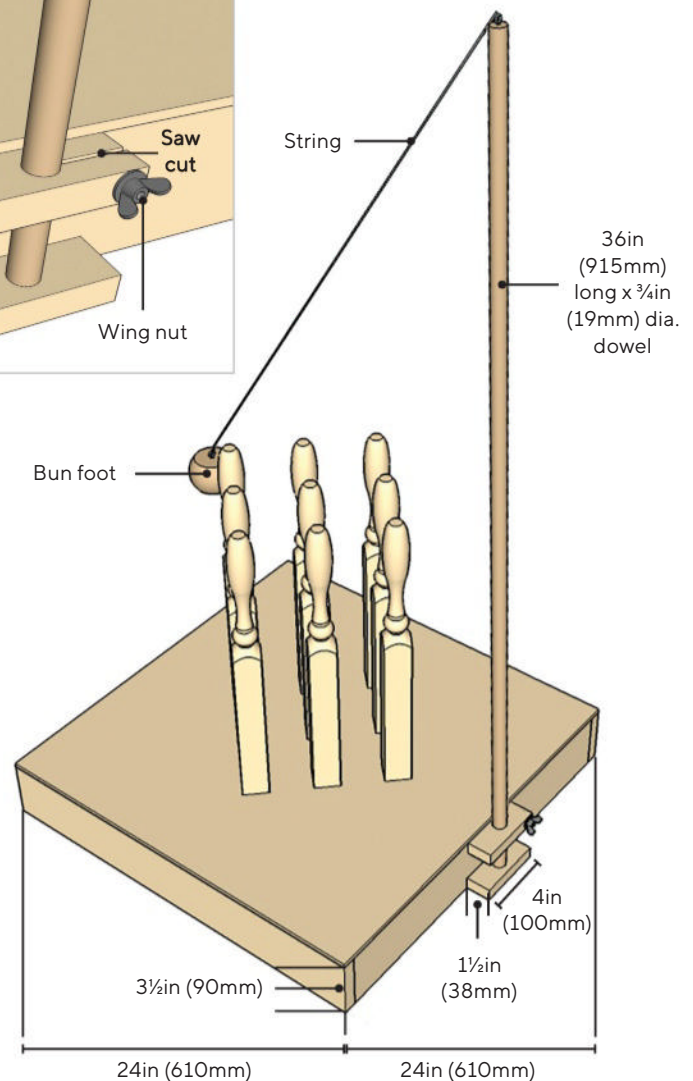
WHAT YOU NEED

- **Table top:** plywood, 24 x 24 x 1/4in (610 x 610 x 6mm)
- **Table ends:** 2 @ 24 x 4 x 1in (610 x 100 x 25mm)
- **Table sides:** 2 @ 22 1/2 x 4 x 1in (572 x 100 x 25mm)
- **Pegs:** decking spindles, 5 @ 36 x 1 1/2 x 1 1/2in (915 x 38 x 38mm) (each makes 2 pegs)
- **Post:** 1 @ 36in (915mm) long x 3/4in (19mm) dia. dowel
- **Post brackets:** 2 @ 4 x 2 x 1in (100 x 50 x 25mm)
- 2 screw eyes
- **Ball:** ready-made bun foot (for chest of drawers), 2 1/2in (63mm) dia. x 1 1/2in (38mm)
- **String:** 36 x 1/8in (915 x 3mm) synthetic rope
- **Carriage bolt:** 1/4in (6mm) dia. x 2 1/2in (63mm) with matching wing nut and flat washer
- Miter saw
- Circular saw with straightedge guide
- Bandsaw
- Drill press
- 3/4in (19mm) drill bit
- **Flathead woodscrews:** 30 @ 1 1/4in (32mm), no. 6 and 30 @ 2in (50mm), no. 8
- Power sander or sanding block with 80-grit sandpaper
- Craft paint and brush
- Masking tape

Detail of post brackets

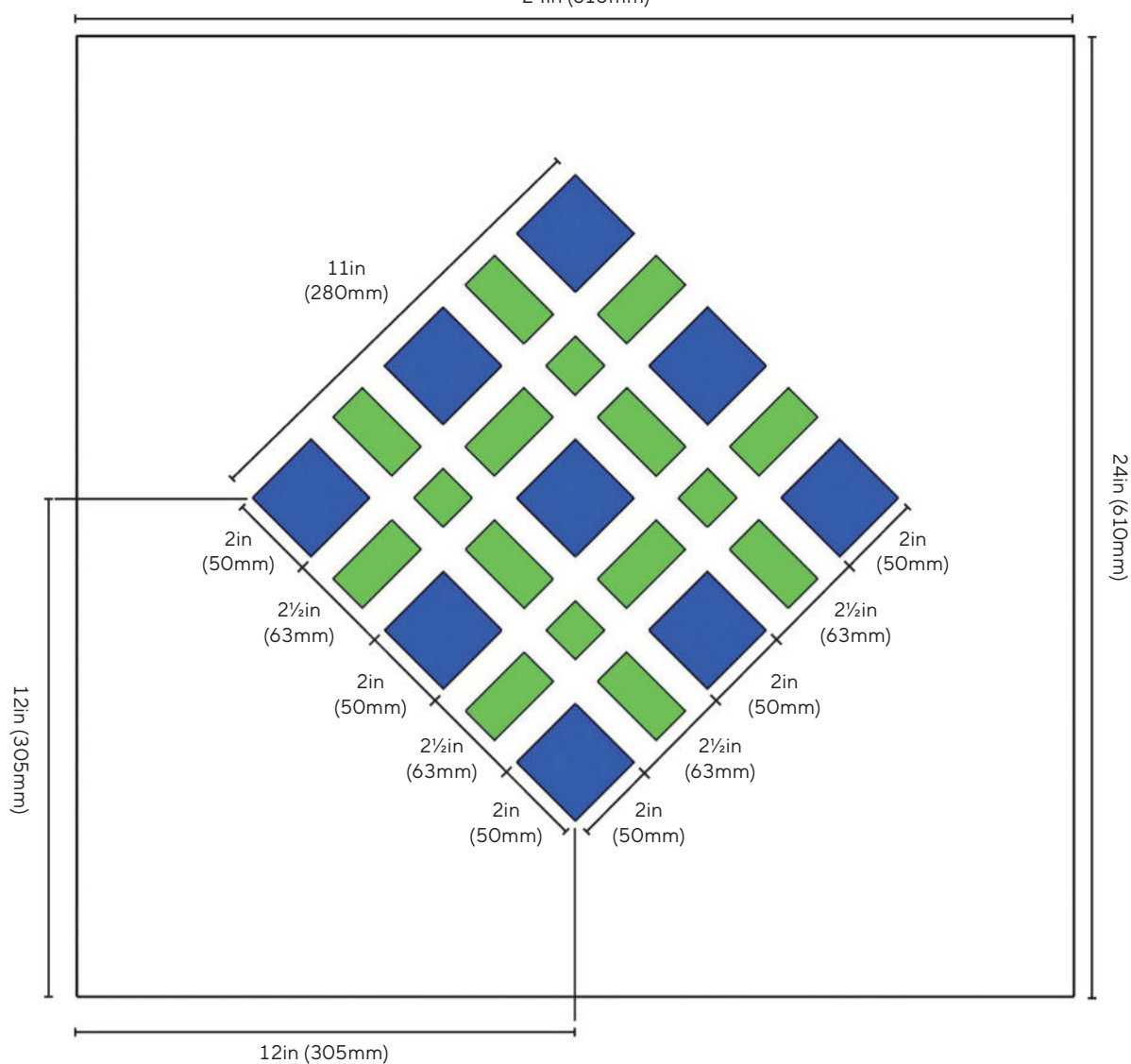


Components of game and dimensions of table top and post





24in (610mm)



The top of the table, or base, is a 24in (610mm) square of ¼in (6mm) plywood. Some hardware stores sell plywood already cut to this size. The table frame is made from 4 x 1in (10 x 25mm) stock, also readily available at the hardware store. Start by cutting the table ends to length, then screw them in place through the plywood. Cut the table sides to fit between the ends and fasten them through the top and ends.

pieces together and used the drill press, making sure to drill only ½in (12mm) deep into the bottom bracket. The drill press ensures the hole is straight. For the top bracket, cut a slot lengthwise from one end of the bracket (it doesn't matter which) to the post hole; this will allow the wing nut and bolt to clamp the post securely. On the same end as the slot, use the drill press to drill a ¼in (6mm) hole for the carriage bolt. Fasten the brackets to the center of one of the sides of the table using glue and screws. We inserted the dowel into the brackets to help align them and make sure the post would stand straight; but be careful not to glue the dowel to the brackets. Use the ¼in (6mm) hole in the top bracket as a guide to drill through the table frame for the carriage bolt. Insert the bolt from the inside and add the washer and wing nut, but don't tighten it yet.



1 Use a circular saw and straightedge guide to cut the plywood for the table top into a 24in (610mm) square.



2 Cut the table sides and ends to length.



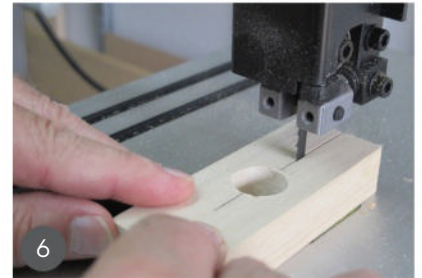
3 Screw the ends to the top.



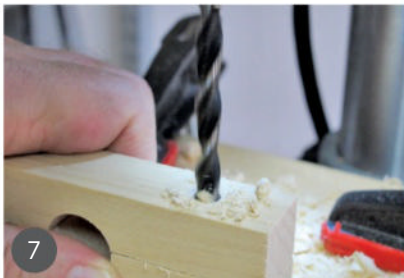
4 Screw the sides to the ends.



5 Drill the hole for the post into both brackets.



6 The narrow lengthwise slot in the top bracket is easy to cut on the bandsaw.



7 Drill a 1/4in (6mm) hole through the edge of the top bracket.



8 Glue and clamp the brackets in the center of one of the table sides, then insert screws. Use the long dowel to check alignment.



9 Use the 1/4in (6mm) hole in the bracket as a guide to drill through the table side.



10 Insert the carriage bolt from the inside and install the washer and wing nut.



11 Lay out the squares on the table top using a straightedge and a miter square.



12 The squares are marked and ready to paint.

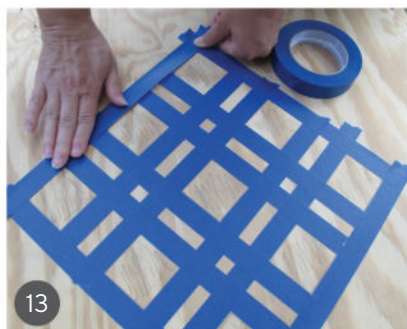
PAINTING THE TOP

Now you can lay out the squares on the table top that serve to locate the pins when setting them up. See the drawing for all the dimensions you need. Use a square with a 45° edge to help lay out the lines. Painter's masking tape along the edges of the squares will help to create crisp edges when painting them. We used craft paint. You could also paint the openings left by the tape a contrasting color for a decorative touch.

MAKING THE POST, BALL, AND PINS

The post is a 36in (915mm) length of $\frac{3}{4}$ in (19mm) dowel. I installed a screw eye in the top end after drilling a small pilot hole. This will help secure the string for the ball. Fit the dowel into the brackets and tighten the wing nut.

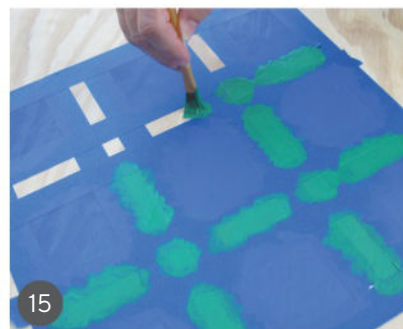
The ball is made from a small bun foot, intended for a chest of drawers, that I found at the hardware store. It comes with a threaded stud that is easy to remove with pliers. Then you



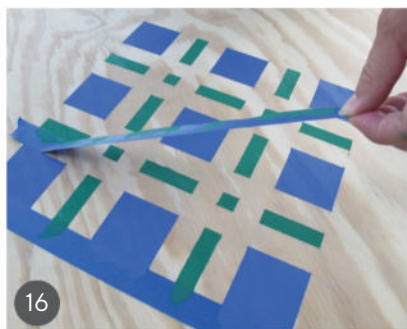
13 Use painter's masking tape to ensure crisp edges.



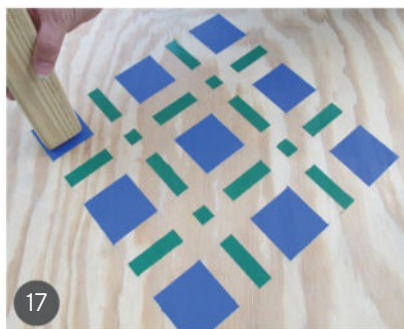
14 Paint the squares with the color of your choice.



15 If you would like to, paint the spaces between the squares a contrasting color.



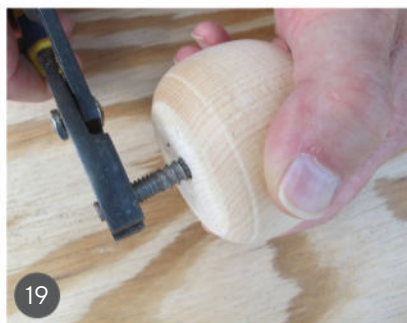
16 Slowly peel the tape away to reveal the pattern.



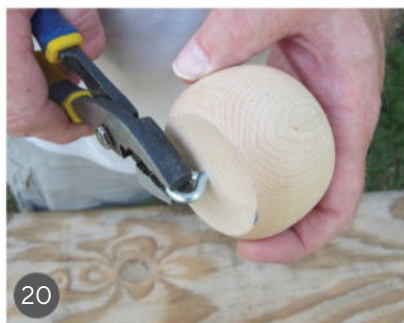
17 The squares help to locate the pins during play.



18 Install a screw eye into the end of the dowel and insert the dowel into the brackets.



19 Remove the screw from the bun foot with pliers.



20 After drilling a pilot hole, insert a screw eye into the bun foot.



21 Decking spindles make ideal pins when cut in half.

can drill a small pilot hole in the opposite end and attach another screw eye. Put the ball aside for now.

The pins are made from 36in (915mm)-long decking spindles. I cut them in half on the chopsaw to create the pins. While you're at the saw, slightly trim the ends just to ensure they are square and will sit straight on the table top. A little sanding is all they need before you set them

up on the painted squares of the game top. If you can't find decking spindles, you could use plain lengths of 2 x 2in (50 x 50mm) stock or large dowels instead.

Determine the length of string needed to secure the ball to the post. You want to make sure the ball contacts the farthest peg when swung during play. Tie the string securely to the post and ball.



22 Use the chopsaw to cut the spindles to create a pair of pins.



23 Trim the ends of the spindles square so they stand straight on the table.



24 The finished pins made from deck spindles.



PLAYING THE GAME

Nine skittles are positioned in a square according to the markings on the base. The ball is swung clockwise around behind the pole and the object of the game is to knock over the skittles as it returns to the player. To be able to knock over all nine skittles, a player must hit the skittle farthest away first. The ball is only permitted to go round the pole once, so the player must catch it if it looks likely to go round again. Any number of players can play and they get three throws per turn; their score is recorded after their turn. The maximum score per turn is 27 and the game is won by the first person to score 100.

1 Set up the skittles on the table and prepare to send them flying.

2 A well-aimed swing will knock the outer skittles down.

3 Keep knocking them down—you are allowed three swings.

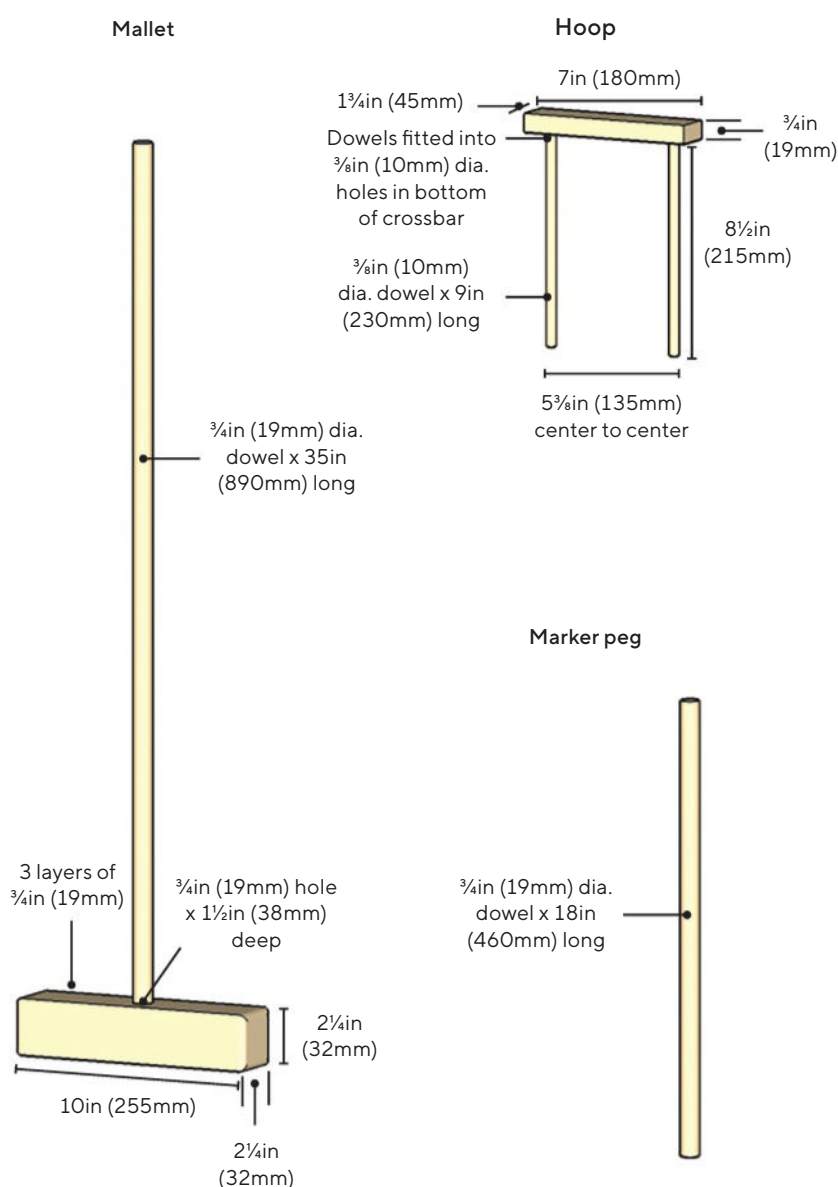
4 Your score is added up after the last of your three swings.

Croquet

Fun for all ages, this classic outdoor game is sure to spawn a few friendly rivalries. Use the mallet to knock your ball through the hoops in the right order, but beware—along the way your opponents can block your path or even knock your ball right out of the court.

WHAT YOU NEED

- **Mallet heads:** 4 @ 10 x 2¼ x 2¼in (255 x 55mm x 55mm) (may be laminated as described in text)
- **Mallet handles:** 4 @ 35in (890mm) long x ¾in (19mm) dia. dowel
- **Marker peg:** 1 @ 18in (460mm) long x ¾in (19mm) dia. dowel
- **Hoop crossbars:** 6 @ 7 x 1¾ x ¾in (180 x 45 x 19mm)
- **Hoop uprights:** 12 @ 9in (230mm) long x ¾in (10mm) dia. dowel
- Cutoff saw, or miter box and handsaw
- Tablesaw
- Router with ¼in (6mm) radius roundover bit
- Power sander or sanding block with 80-grit sandpaper
- Wood glue
- Waxed paper
- Clamps as needed
- Chisel
- Hammer
- Vinyl electrical tape (4 colors)
- Forstner-type or spade drill bits, ¾in (10mm) and ¾in (19mm)
- **Balls:** 4 of different colors, bought ready-made; these are sold for games such as boules or bocce





MAKING THE MALLETS

Typical croquet mallets have a head roughly 10in (255mm) long. Their width and height is around 2¼–2½in (55–63mm). Finding wood this thick can be a problem. An easy solution is to glue up three layers of ¾in (19mm) material, resulting in 2¼in (55mm) thickness. We used 4 x 1in (100 x 25mm) boards from the hardware store; the actual dimensions of these boards were 3½ x ¾in (90 x 19mm). Stack three boards together on the chop saw. Cut the blanks a little overlong for the 10in (255mm)-long mallet head; it's easy to trim the ends flush and to exact length after the three layers have been glued up.

To glue up the three layers, first lay waxed paper on a smooth work surface to protect it from glue. Apply the glue, then stand the glued-up blank on edge and use the work surface to make sure all the pieces align and the edges are flush. Apply clamps and wait at least an hour before moving on.

After the glue is dry, it's time to cut the mallet head blanks to length by first making a skim cut on one end to make it flush and smooth. Then measure and mark the 10in (255mm) length and make the final cut. Before cutting the blanks to 2¼in (55mm) width on the tablesaw, it's a good idea to chisel off most of the dried excess glue that was squeezed out of the joints. Make a light skim pass on one side to make it smooth, then rotate the blank 180° and adjust the rip fence for the final 2¼in (55mm) width. Use a small handheld router or a router table to form a ¼in (6mm) radius on all the edges, including the ends. A little sanding removes saw marks and makes everything smooth.

To accommodate the handle, drill a ¾in (19mm) hole 1½in (38mm) deep with a Forstner or spade bit. This hole should be centered along the width and length of the mallet head.

Cut the ¾in (19mm) dowel to 35in (890mm) and glue it into the mallet head. You may need to use a hammer to gently tap the dowel until it bottoms out in the hole. Add a strip of colored vinyl tape around the top of each handle to indicate which ball belongs to which player.



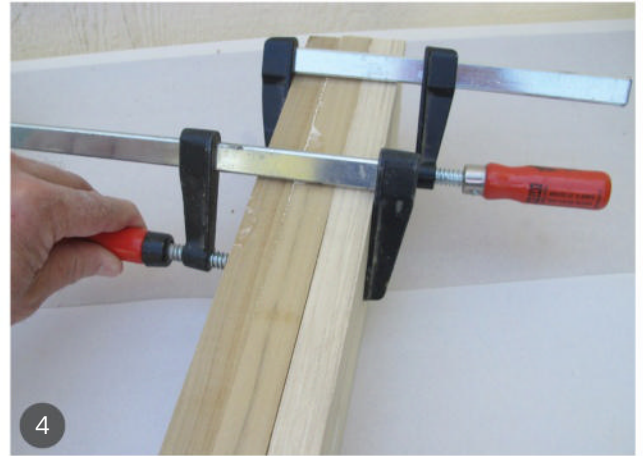
1 Stack up three boards and cut them to roughly 11in (280mm) lengths.



2 Get everything ready for gluing up the three layers to form each mallet head.



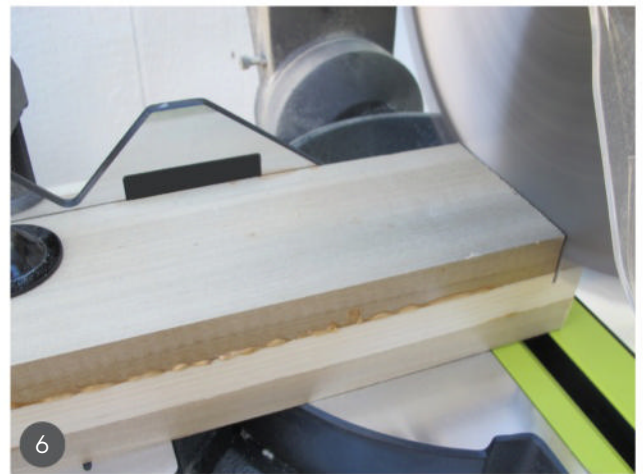
3 Apply an even coat of glue.



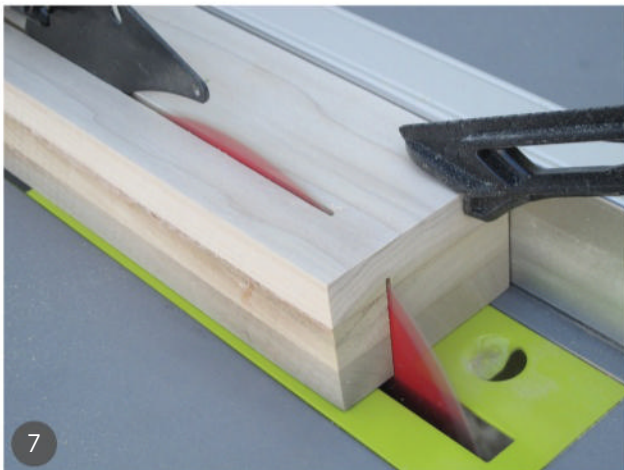
4 Make sure the edges are flush as you apply the clamps.



5 Use a chisel to remove dried, squeezed-out glue.



6 Cut the glued-up blanks to their final 10in (255mm) length.



7 Trim the edges of the mallet heads to a final width of 2¼in (55mm).



8 Round over all the edges with a router.



9 Drill the hole for the handle in the mallet head.



10 Apply glue and tap the handle into the mallet head.



11 Apply a ring of colored tape at the top of the handle.

MAKING THE HOOPS AND MARKER PEG

Cut the 2 x 1in (50 x 25mm) stock to 7in (180mm) lengths to create six crossbars. Drill two $\frac{3}{8}$ in (10mm) holes $\frac{1}{2}$ in (12mm) deep and spaced $5\frac{3}{4}$ in (135mm) from center to center. These holes should be centered on the width of the crossbar. Cut 12 x $\frac{3}{8}$ in (10mm) dowels 9in (230mm) long to form the uprights for the hoops. Glue and tap them with a hammer into the holes in the crossbars.

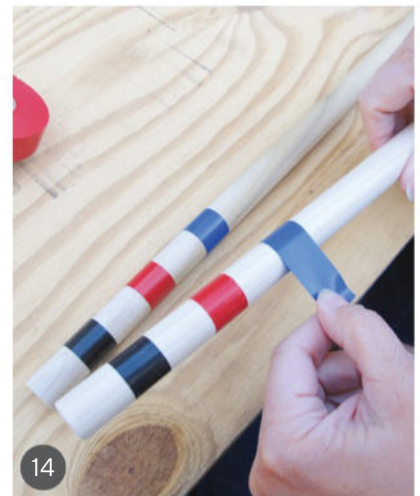
The marker peg is nothing more than a $\frac{3}{4}$ in (19mm) dowel cut to 18in (460mm) long. Apply rings of vinyl tape at the top to indicate in which order the players are to take their turns.



12 After cutting the hoop crossbars to length, drill holes for the uprights.



13 Glue the uprights into the crossbars and tap them home.



14 Apply tape to the top of the marker peg (a spare one is shown here) to indicate the order of play.

The most popular form of this game is played with two teams and each team has two balls of different colors.

PLAYING THE GAME

The most popular form of this game is played with two teams and each team has two balls of different colors. Our balls are green, red, yellow, and blue, so one team might have red and yellow and the opposing team will have green and blue.

The hoops are laid out on the playing area as shown in the diagram, and players hit their balls through them in numerical sequence and in the color order shown on the central peg. The first ball to pass completely through a hoop from the playing side scores a point for that team. The playing area is predetermined and any ball that leaves it is replaced at the edge where it exited. A player can hit another ball in play to attempt to clear it out of the way. If a ball that has been moved in this way goes more than halfway to the next hoop, it is declared offside and has to be played from the penalty point, which is the halfway point of the playing area; the opponent chooses which side of the penalty point it is played from.

Once a ball has passed through a hoop the next hoop can be played. Players take one shot per turn unless extra shots are won. If your ball, when struck, contacts one of the other balls, you earn two extra shots.

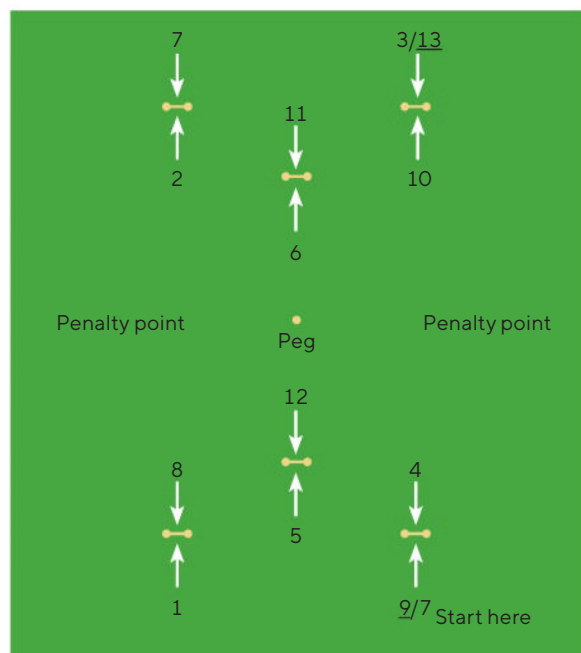
The first shot, known as the croquet shot, is taken with your ball in contact with the ball that was hit. You place your ball anywhere around the ball that was hit and strike only your ball; both balls can move and the idea is to get your ball into a favorable position while moving your opponent's ball to an unfavorable place. For your second extra shot, you hit your ball from where it lies after the first extra shot.

The game is won when one player or team has passed a ball through all the hoops in the numbered sequence and the ball then touches the marker peg.

1 Set up the play area. The colored marks on the marker peg in the middle show the order of play.

2 Play around the course, making sure your ball goes through all the hoops in the proper order.

3 The game is won when one player's ball has passed through all the hoops in the correct sequence and finally rests against the marker peg.

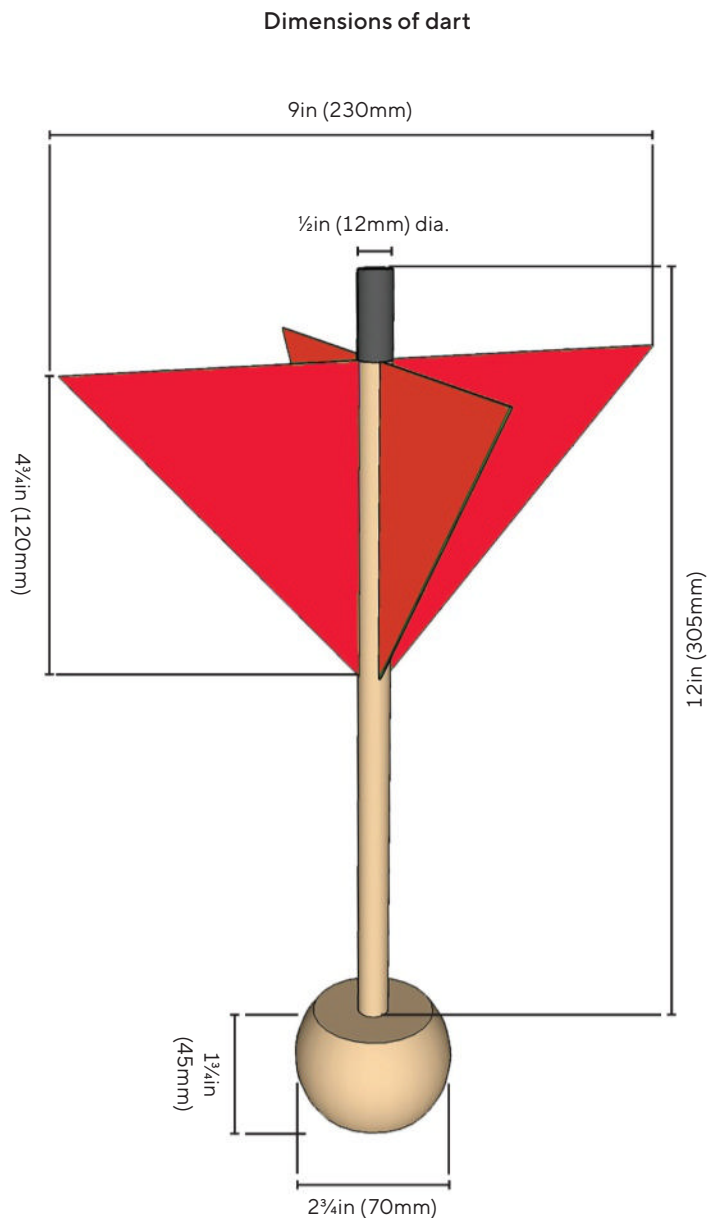


Lawn Darts

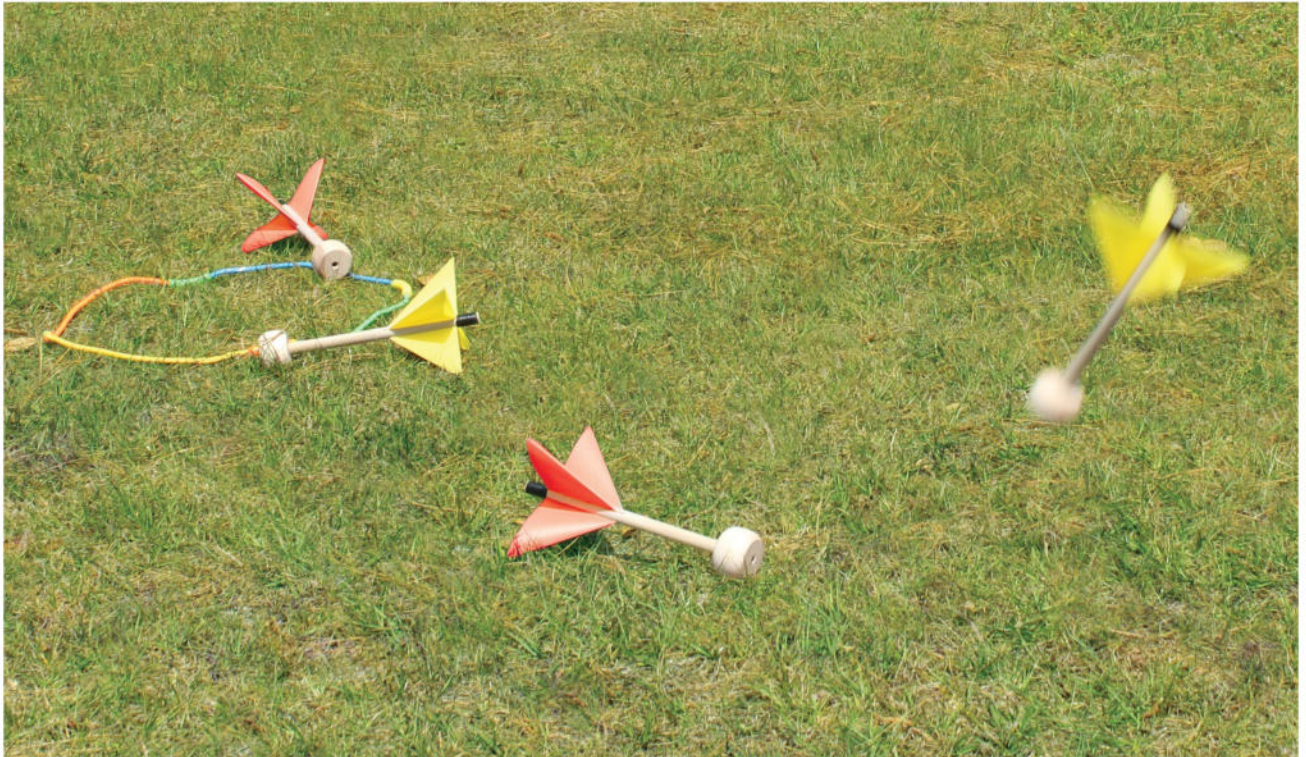
This throwing game may date from medieval times. The first lawn darts had sharp points and were fairly dangerous. All sets available now are round-nosed and so they are much safer to play with. Our version is fun both to make and to play.

WHAT YOU NEED

- **Weighted ends:** ready-made bun feet (for chest of drawers), 4 @ 1¾in (45mm) x 2¾in (70mm) dia.
- **Shafts:** 4 @ 12in (305mm) long x ½in (12mm) dia. dowel
- **Flights:** 4 @ 9½ x 9½in (240 x 240mm) plastic card (e.g. file holders)
- Vinyl electrical tape
- Deck screws, 8 @ 3in (75mm)
- Screwdriver
- Drill and bit
- Handsaw or bandsaw
- **Cord:** any kind, long enough to make two circles of 18in (460mm) dia. Alternatively, 2 target rings (sold as swimming-pool toys)







MAKING THE DARTS

To create the weighted ends of the darts, first remove the bolts from the furniture feet; this is easily done using a pair of grips or pliers. Then drill a pilot hole through each foot and countersink the outer side. Cut four pieces of $\frac{1}{2}$ in (12mm) dowel 12in (305mm) long for the shafts. On each shaft, mark the hole for the screw at one end and the positions of the flights on the other end. The 6in (150mm)-long cuts to receive the flights need to be sawn carefully

to lessen the vibration and the possibility of breakage. So, make the first cut only partway at first, then rotate the shaft in the vise to begin the second cut.

Continue cutting and rotating in stages until the full depth is reached. When all the cuts have been made, the shaft can be screwed to the weighted end and set aside while the flights are made.



1 A ready-made furniture foot was the right size for the head of the dart; start by removing its screw.



2 Drill through the foot so it can be screwed to the shaft, then countersink from the other side.



3 Mark the cuts for the flights. You can do this freehand, using your finger as a pencil gauge.



4 Make the saw cuts in easy stages.



5 Hold the top of the shaft to reduce vibration as you approach the final depth.



6 Sand the shaft ready for the flights.



7 On the other end, mark the center of the shaft ready for the screw.



8 Drill into the end of the shaft, then screw the head of the dart to the shaft.

MAKING THE FLIGHTS

The flights are made from thin plastic sheet. We obtained some file holders from the stationery store for this. This yielded pieces 9½in (240mm) square. Each square is then folded diagonally in half and creases made; then fold and crease the sheet diagonally on the opposite side. When this is done, the folds to create the X-section can be made; this is easier to show in a photograph than to explain in words! The completed flight is then slipped into the cuts on the end of the shaft and pushed all the way to the end of the cut. The

dowel left protruding at the end is where the dart is held for throwing. To secure the flight in place, wind electrical tape around the end of the shaft behind the flight; this will pull together the cross cut, holding the flights tightly.

MAKING THE TARGET RINGS

The two target rings can simply be pieces of rope laid out in a circle; even simpler, use swimming-pool toys that can be obtained inexpensively from a sports store.



9 Cut a sheet of plastic into a square.



10 Fold the square sheet in half diagonally, then diagonally the other way, and make creases.



11 Pinch the sheet together to create a cross and make creases both ways.



12 Slide the flight into its slots in the shaft.



13 Use electrical tape to hold the flight in and close the cross on the end of the shaft.



PLAYING THE GAME

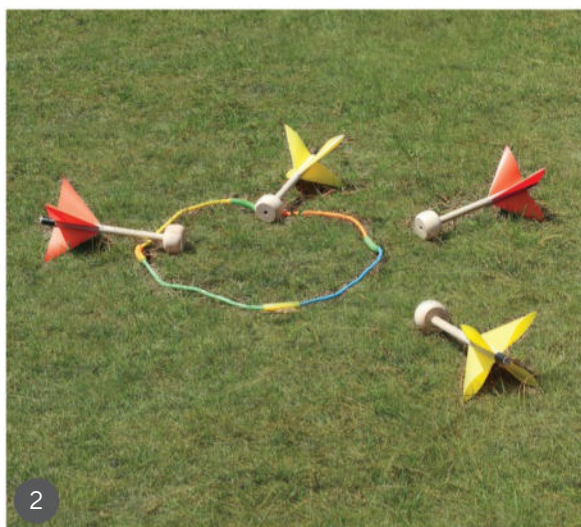
This outdoor game is designed for two players one-on-one or four players in teams of two. Set the two target rings 35ft (10.5m) apart. The players stand in one ring and take turns to throw both their darts underarm into the air, attempting to make them land in the other ring. Make sure the play area is clear of children and pets before you start. Points are scored by landing the dart's head inside the target ring, which is worth three points; failing that, the dart nearest the ring scores one point. If both players get a dart in the ring, the score cancels out and the game is a no-score draw; the dart nearest the ring does not score either. The players then walk to the

ring they were throwing to and repeat the game from that position, throwing the darts back to the ring they started from, and so on. The first player or team that reaches 21 points wins the game.

1 Take turns to launch darts at the target.

2 If you get both darts in the ring it cancels out the score; the nearest dart does not score either.

3 The yellow dart in the ring gets three points; if there were no darts in the ring, the nearest dart to the ring would score one point.



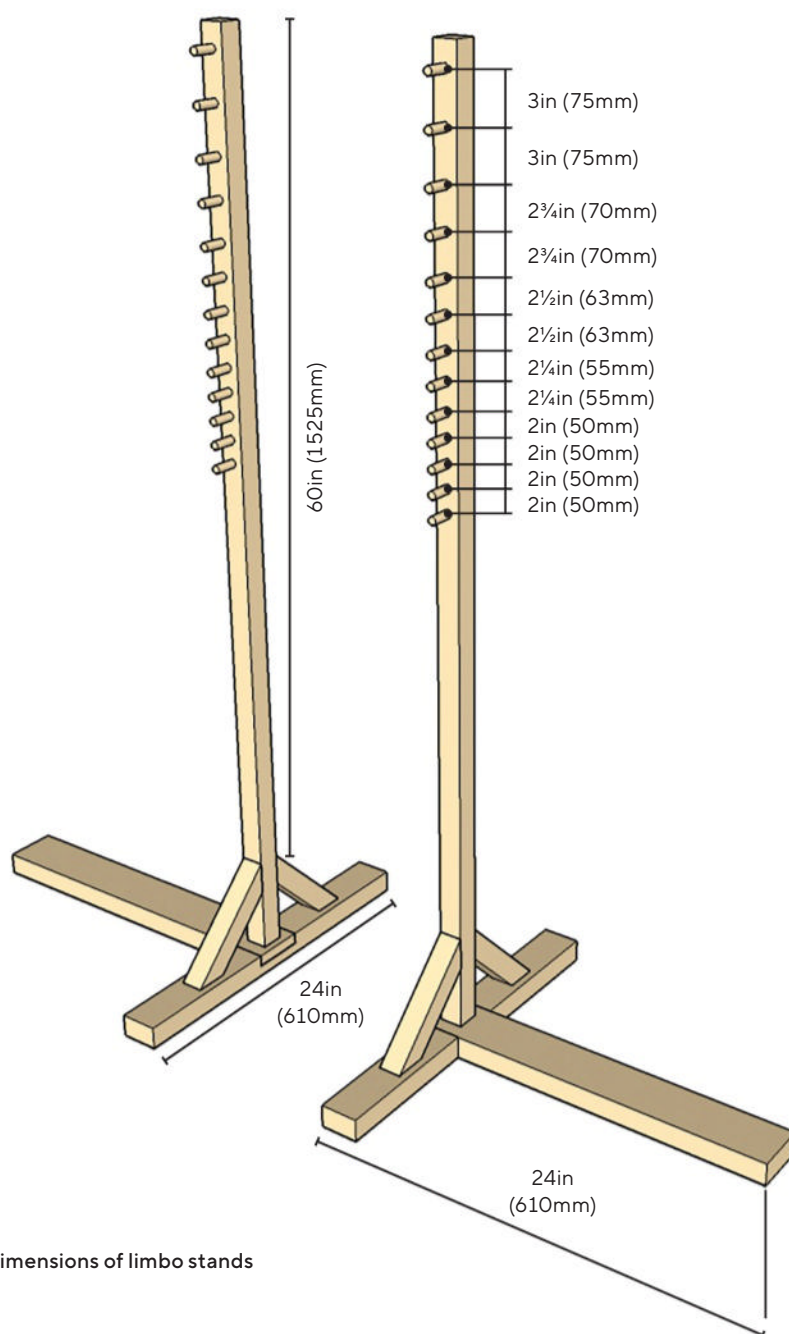
Limbo Dancing

Limbo dancing originated in Trinidad and Tobago. It is thought to have had a ritual meaning in the past, but it has become a popular form of entertainment worldwide.

Use it to test your flexibility!

WHAT YOU NEED

- **Uprights:** 2 @ 60 x 2 x 2in (1525 x 50 x 50mm)
- **Feet:** 2 @ 24 x 3 x 2in (610 x 75 x 50mm) and 2 @ 24 x 4 x 2in (610 x 100 x 50mm)
- **Diagonal braces:** 4 @ 9 x 2 x 2in (230 x 50 x 50mm)
- **Height bar (limbo bar):** 1 @ 72in (1830mm) long x 3/4in (19mm) dia.
- **Pegs:** 26 @ 1/2in (12mm) dia. dowel x 1 1/4in (32mm) long
- **Deck screws:** 8 @ 1 1/4in (32mm) no. 8; 2 @ 3in (75mm) no. 8
- Miter saw, or handsaw with miter box
- Drill press or hand drill
- Circular saw
- Chisel
- Powered sander or sanding block with 80-grit sandpaper
- Screwdriver



Dimensions of limbo stands



MAKING THE LIMBO STANDS

Cut two uprights 60in (1525mm) long from 2 x 2in (50 x 50mm) stock, then mark out the holes for the pegs. The pegs get progressively closer together the lower the bar goes, since the game gets more difficult the lower you have to go. The center of the top peg is 1½in (38mm) down from the top of the upright, the next is 3in (75mm) to its center, and so on (see the drawing for all the measurements). When all the peg positions have been marked and double-checked, set up a drill press, or if you have a steady hand use a hand drill. Choose a bit the same size as the dowel used for the pegs and proceed to drill all the holes ¼in (6mm) deep. When this is done, sand all the rough edges of the uprights and dowels. Next, tap the dowels into the holes (you can use glue if you want), making sure they go to the bottom of the holes.

Now set the uprights to one side and proceed to make the feet. Each foot is made of a 24in (610mm)-long piece of 3 x 2in (75 x 50mm) stock and a 24in (610mm)-long piece of 4 x 2in (100 x 50mm), which meet in a cross-halving joint. Use a handheld circular saw and set its depth of cut to half the thickness of the wood, then mark the position of the

cuts in the middle of the 3 x 2in (75 x 50mm) part of the foot. Using a fence clamped to the foot, make multiple cuts where the joint will be. Snap out all the waste pieces of wood between the two outside cuts and clean the bottom of the joint with a chisel. Do the same on the ends of the 4 x 2in (100 x 50mm) part of the foot; this time the cuts are made on the end, using a piece of scrap to support the saw. Break out the wood and clean up the joint with a chisel as before.

Fit the two parts together and drill a pilot hole where the foot will be screwed to the upright; also mark the center of the upright where the screw will penetrate it. Insert the screw from below and tighten, making sure the pegs point toward the shorter part of the foot (the crossbar of the T).

When building the second stand, make it the other way round to this one, so that when the two stands are set up facing one another, all the pegs are on the same side. Lastly, screw on some angle braces made of 2 x 2in (50 x 50mm) stock, cut at 45° on each end, to make the stands more rigid. The height bar is a 72in (1830mm)-long piece of ¾in (19mm) dowel.



1 Mark the positions for the height pegs across both uprights.



2 Drill the holes for the pegs, aiming for a snug fit.



3 Cut the pegs to length; a miter box with a piece of tape to act as a length stop makes quick work of this.

***Most contestants will make it through the first round.
Only a limbo champion will get down this low.***



4 Hammer the pegs into their holes, using a wood block to avoid damaging their ends.



5 Make saw cuts in the foot where the halving joint will be.



6 Break out the waste pieces, then chisel the joint smooth.



7 Repeat the process to cut the other part of the joint. A scrap piece of the same thickness supports the saw.



8 Drill the hole to attach the upright; the same screw will also hold the joint together.

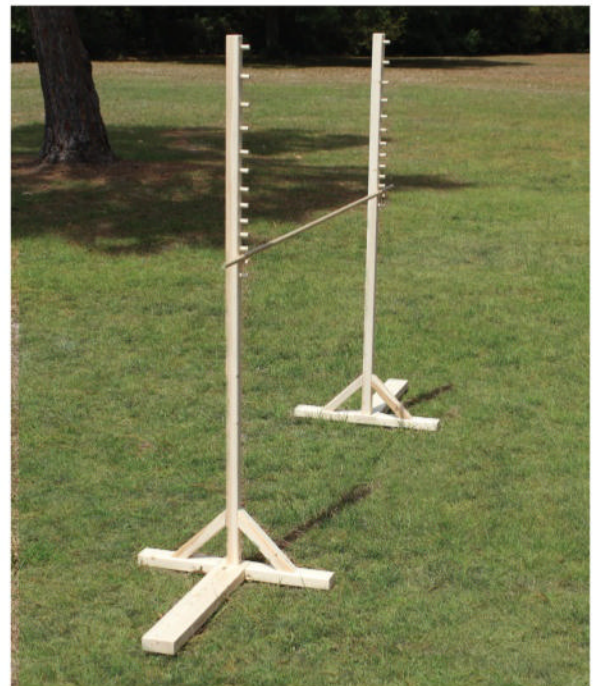


9 Screw the diagonal braces in place.

PLAYING THE GAME

A horizontal height bar, or limbo bar, is placed on pegs that protrude from two uprights and players attempt to go under the bar bent backward with their backs facing the ground. Only the feet of the contestants are allowed to touch the ground and no part of their body may touch the bar; any player who breaks these rules is out. After all the players have had their turn, the bar is lowered to the next pair of pegs and the remaining players "limbo" again. This continues until only one player remains and this person is declared the winner.

Most contestants will make it through the first round. Only a limbo champion will get down this low.



Giant Chess

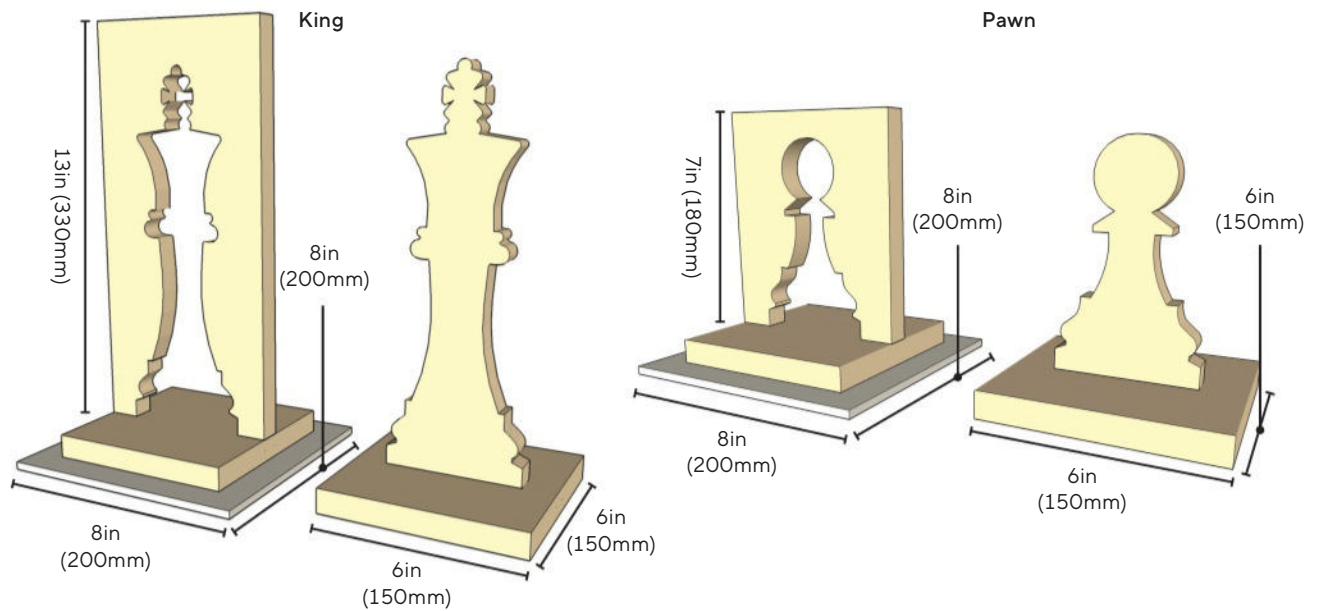
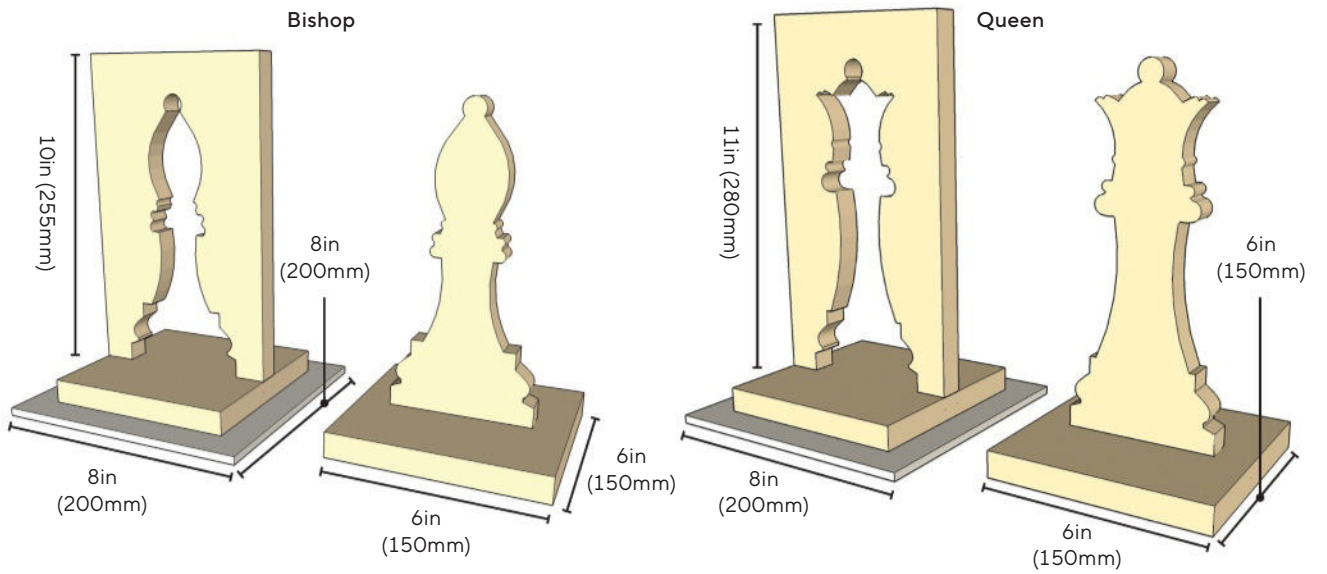
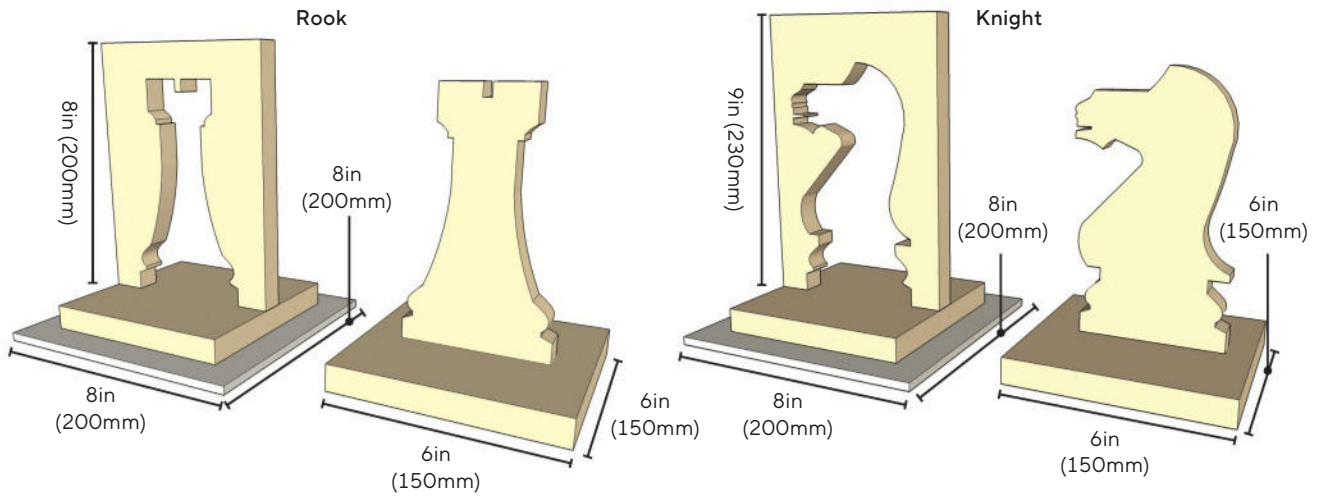
Plan your strategy in this centuries-old game of kings. We've made this game easy to build for large-scale fun. The pieces are cut in such a way that the light and dark playing pieces are formed simultaneously. The game board uses plywood for the “white” squares, while your lawn, driveway, or deck provides the “black” squares.

WHAT YOU NEED

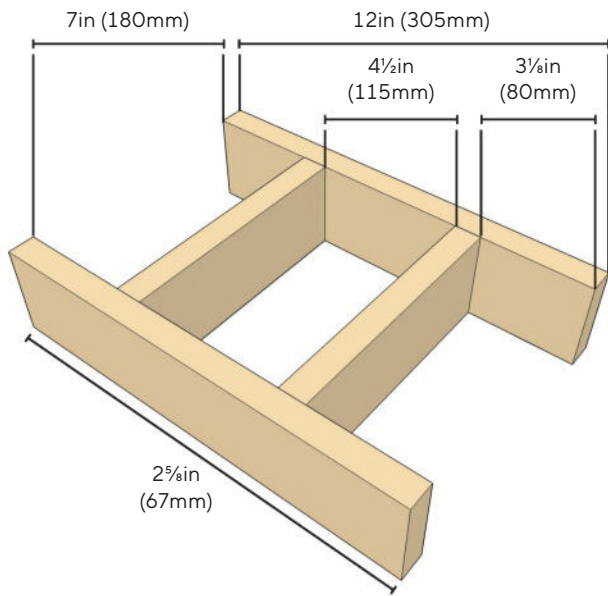
- **Bases:** 32 @ 6 x 6 x ¾in (150 x 150 x 19mm)
- **Rooks:** 2 @ 8 x 6 x ¾in (200 x 150 x 19mm)
- **Knights:** 2 @ 9 x 6 x ¾in (230 x 150 x 19mm)
- **Bishops:** 8 @ 10 x 6 x ¾in (255 x 150 x 19mm)
- **Queens:** 1 @ 11 x 6 x ¾in (280 x 150 x 19mm)
- **Kings:** 1 @ 13 x 6 x ¾in (330 x 150 x 19mm)
- **Pawns:** 8 @ 7 x 6 x ¾in (180 x 150 x 19mm)
- **Board squares:** 32 @ 8 x 8 x ¼in (200 x 200 x 6mm) plywood
- Circular saw with straightedge guide, or tablesaw
- Miter saw
- Scrollsaw or coping saw
- Clamps
- Spray adhesive
- **Flathead woodscrews:** 8 @ 1½in (38mm), no. 8
- Power sander or sanding block and 80-grit sandpaper



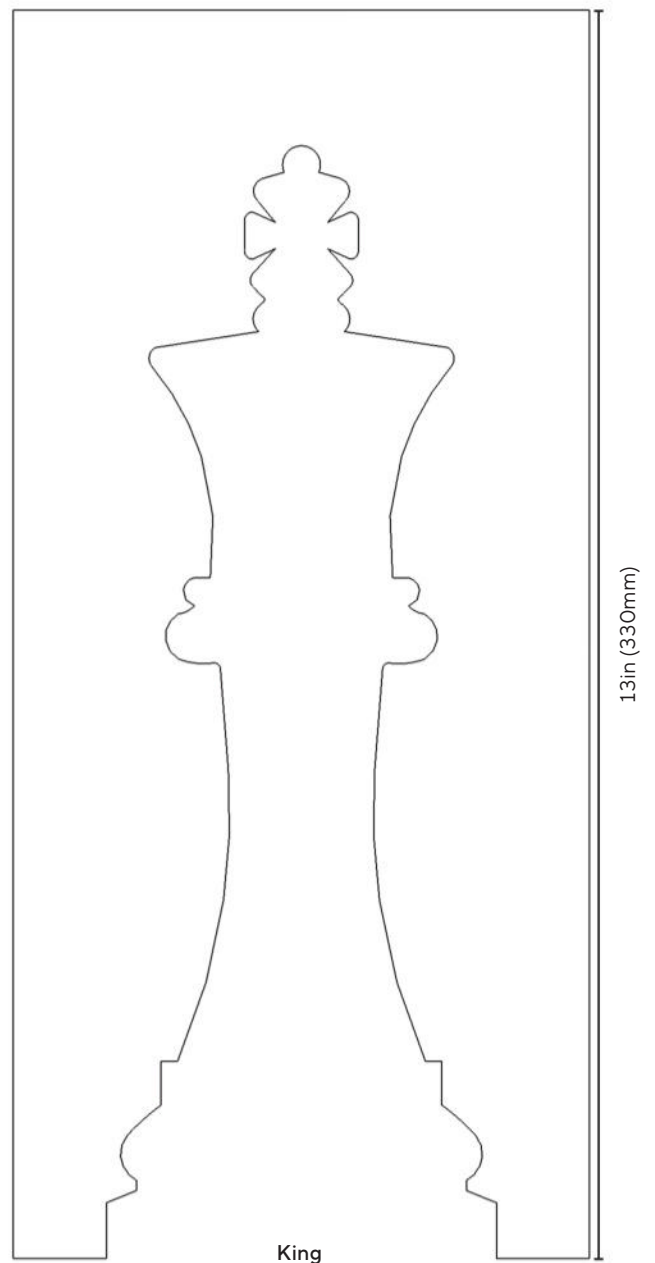
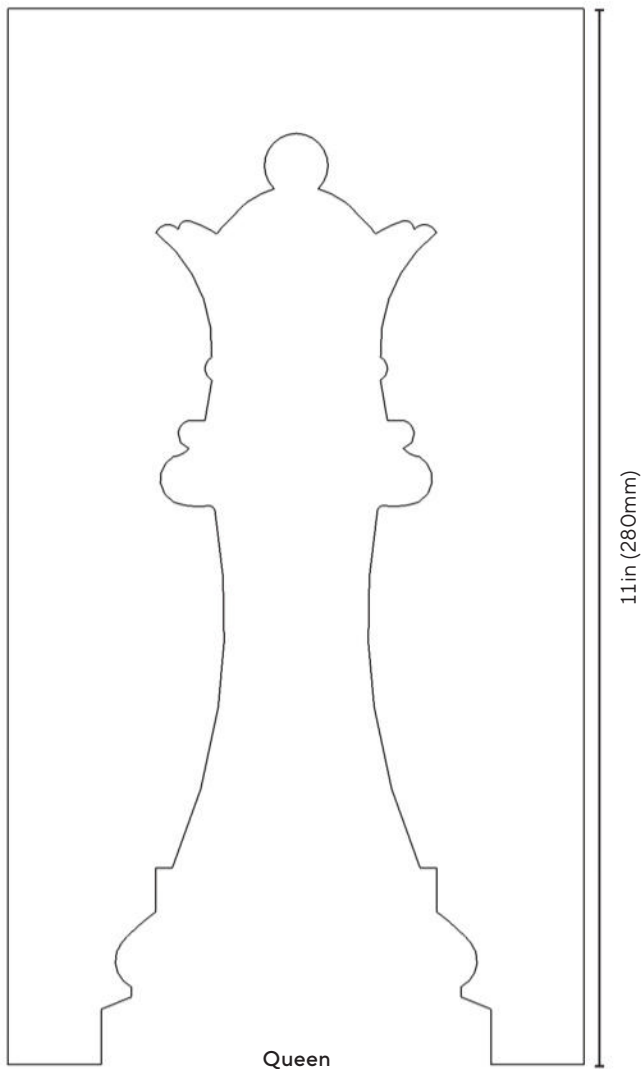


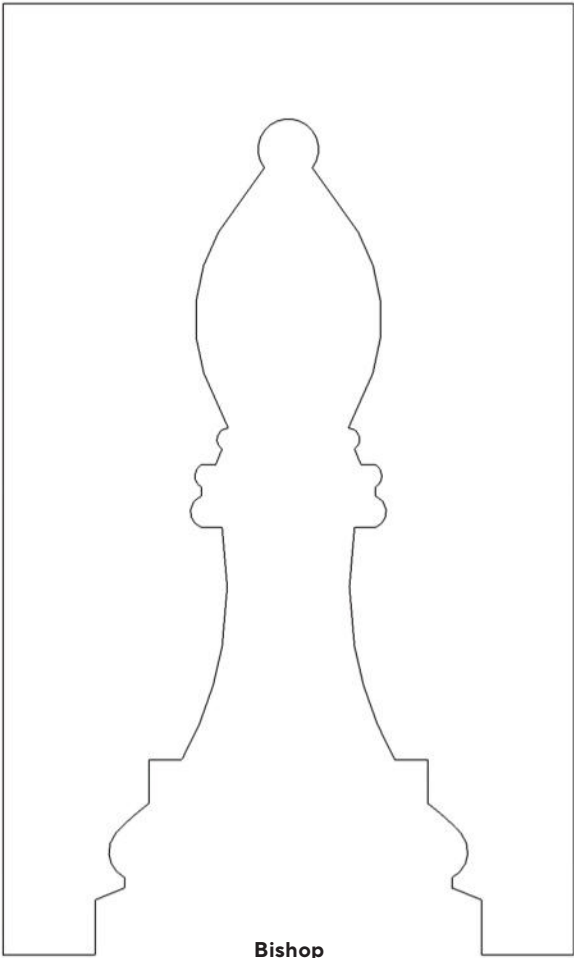


Alignment jig



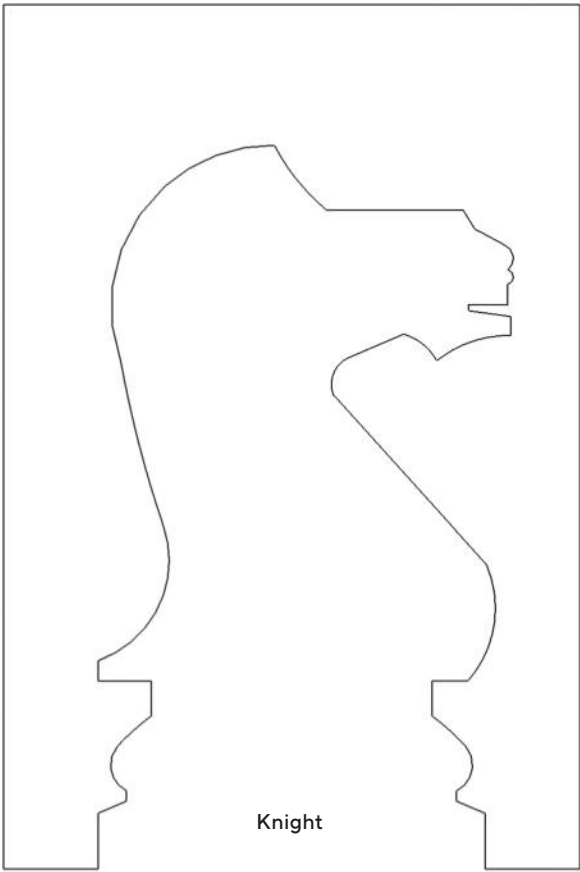
Chess piece patterns shown at 50% scale.
Enlarge the patterns 200% using a photocopy machine,
or use a penciled grid to transfer them to paper.





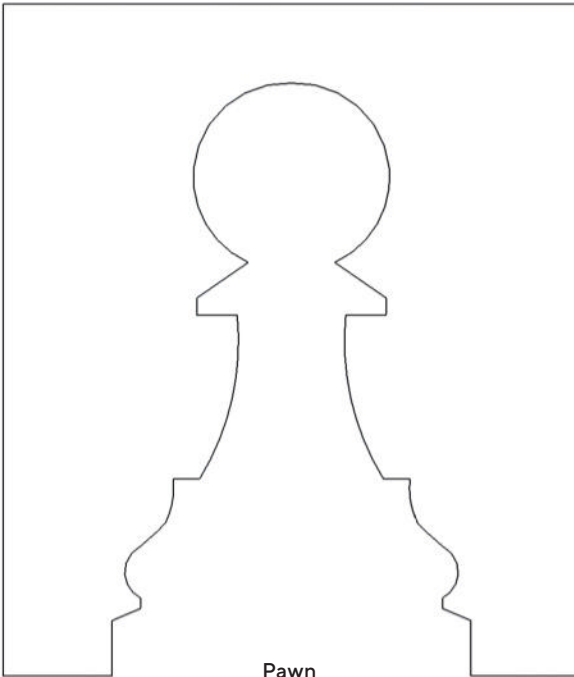
Bishop

10in (255mm)



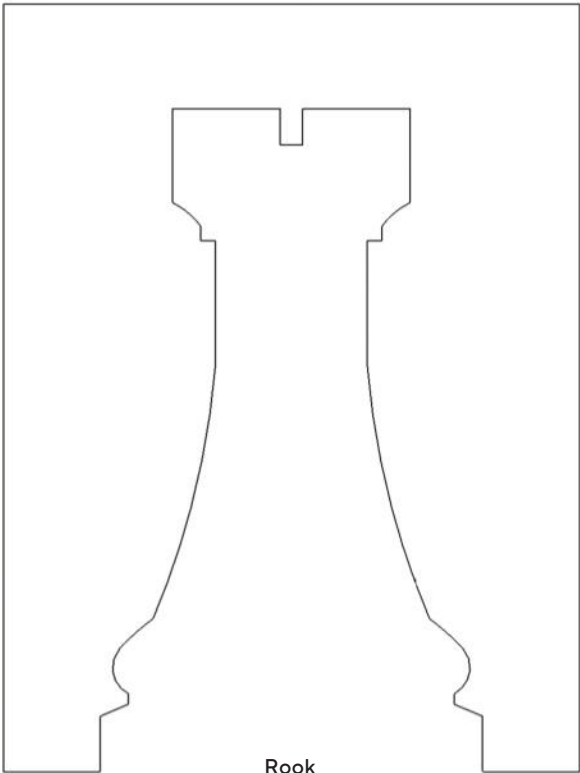
Knight

9in (230mm)



Pawn

7in (180mm)



Rook

8in (200mm)

MAKING THE CHESSBOARD

All the chess pieces and their bases are made from 8 x 1in (200 x 25mm) boards from the hardware store. You can also make them from $\frac{3}{4}$ in (19mm) plywood, if you choose. The board squares are made from $\frac{1}{4}$ in (6mm) plywood. Start out by cutting 32 plywood squares on the tablesaw to create the white chessboard squares.



1 Rip strips 8in (200mm) wide from $\frac{1}{4}$ in (6mm) plywood to create the board squares.

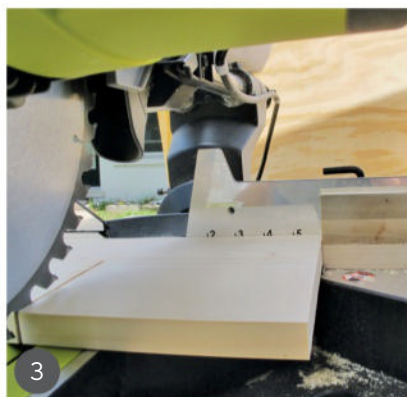
To enable the most economic use of the $\frac{1}{4}$ in (6mm) plywood, cut the squares 8in (200mm) square or slightly less. This will account for the waste removed by the saw blade. Cut strips on the tablesaw, then stack the strips by the miter saw to cut multiple squares at once. All you need to do after that is sand them smooth.



2 Stack the plywood strips against a stop clamped on the miter saw so you can cut multiple squares at once.

MAKING THE CHESS PIECES

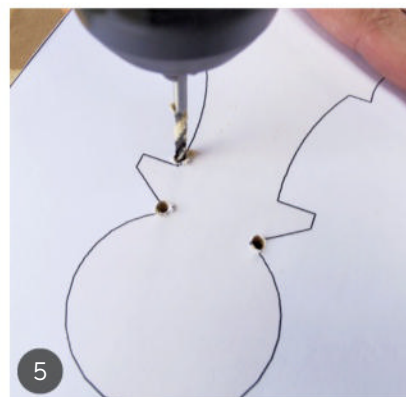
While your miter saw is set up for cutting squares, you can cut the 6 x 6in (150 x 150mm) bases for all the chess pieces from 8 x 1in (200 x 25mm) boards. You will need 32 of these bases. The blanks for the chess pieces are also 6in (150mm) wide. Start by ripping the boards into strips of this width, then cut the bases and blanks to final length at the miter saw. See the "What you need" box (page 74) for the lengths of the chess piece blanks.



3 Move the stop block to cut the 6in (150mm) squares for the bases of the game pieces.



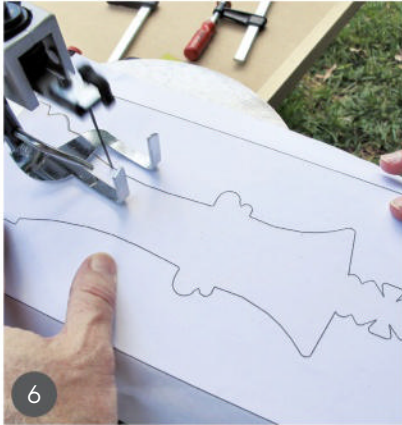
4 Attach the pattern to the blank with a light coat of spray adhesive applied to the wood.



5 Drill small holes at the sharp corners of the pattern to make it easier to cut out the shapes.

Since there are a lot of twists and turns when cutting out the shapes, it's a good idea to drill small holes in the tight corners of the pattern. This makes it easier to navigate the turns as you're cutting and decreases the likelihood that the blade will break. It's easier to follow the pattern lines if you use a narrow blade in your saw.

Once the shapes are cut out, remove the patterns and sand all the pieces. Sanding will also remove any remnants of the pattern adhering to the blank. To attach the pieces to their bases, draw a light centerline as a guide for locating the screws, then attach each piece to its base with a pair of 1½in (38mm) no. 8 screws. To help hold the two pieces square and centered while driving the screws, we built a simple jig, of which details are given on page 77.



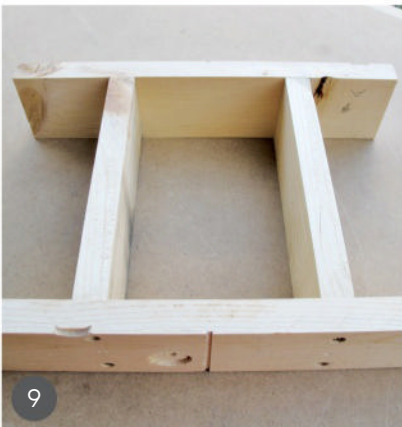
6 Follow the lines closely to create the two nested shapes.



7 The two parts should separate easily once cut. You can see how one cut makes two game pieces.



8 Sand the pieces to remove all traces of the pattern.



9 Use a simple jig to help hold the base and game piece square while fastening them together.



10 Place the chess piece on the alignment jig.



11 Use a pair of screws to attach the base to each chess piece.

The game is far more complex than can be explained here, and many people make it a lifelong study. There are many books available, or you can join a club and learn from the experts.

PLAYING THE GAME

The chessboard consists of 64 squares: 32 dark and 32 light. Each player has 16 pieces on the board and they are:

Two rooks (castles) which are placed on the left and right corners and can move in a line forward, backward, or sideways.

Two knights which are placed inside the rooks and make an L-shaped move: two squares forward or back and one square right or left, or vice versa.

Two bishops which are placed inside the knights and can move diagonally forward or back.

One queen which is placed on the central square of its own color and can move in any direction, forward, back, or diagonally.

One king which takes the place next to the queen and can move one square in any direction.

Eight pawns which are placed in the next row of squares in front of all the other pieces. They can move one square forward or (when taking another piece) one square diagonally; they cannot move backward.

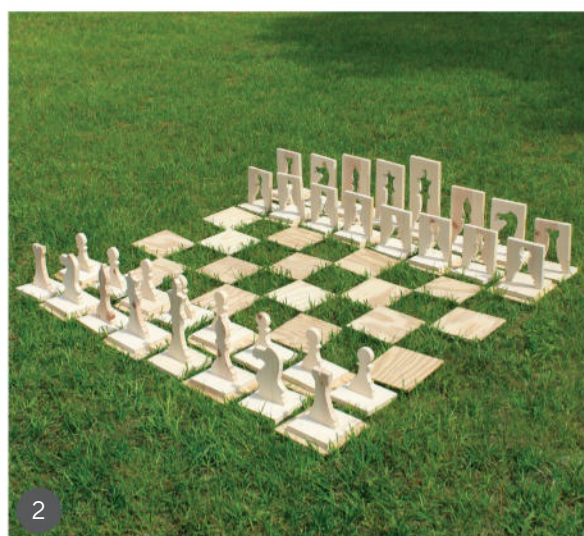
The basics of the game are that white (that is, the player with the white queen) moves first, then players take alternate moves. Each player chooses which piece to move, remembering that pieces cannot jump over an opponent's piece. If you land one of your own pieces on a square that is already occupied by an opponent's piece, the opponent's piece is "taken" and permanently removed from the game. The king may not be taken, but is said to be "in check" if it is in a position where it could be taken on the next move. The game is won when one player's king is put into "checkmate"; this means that the king cannot be moved out of check.

The game is far more complex than can be explained here, and many people make it a lifelong study. There are many books available, or you can join a club and learn from the experts.

1 Set up the chessboard with 8 x 8 squares; there should be a light-colored (plywood) square in the near right-hand corner.

2 Position the pieces on the board for the start of the game. The solid pieces are "white" and the cutout ones are "black."

3 Move and take pieces according to the usual rules of the game.

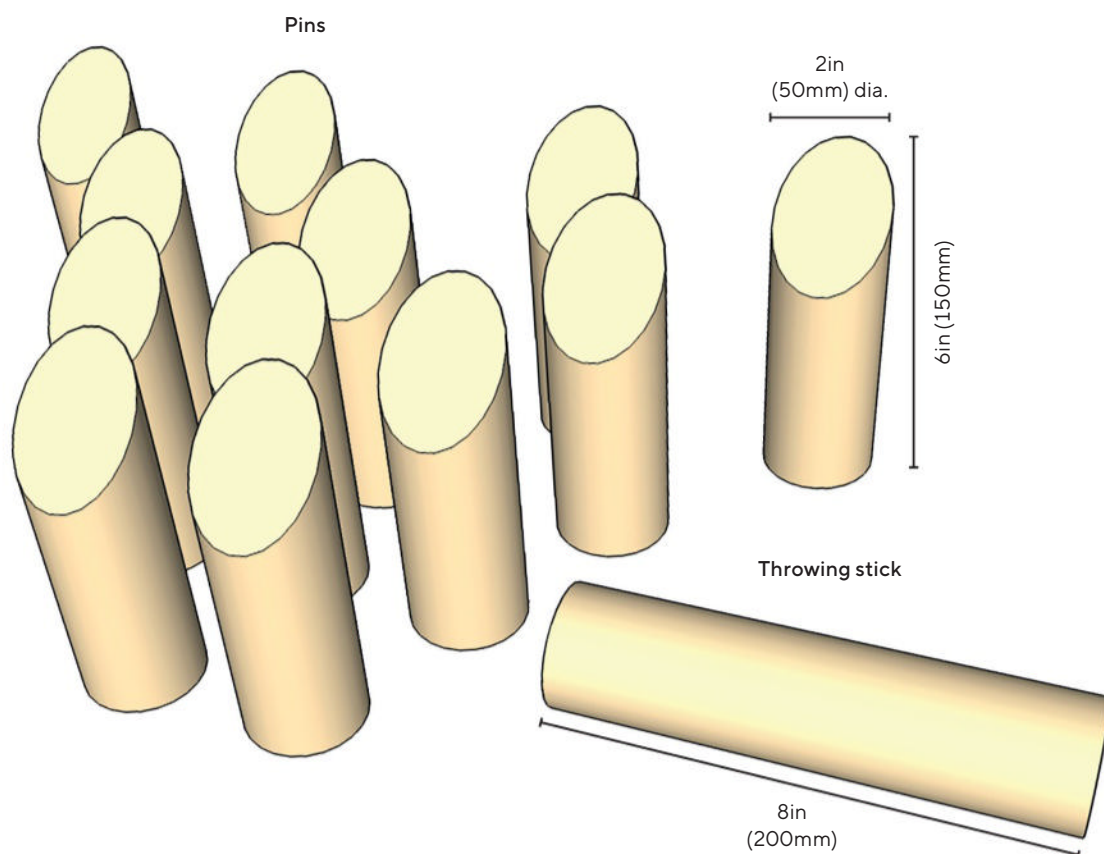


Twelvepins

Simply made from large-diameter dowels, this game consists of 12 pins and a throwing stick. Knock over the numbered pins with the throwing stick to accumulate points. As with all outdoor throwing games, children should have adult supervision.

WHAT YOU NEED

- **Pins:** 12 @ 6in (150mm) long x 2in (50mm) dia. dowel
- **Throwing stick:** 1 @ 8in (200mm) long x 2in (50mm) dia. dowel
- Miter saw, or miter box and handsaw
- Power sander or sanding block with 80-grit sandpaper
- Number stencils
- Craft paint





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MAKING THE PINS AND THROWING STICK

The game consists of twelve identical pins made from large-diameter dowels with a 90° cut on one end and a 45° cut on the other, and a throwing stick cut to 90° at both ends. We found 2in (50mm) dowel at the hardware store, which served for both.

A miter saw makes quick work of cutting all the pieces. To make the pins, start by setting the angle on your miter saw to 45° and trim the end of the dowel. To ensure all the pins are the same length, cut a stop block with a 45° cut on one

end and clamp it to the fence of the miter saw. Nest the angled end of the dowel into the notch formed by the stop block, then reset the saw to make a 90° cut and adjust the stop to cut a 6in (150mm) length. Alternate making angled and straight cuts until you have a dozen pins. The throwing stick is the easiest part to make: simply cut a length of dowel 8in (200mm) long.

To paint the numbers on the angled ends of the pins, we used stencils to outline the numbers then filled them in with paint.



1 Set the saw to make a 45° cut, then trim the end of the first dowel blank.



2 Make a mark 6in (150mm) from the tip of the angled end of the dowel.



3 Make an angled stop block and locate this to make a cut 6in (150mm) from the tip of the dowel.

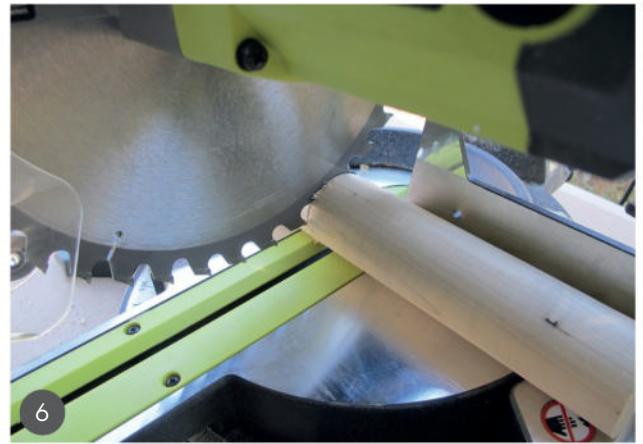


4 The stop block helps to secure the dowel and ensure consistent cuts.

Knock over the numbered pins with the throwing stick to accumulate points.



5 Use a stencil to outline the numbers before painting them.



6 Cut the throwing stick to a length of 8in (200mm).

PLAYING THE GAME

All the pins are placed in a tight group with their numbers facing the players, who stand about 9ft (2.7m) away and throw the throwing stick at them. If only one pin is knocked over, the player scores the number marked on the end of it. Knocking two or more pins over only scores the number of pins knocked over. To count, the pin must be completely on the ground; if it is resting on another pin, or on the throwing stick, it is not counted. After each throw, any knocked-over pins are stood up where they lie and the next player takes their turn. The first player to reach exactly 50 points is the winner, but if over 50 is scored the player is penalized 25 points. A player who fails to knock over any pins three times in a row is disqualified.

1 Arrange the pins as shown here.

2 Throw the stick at the pins.

3 Stand the knocked-over pins where they fall.

4 Continue throwing the stick and knocking over the pins until a winning score of 50 points is reached.



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Giant Checkers

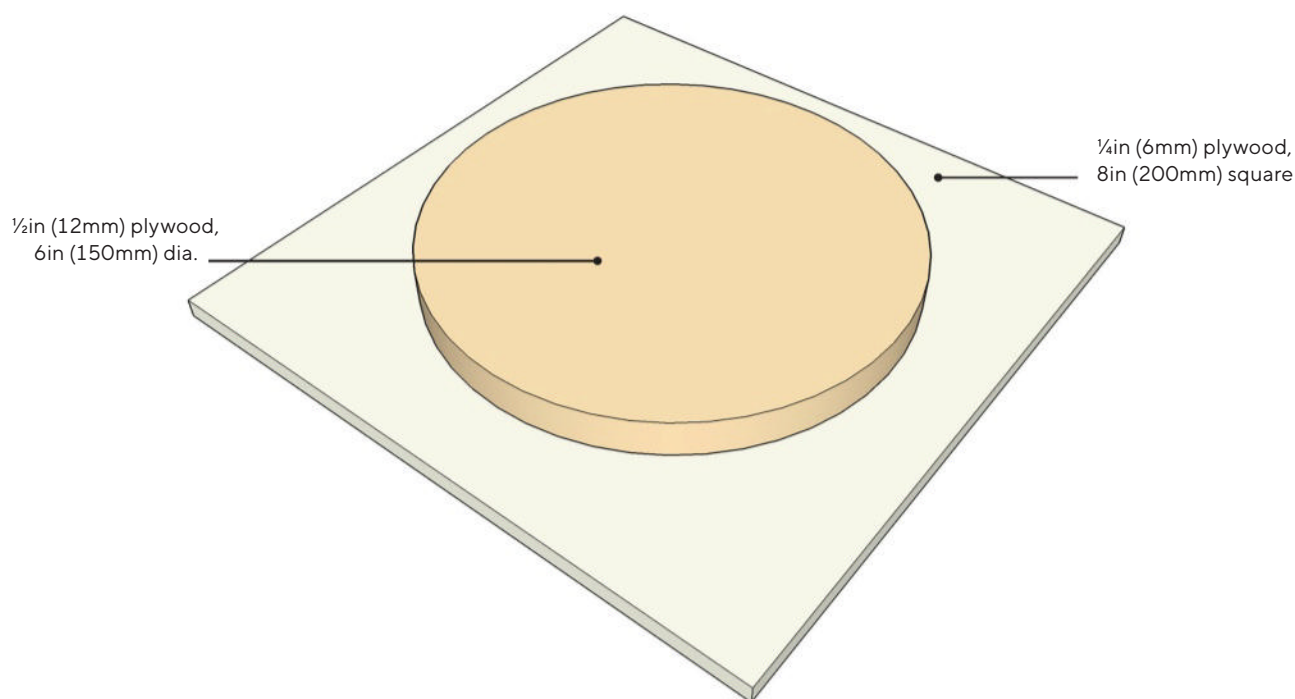
Checkers is less challenging than chess and can be played by people of all ages and skill levels. That said, it is still a game that is played with fierce competitive spirit. This large outdoor version is played on a board made of plywood squares for the light spaces, using the ground underneath for the dark spaces.

The board is identical to that used for the chess game.

WHAT YOU NEED

- **Game pieces:** plywood, 24 @ $\frac{1}{2}$ in (12mm) x 6in (125mm) dia.
- **Board squares:** plywood, 32 @ 8 x 8 x $\frac{1}{4}$ in (200 x 200 x 6mm)
- Miter saw
- Tablesaw, or circular saw with straightedge guide
- Small flathead woodscrew
- Bandsaw with circle-cutting jig, scrollsaw or jigsaw
- Power sander or sanding block with 80-grit sandpaper
- Dark wood stain
- Clamps

Checkerboard square and piece







MAKING THE BOARD SQUARES

The checkerboard is identical to the chessboard (see page 74), so follow the instructions given there. Then use

the same method to make the square blanks for the game pieces, which are 6in (125mm) square.

MAKING THE CHECKERS PIECES

A simple homemade circle-cutting jig for the bandsaw is a quick way to cut the game pieces. It consists of a thin plywood top with a cleat or fence underneath. The cleat can be sized to fit into the miter slot in the bandsaw table, or it can ride against the outside edge of the table (as shown here), depending on the configuration of your saw. Now mark the position for a saw kerf on the top surface of the jig, and mark the place for the pivot pin 3in (75mm) from where the blade will cut; a stop clamped to the saw table helps to position the pivot jig correctly. Drill a small pilot hole through the jig top and insert a small flathead woodscrew from underneath to serve as the pivot pin. Now cut a kerf into the top of the jig; the kerf must extend a little further than the position of the pivot pin, as the photos make clear. The pin should align with the front edge of the blade when the jig is against the stop.

Before using the circle-cutting jig, you'll need to drill a pivot hole at the center of each blank. You can easily find the center by marking diagonals across the blank. Size the pivot hole to fit over the pivot screw in the jig. To use the circle-cutting jig, pull the jig forward (that is, toward the left in the photos) so that you can position the square blank over the pivot pin. With the blank seated against the top of the jig, switch on the saw and slide the jig toward the back of the table until it contacts the stop, making sure the cleat on the underside is pressed against the edge of the table. Rotate the blank to create the disc, turn off the saw, then remove the disc.

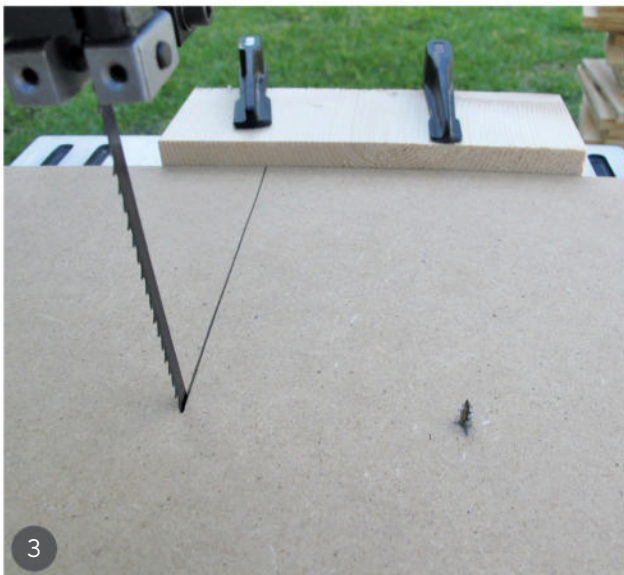
All you need to do now is sand the discs smooth and apply a dark stain to half of them before setting up your first game.



1 Use a simple jig to make cutting the circular checkers an easy task on the bandsaw.



2 The underside of the jig features a cleat (shown at right) to register against the edge of the bandsaw table.



3 Clamp a stop to the table to ensure that the pivot pin aligns with the front of the blade.



4 For a quick way to locate the center, mark the diagonals of the square blanks.

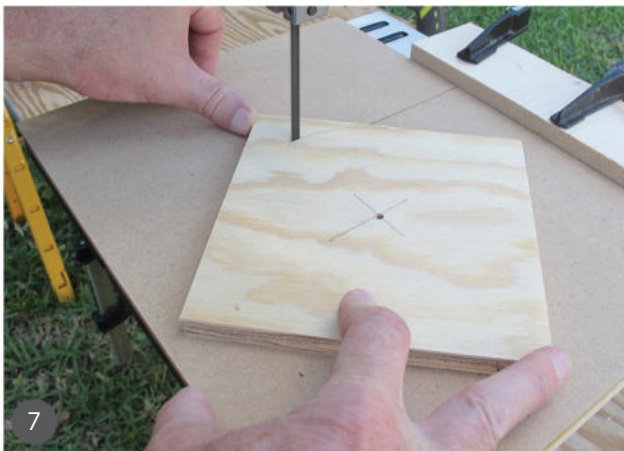
Checkers is less challenging than chess and can be played by people of all ages and skill levels. That said, it is still a game that is played with fierce competitive spirit.



5 Drill a pivot hole in each blank to fit over the pivot pin in the jig.



6 Position the blank over the pivot pin before switching on the saw.



7 Slide the jig against the stop and rotate the blank to begin the cut.



8 Continue turning the blank steadily to complete the cut.



9 Remove the disc from the jig and repeat the process for the other blanks. Finish by sanding the edges and staining half the discs a dark color.

PLAYING THE GAME

Checkers, is played by two players and each begins the game with 12 pieces; one player takes the light-colored pieces, the other takes the dark ones. The board consists of 64 squares, 32 dark and 32 light, and it is positioned so each player has a light square on the right-side corner closest to them. The players place their pieces on the 12 dark squares closest to them.

The player with dark pieces moves first and then the players take turns. Pieces are moved diagonally forward on the dark squares only. Each piece may move only one square at a time, unless it is capturing an opponent's piece. You can take an opponent's piece by jumping over it (still moving diagonally), provided there is an empty square beyond it for your piece to land on. A piece may make multiple jumps in one move, but there must be a vacant square available for each jump. Captured pieces are removed from the board. In most versions of the game, it is compulsory

to take an opponent's piece if you can. Once a piece has reached the other side of the board, one of the captured pieces is placed on top and it becomes a king, which is allowed to move in any direction diagonally. The game is won when the opponent cannot make a move or has no pieces left.

1 Lay out the playing board so that it measures 8 x 8 squares, with a light square in the right front corner.

2 Set up the pieces and get ready to play.

3 Move pieces diagonally, and when an opponent's piece is jumped, remove it from the board.

4 If a piece makes it to the other side, place one of the taken pieces on top for it to become a king, which can then move diagonally in any direction, forward or back.

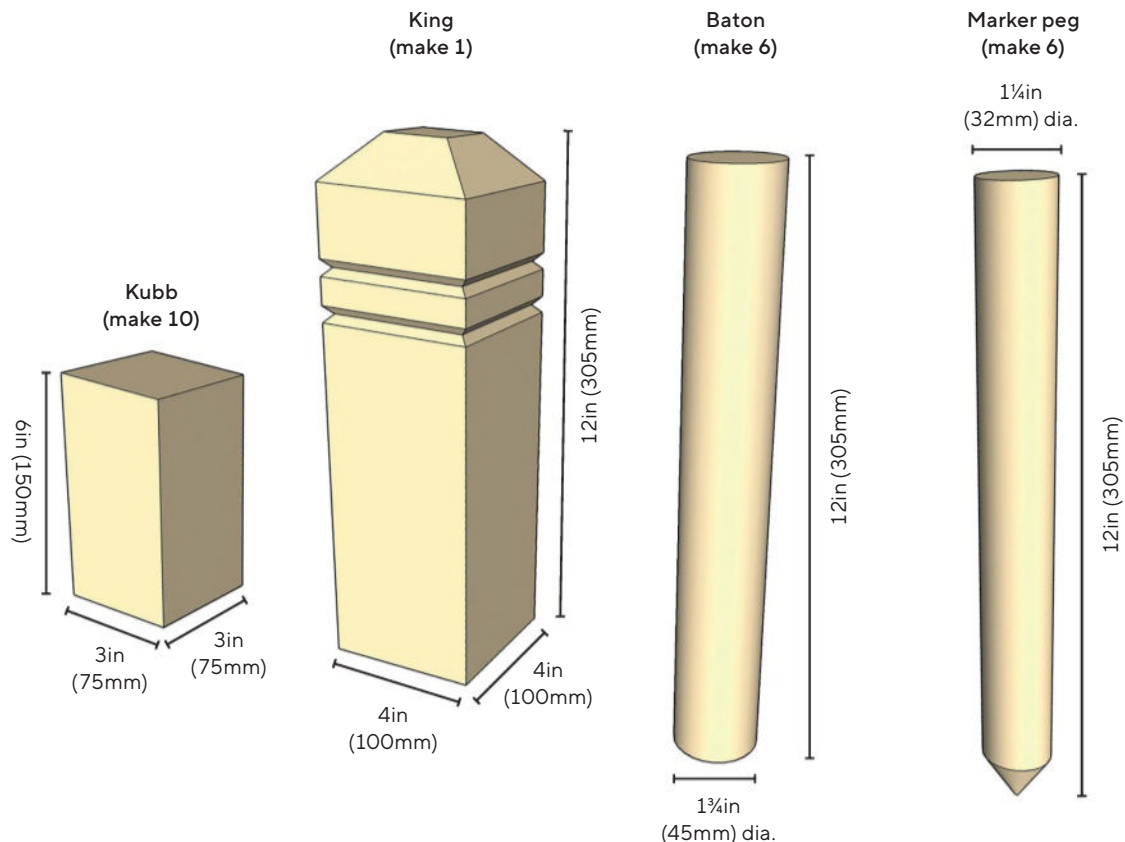


Kubb Lawn Game

Kubb (pronounced “keb”) is said to have been invented by the Vikings in Sweden and is sometimes called “Viking chess.” It is a game of throwing skills where the ultimate goal is to get the king to fall. A game of kubb can be short or very long, depending on the size of the playing area and the skills of the players involved.

WHAT YOU NEED

- **Kubbs:** 10 @ 6 x 3 x 3in (150 x 75 x 75mm)
- **King:** 1 @ 12 x 4 x 4in (305 x 100 x 100mm)
- **Batons:** 6 @ 12in (305mm) long x 1½in (45mm) dia. dowel
- **Marker pegs:** 6 @ 12in (305mm) long x 1¼in (32mm) dia. dowel
- Rope to aid in marking out the playing area, 30ft (9m) long
- Miter saw, or handsaw with miter box
- Powered sander or sanding block with 80-grit sandpaper
- Handplane

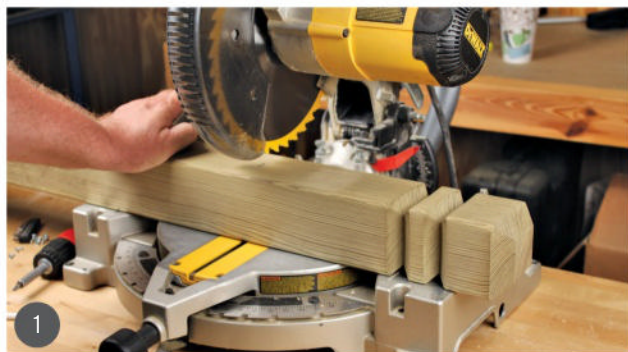




MAKING THE GAME PIECES

This game comprises a collection of pieces of wood cut to different lengths. The king is a 12in (305mm) length of 4 x 4in (100 x 100mm) timber with a decorative design at the top. We found a ready-made post intended for garden decking, with a design already created on the top that fitted the bill perfectly. The kubbs are cut from readily

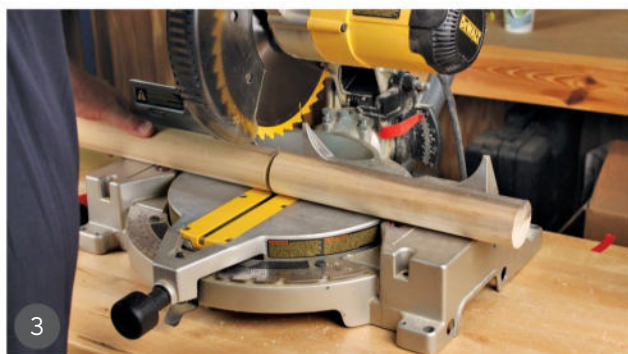
available 3 x 3in (75 x 75mm) posts; ten of these are cut to 6in (150mm) long. The six batons are cut from 1 $\frac{3}{4}$ in (45mm) dowel and are 12in (305mm) long. Finally, the six marker pegs are cut from 1 $\frac{1}{4}$ in (32mm) dowel to 12in (305mm) long and then a point is fashioned on one end. Sand up all the rough edges and you are ready to play.



1 Cut the king from a predecorated decking post. Alternatively, the decoration shown here could be replicated with a backsaw and chisel.



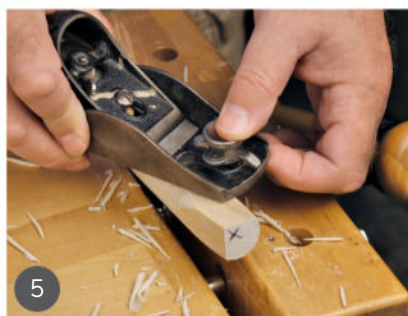
2 Cut the ten kubbs to 6in (150mm) long from timber 3in (75mm) square.



3 Cut six batons 12in (305mm) long from 1 $\frac{3}{4}$ in (45mm) dowel, and six marker pegs from 1 $\frac{1}{4}$ in (32mm) dowel.



4 Here are all the pieces cut to length.



5 Use a handplane to sharpen the marker pegs to a point; a center mark on the end of the peg helps to keep the shape symmetrical.



6 Sand the point smooth—though it won't remain this way after it has been hammered into the ground a few times!



7 Sand all the pieces and round over the corners.

PLAYING THE GAME

A playing area is set up using four stakes. For a traditional game-sized area they are spaced 16ft 4in (5m) wide and 26ft 2in (8m) long, with two more stakes placed at the halfway point on each long side to divide the area into two halves. A piece of rope marked with the lengths required is a useful aid. You could make the playing area smaller to speed the game up. The King is placed exactly in the center and each team's five kubbs are placed equidistant from each other along their respective baselines.

The batons are thrown underhand and end over end; no sideways spinning is allowed. Team A throws all six batons one by one at the opposing team's kubbs. Any kubbs that are knocked over are thrown back into team A's half of the playing area and stood up where they land; they are then called "field kubbs."

Team B, from the opposite end of the area, then throws all the batons at team A's kubbs. They must knock down all the field kubbs before knocking down any baseline kubbs; if a baseline kubb is knocked over too soon, it is stood up again. At the end of B's turn, all the knocked-over kubbs are thrown into team B's half and stood up.

If a team fails to knock over all the field kubbs before their turn is over, then the kubb standing nearest to the centerline becomes the opposite team's baseline

for their next round of throws. However, throwing kubbs into the opposing team's half is always done from the original baseline.

Play continues until one team manages to knock down all the field and baseline kubbs; then, if they have a baton left, they can attempt to knock down the king (throwing from the original baseline) to win the game. If the king is knocked down while any of the kubbs are still standing, the team that knocks it down automatically loses. For a longer match, the player or team who achieves the best of three games is the winner.

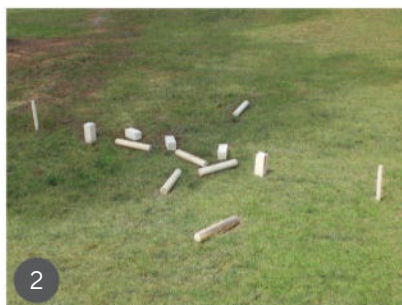
1 Set up the playing area to your preferred size and place the pieces on it.

2 Throw batons at the opponent's baseline kubbs to knock them over.

3 Throw the knocked-over kubbs back into the other half of the playing area ...

4 ... then stand them up where they landed.

5 Here, all of team A's kubbs have been knocked down and team B can attempt to win the game by knocking down the king.



Resources

USA

Ace Hardware
+1 (1) 800 290 5334
acehardware.com

Amazon.com

Dick's Sporting Goods
+1 (1) 877 846 9997
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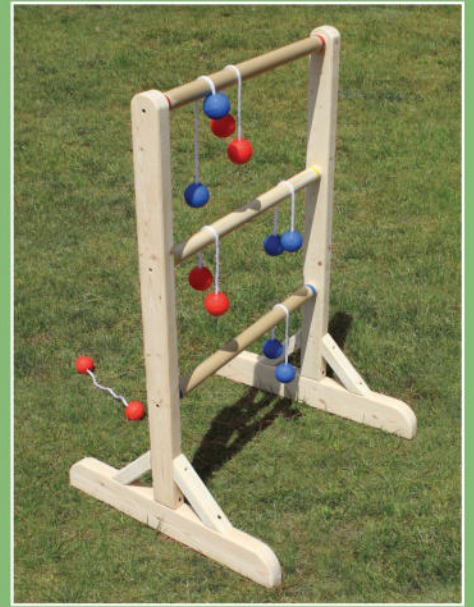
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Have fun making an array of outdoor games that people of all ages can enjoy! With 17 popular games to create in your workshop, including classics such as Limbo Dancing and Croquet, you will be able to entertain friends and family for hours and bring some friendly competition to your garden parties.

You will only need basic woodworking skills, materials and tools to make the games. Each one has easy-to-follow step-by-step photographs and instructions, and there are plenty of diagrams to help you ensure your measurements are accurate. Once you have made the games you can read the instructions on how to play them, along with the all-important rules!

Games include: • Lawn Darts • Giant Dominoes • Duck Shoot • Cornhole
Twelvepins • Tumbling Timbers • Quoits

