

Do-It-Yourself Chess Set for Webelos Craftsman Activity Badge



When looking for a project to complete the **Webelos Craftsman** activity badge, this is activity that keeps on giving! The steps to build a “nuts and bolts chess set” involve learning about different types of hardware, assembling the pieces, artistic design, and basic woodworking skills (i.e., measuring, sawing, and sanding). We have a rather small group of Webelos (6 boys). They divided into stations forming an assembly line to construct the chess set. The boys love playing chess so the activity was engaging and the final product will be a fun addition to our regular den meetings.

As the original post stated, a limitation of the project was that the materials, particularly some of the obscure hardware), made the project rather expensive (~\$20/ea). Some of the sets online used specialty parts that were very ornate and

costly. Our local hardware store manager was kind enough to cut our scouting group a discount. Feel free to search your local hardware store and come up with your own creative versions of the chess pieces. You may be able to bring the cost down even further. In addition, many of the examples I found online called for expensive wood for the chess board. We used a thin piece of $\frac{1}{4}$ " pine (8" x 8") rather than oak or walnut. It served the purpose.

Hardware:

- 16 – $\frac{1}{4}$ "-20 x $\frac{1}{2}$ " Round Head Bolts
- 16 – $\frac{1}{4}$ "-20 Hex Nuts
- 4 – $\frac{3}{8}$ " x $\frac{3}{4}$ " Hex Bolts
- 4 – $\frac{3}{8}$ " Slotted Hex or “Castle” Nuts
- 4 – #10-24 x $\frac{5}{16}$ " T-Nuts
- 4 – $\frac{3}{16}$ " x $1 \frac{1}{2}$ " Eye Bolts
- 6 – $\frac{3}{8}$ " x $1 \frac{1}{2}$ " Hex Bolts
- 4 – $\frac{3}{8}$ "-16 T-Nuts
- 4 – $\frac{3}{8}$ " Hex Nuts
- 2 – $\frac{3}{8}$ " Kep Nuts
- 2 – $\frac{3}{8}$ " x 2" Hex Bolts
- 2 – $\frac{3}{8}$ " External Tooth Lock Washers
- 2 – $\frac{3}{8}$ " Acorn or Cap Nuts

Note: For one-stop shopping when buying in bulk, I have found that [McMaster-Carr](#) is a reliable, reasonably-priced online vendor with great customer service. However, you may also be fortunate to have a good hardware store in town and I always encourage buying local when possible.

Helpful Tips:

- Pay attention to thread size as nuts and bolts of coarse and fine threads are not interchangeable.
- When searching for hardware, give yourself plenty of time! You’ll need to locate the piece in the right size and count out the number you need. Even with a salesperson helping you, it isn’t a quick process.
- **Zinc-plated parts are cheapest.** Since we aren’t concerned about corrosion, zinc-plated is definitely the best option. However, some of the specialty hardware is only available in brass or stainless steel.
- The hex bolts have raised identifying letters on the head. Look for **bolts with letters that aren’t too high**. If they are, they may make the piece wobble too much. However, this issue can be quickly resolved with a file, piece of sandpaper or Dremel.
- The larger the hardware parts, the more expensive they are. So we decided to **make smaller pieces** for this Webelos Craftsman project to keep the costs down.

Chess King



2" x 3/8" hex or cap bolt
3/8" external tooth lock washer
3/8" hex nut
3/8" acorn nut

CubScoutIdeas.com

Your chess set project will need **two kings**—one for each side. We used a 2" x 3/8" hex or cap bolt. To make it look a little more ornate, screw a 3/8" hex nut about halfway down the bolt and top with a 3/8" external tooth lock washer. Top with a 3/8" acorn or cap nut.

Chess Queen



1 1/2" hex or cap bolt
3/8" hex nut
3/8" Keps nut

CubScoutIdeas.com

Make **two queens** for your set. Use a 1 1/2" x 3/8" hex or cap bolt. Thread a 3/8" hex nut about halfway down the bolt. A 3/8" Keps nut makes a fitting crown for the queen!

Chess Bishop



1 1/2" x 3/8" hex or cap bolt
3/8"-16 T-Nut

CubScoutIdeas.com

Your set needs **four bishops**. We used 3/8"-16 T-nuts. These have points on them, so check them out before you give them to your Webelos. I didn't think they were sharp enough to hurt the boys, so I decided to use them. A 1 1/2" hex bolt is your base. Top it with the T-nut.

Chess Knight



3/16" x 1 1/2" Eye Bolt
#10-24 x 5/16" T-Nut

CubScoutIdeas.com

We wanted our knight to have some sort of curve at the top to simulate a horse, so we used a 3/16" x 1 1/2" eye bolt. Simply screw it into a #10-24 T-nut. Make **four knights** for your Webelos Craftsman project.

Chess Rook



3/8" x 3/4" hex or cap bolt
3/8" castle nut

CubScoutIdeas.com

The **four rooks** looked very cool with the castle nuts topping them! Use 3/8" x 3/4" hex bolts, and screw 3/8" castle nuts on the top.

Chess Pawn



1/4" x 1/2" machine screws
with hex nuts

CubScoutIdeas.com

Your set needs **16 pawns**. We used 1/4" x 1/2" machine screws with hex nuts. They are packaged together.

After you have assembled your pieces, you'll want to paint each set with a different colored enamel. Spray paint is quick but can be messy and should definitely be done in a controlled (preferably outdoor) environment. The other option is nail polish that is a bit easier with the small brush. Lay down a lot of newspaper or plastic at the work station and please make sure your scouts wear nitrile gloves and have acetone and cotton balls for a quick cleanup.



The Chess Board

- Cut a piece of plywood or hardwood (walnut or maple) to 8" x 8".
- Use a ruler or t-square to mark columns and rows an inch wide. If you use a different size piece of wood, keep in mind that chess boards have an 8x8 grid.
- Use a piece of sandpaper to clean up the edges and smooth the board surface.
- You can use two different colors of paint and/or stain to decorate your chess board....alternating colors every square as shown below.
- The boys will likely be a bit messy and the grid won't be perfect but let them do it! Contrary to my type A personality, it doesn't have to be perfect 😊



After the chess pieces and board have completely dried, find a chess partner and let the games begin! If any of the boys don't know how to play chess, here is a good online resource (<http://www.chesskid.com/learn-how-to-play-chess.html>).