INSTRUCTIONS TO BUILD YOUR VERY OWN

science seeds

BALLISTA

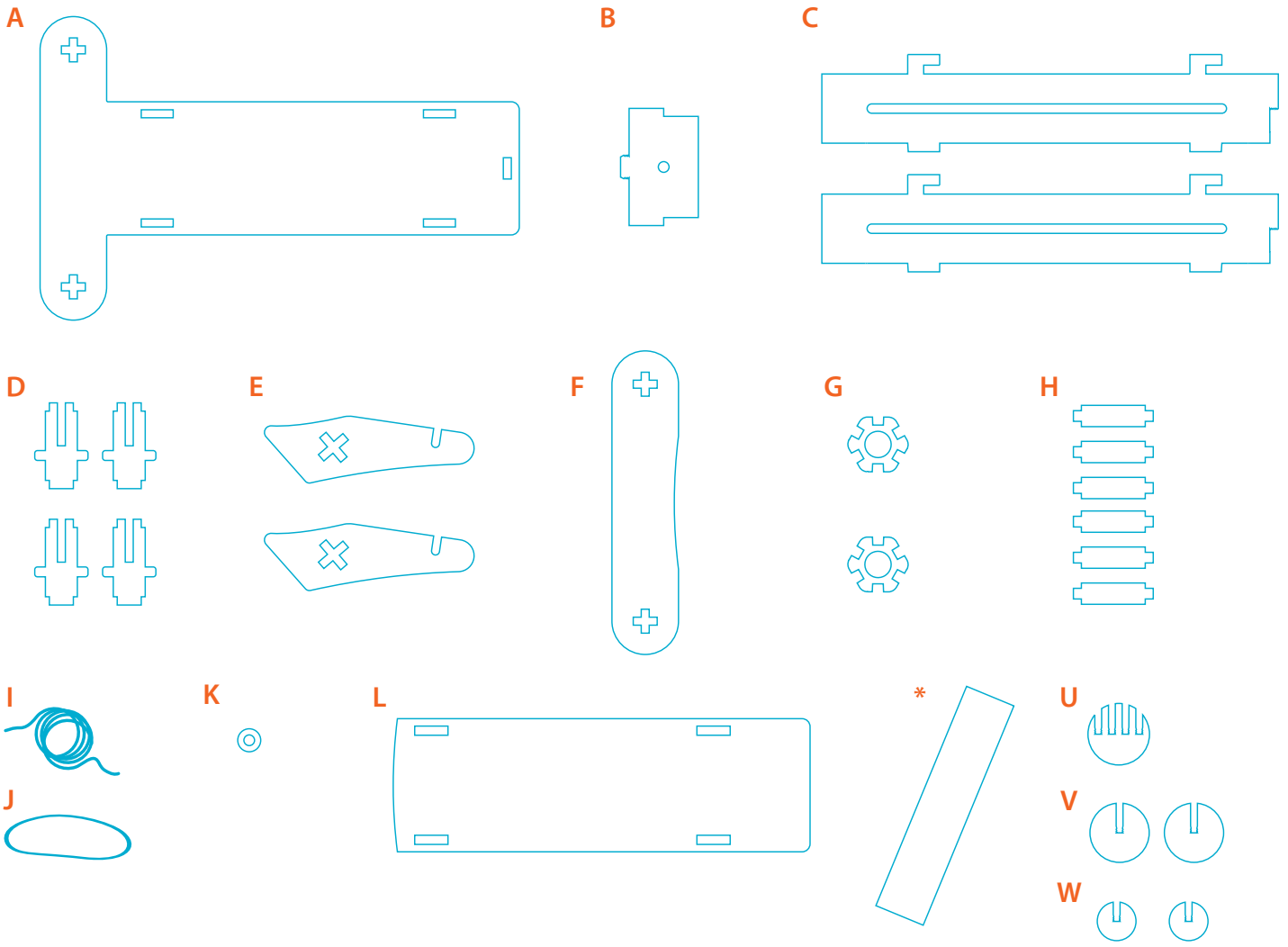
BACKGROUND

Our ballista is based on the siege weapon of ancient Greece. Its levers add torsion, a clever way to make it more powerful than the weapons that came before it. The ballista stores energy in a rubber band: when you pull the string back, the band stretches, and when you let go, that energy turns into motion and your ball shoots forward!

PREP

- Lay out your pieces so you can find them easily.
- Decorate with markers or paint. Coloring the pieces before you build is easiest.
- Your ballista is laser cut from natural plywood, so some pieces may fit a little snugger or looser than others.
- If a piece feels tight, smooth the edge with the sandpaper strip.
- The ballista fits together without glue. If a fit feels loose, a dot of wood glue will hold it. **Leave the levers (E) and the lid (L) unglued so they can turn and lift off.** You can glue the spool slats (H) to the spool ends (G).

PARTS INCLUDED IN THIS KIT



- A Base
- B Back
- C Sides (x2)
- D Pins (x4)
- E Levers (x2)
- F Top
- G Spool ends (x2)
- H Spool slats (x6)
- I String
- J Rubber band
- K Bead
- L Lid
- * Sandpaper strip

BALL COMPONENTS

- U Ball base
- V Large faces (x2)
- W Small faces (x2)

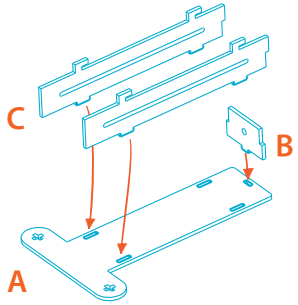
Scan for interactive instructions

AGES 8+

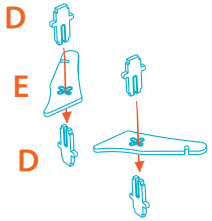
Your kit may include spare pieces.

BUILD THE BASE

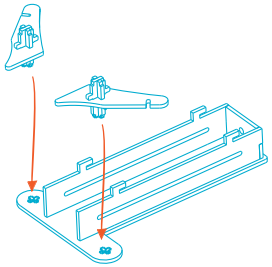
1. Press the sides (C) and the back (B) into the base (A).



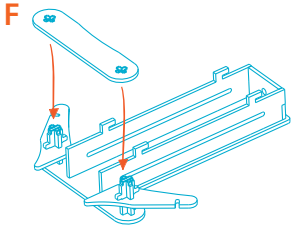
2. Push a pin (D) down through each lever (E) and a second pin up from below, so they lock.



3. Stand the levers in the front holes of the base, notches facing forward.

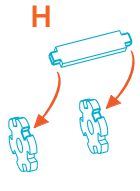


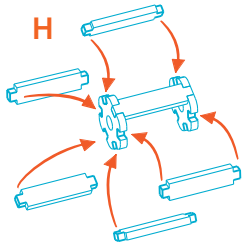
4. Press the top (F) down onto the lever pins.



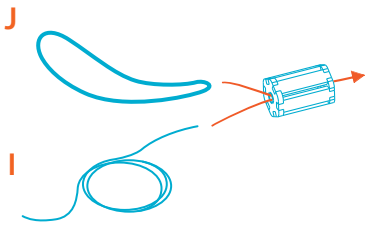
BUILD THE SPOOL

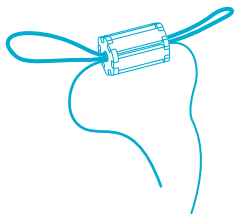
5. Connect the six spool slats (H) to the two spool ends (G).



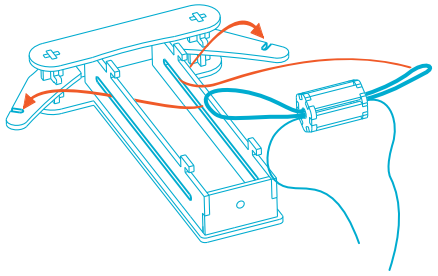


6. Feed the rubber band (J) through the spool and out the other side. Do the same with the string (I).

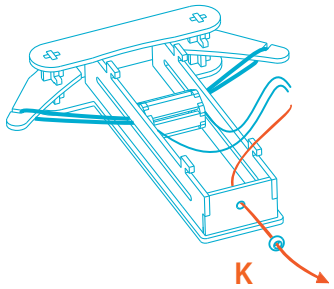




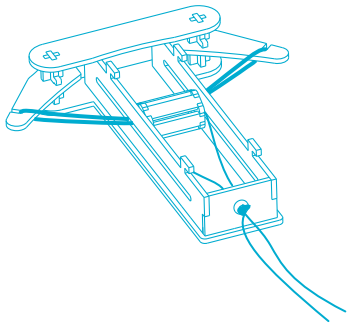
ADD THE BAND AND STRING



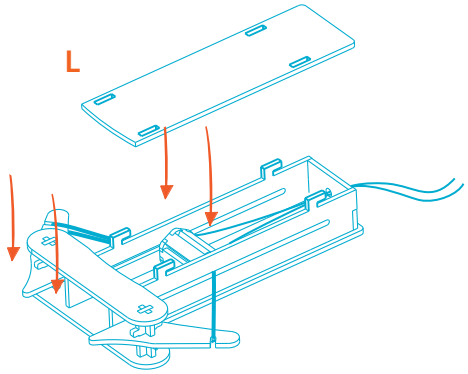
7. Lower the spool between the sides. Feed the band ends out through the long slots and hook them onto the lever notches.



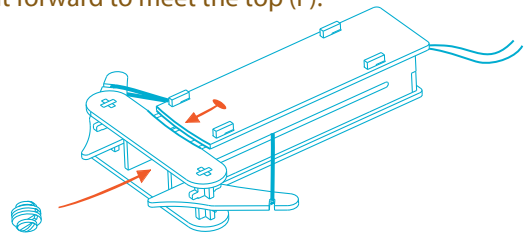
8. Feed both string ends through the hole in the back (B) and tie them to the bead (K), so the string can't slip back inside.



ADD THE LID



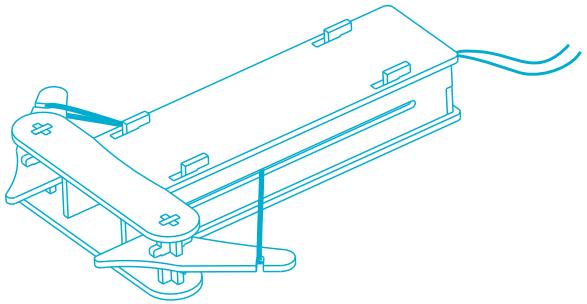
9. Drop the lid (L) over the four hooks, then slide it forward to meet the top (F).



Load the ball, pull the string back and let go!

CONGRATULATIONS

YOU DID IT!



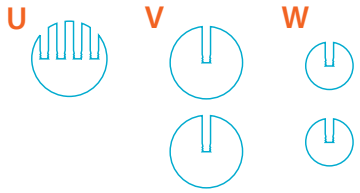
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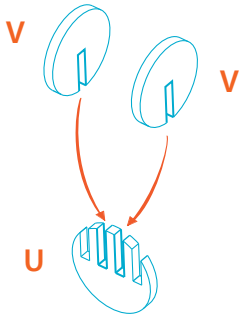
MAKE THE BALL

If you'd like to color your ball, do it before you put it together. Keep paint out of the slits so the faces still slide in. If a fit is tight, turn the ball over and press down on the face to push it into place.

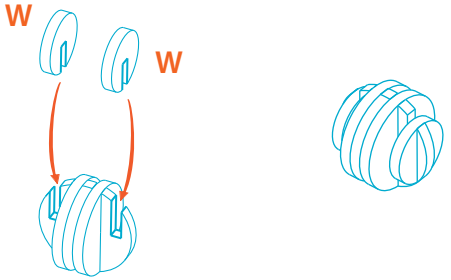


U Ball base
V Large faces (x2)
W Small faces (x2)

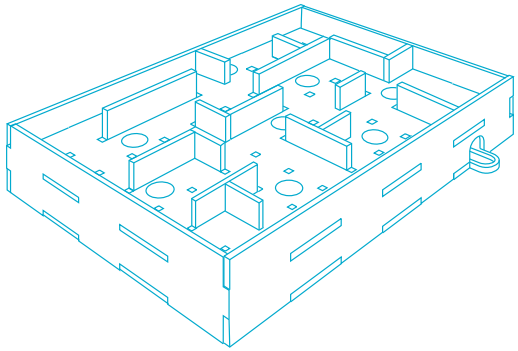
10 Slot the large faces (V) into the ball base (U).



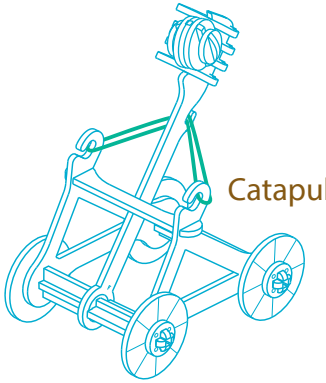
11 Add the small faces (W).



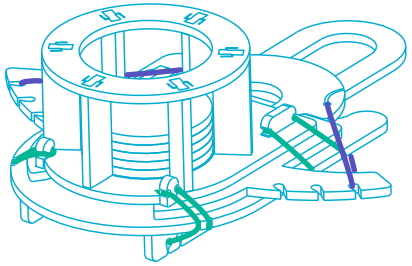
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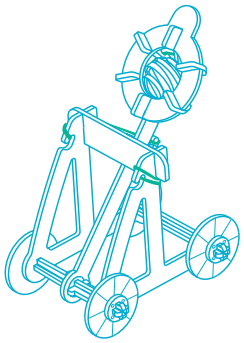
Marble Maze



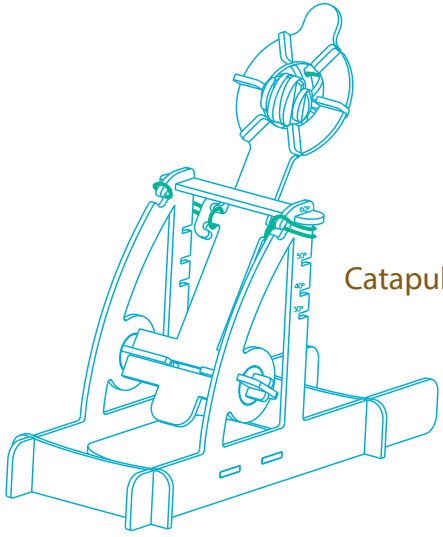
Catapult No. 1



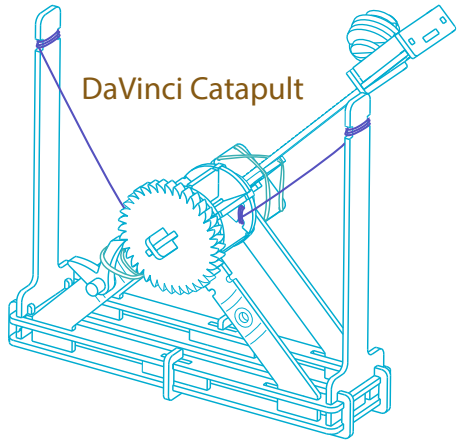
Disc Launcher



Catapult No. 1A



Catapult No. 2



DaVinci Catapult