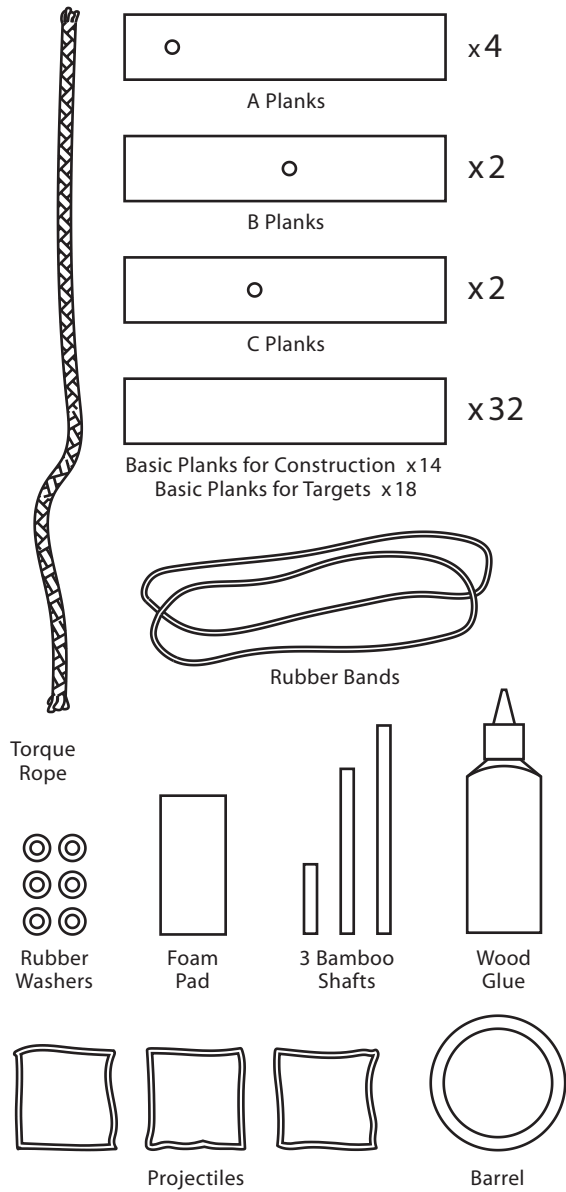


# CONTENTS



# SETUP

Before you begin, cut the ruler from the instruction sheet.

We recommend that you construct your catapult with the wood glue included in the kit. Building with wood glue requires patience, as you must allow time for the joints to dry between steps, but it also allows you to position the pieces precisely.

Use the time while the glue dries to plan catapult experiments!

## 1. Collect Projectiles

Gather a variety of household objects to fling in your catapult. Cotton balls, marshmallows, large paper clips and small erasers make good test projectiles. Avoid hard or dense objects that could cause damage or injury.

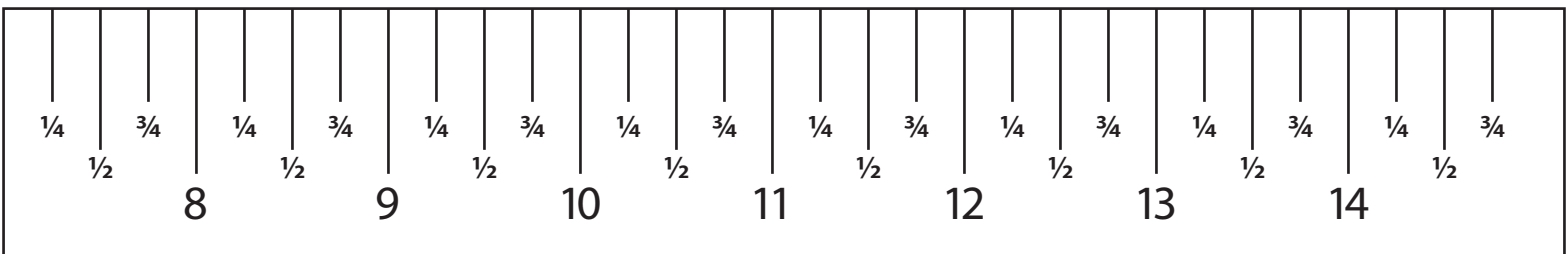
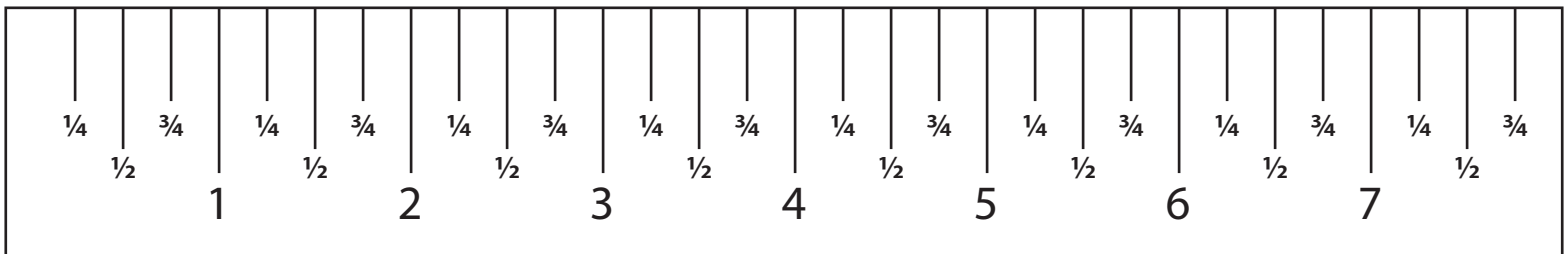
## 2. Construct a Hypothesis

How far do you think each test projectile will travel? Will a cotton ball fly farther than a marshmallow? Will a marshmallow fly farther than a paper clip?

## 3. Test your Hypothesis

Once the catapult glue has dried, fling each object and measure the flight distance. Record and analyze your data. What conclusions can you make?

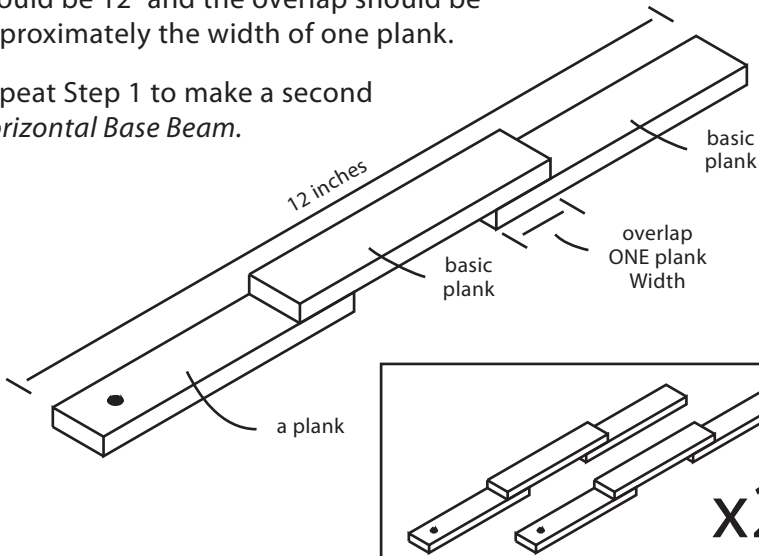
It is possible to construct your catapult using a hot glue gun, which will speed up assembly as drying time is not required. However, we recommend that you take your time and enjoy the building process – you only get to build the catapult once. If you choose to use a hot glue gun, ask an adult for permission and supervision.



## Step 1: Construct Horizontal Base Beams

Glue two Basic Planks to one A Plank. The total length should be 12" and the overlap should be approximately the width of one plank.

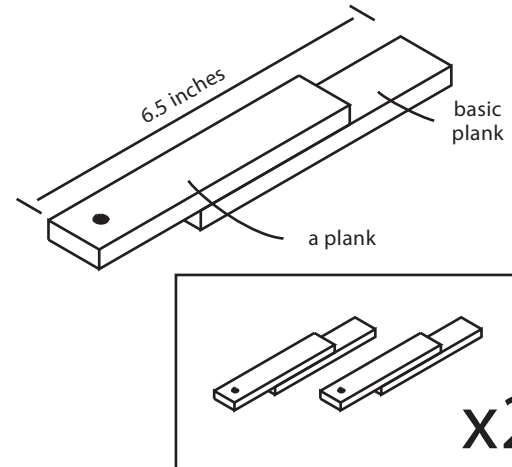
Repeat Step 1 to make a second *Horizontal Base Beam*.



## Step 2: Construct Upright Supports

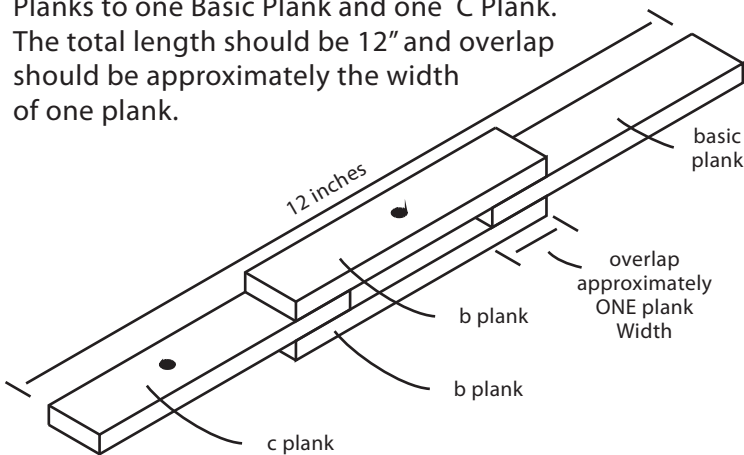
Glue one Basic Plank to one A Plank. The total length should be 6.5"

Repeat Step 2 to make a second *Upright Support*.



## Step 3: Begin Sling Arm Construction

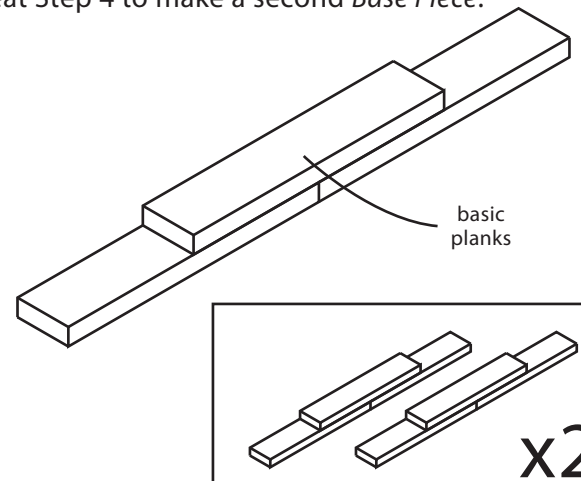
Construct part of the *Sling Arm* by gluing two B Planks to one Basic Plank and one C Plank. The total length should be 12" and overlap should be approximately the width of one plank.



## Step 4: Construct Base Pieces

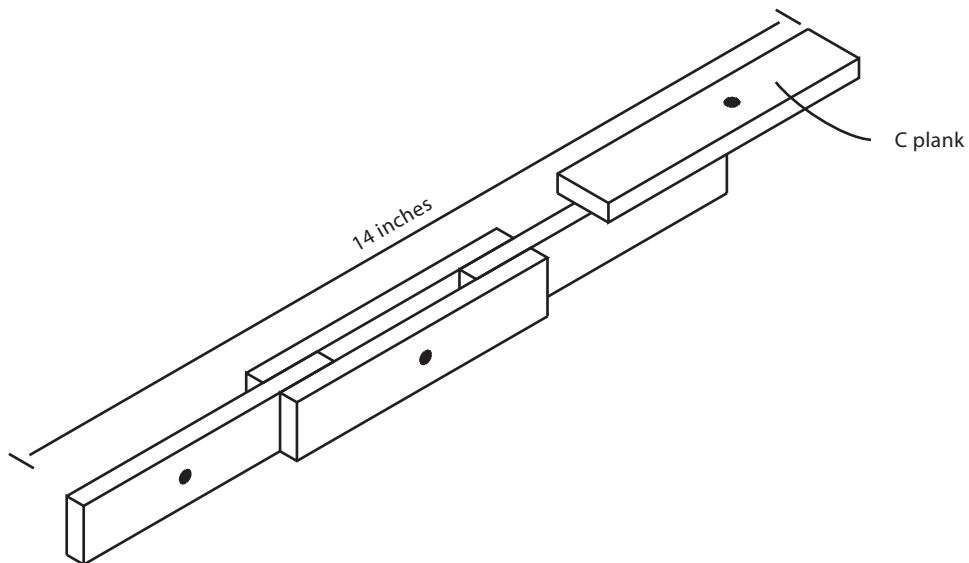
Create a base by gluing three Basic Planks together as shown below.

Repeat Step 4 to make a second *Base Piece*.



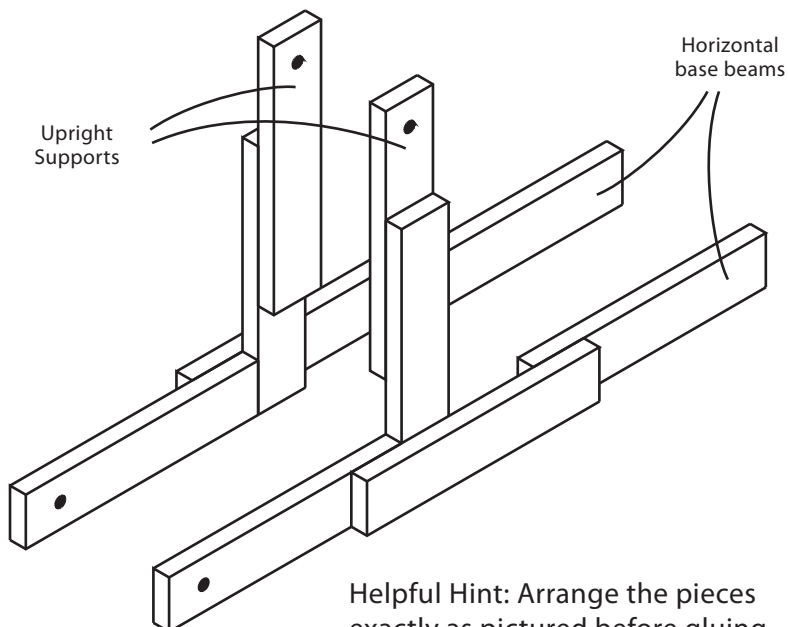
## Step 5: Continue Sling Arm Construction

Glue the last C Plank to the partial *Sling Arm* you constructed in Step 3. The total length should be 14".



## Step 6: Assemble Sling Arm Braces

Glue the *Upright Supports* constructed in Step 2 to the *Horizontal Base Beams* constructed in Step 1.



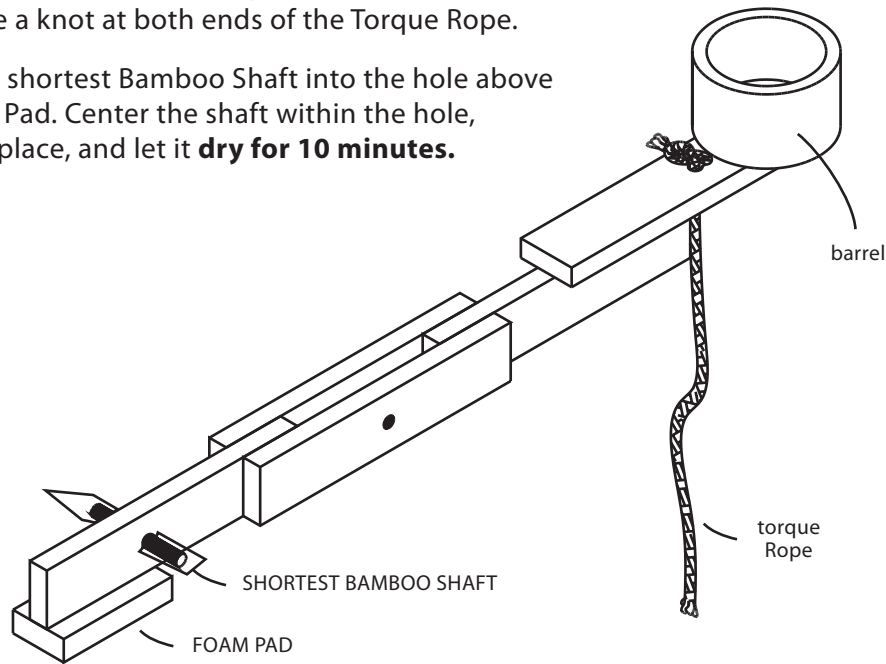
Helpful Hint: Arrange the pieces exactly as pictured before gluing to ensure the proper configuration.

## Step 7: Complete Sling Arm Construction

Glue the Barrel and the Foam Pad to the *Sling Arm* created in Step 5.

Insert the Torque Rope through the hole below the Barrel. Tie a knot at both ends of the Torque Rope.

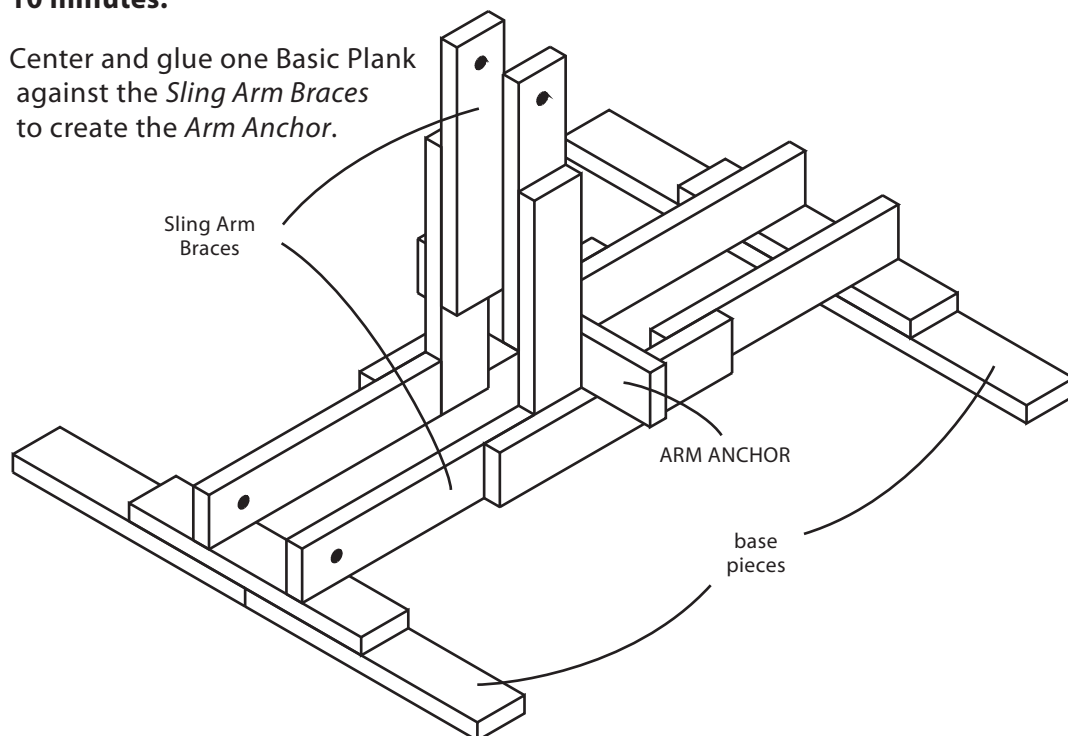
Insert the shortest Bamboo Shaft into the hole above the Foam Pad. Center the shaft within the hole, glue it in place, and let it **dry for 10 minutes**.



## Step 8: Assemble Catapult Frame

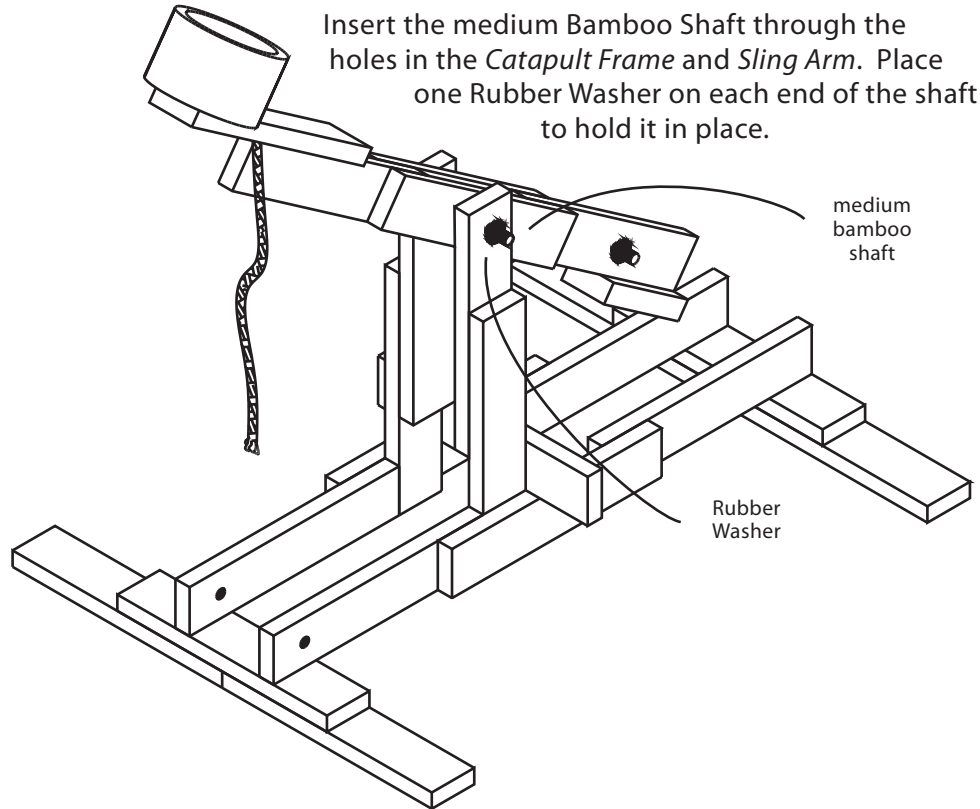
Place the *Sling Arm Braces* constructed in Step 6 on the *Base Pieces* constructed in Step 4. The space between the *Sling Arm Braces* should be no less than 1.75" and no more than 2". Mark the position on the *Base Pieces* so you will know where to place the glue. Glue the *Sling Arm Braces* in place and let **dry for approximately 10 minutes**.

Center and glue one Basic Plank against the *Sling Arm Braces* to create the *Arm Anchor*.



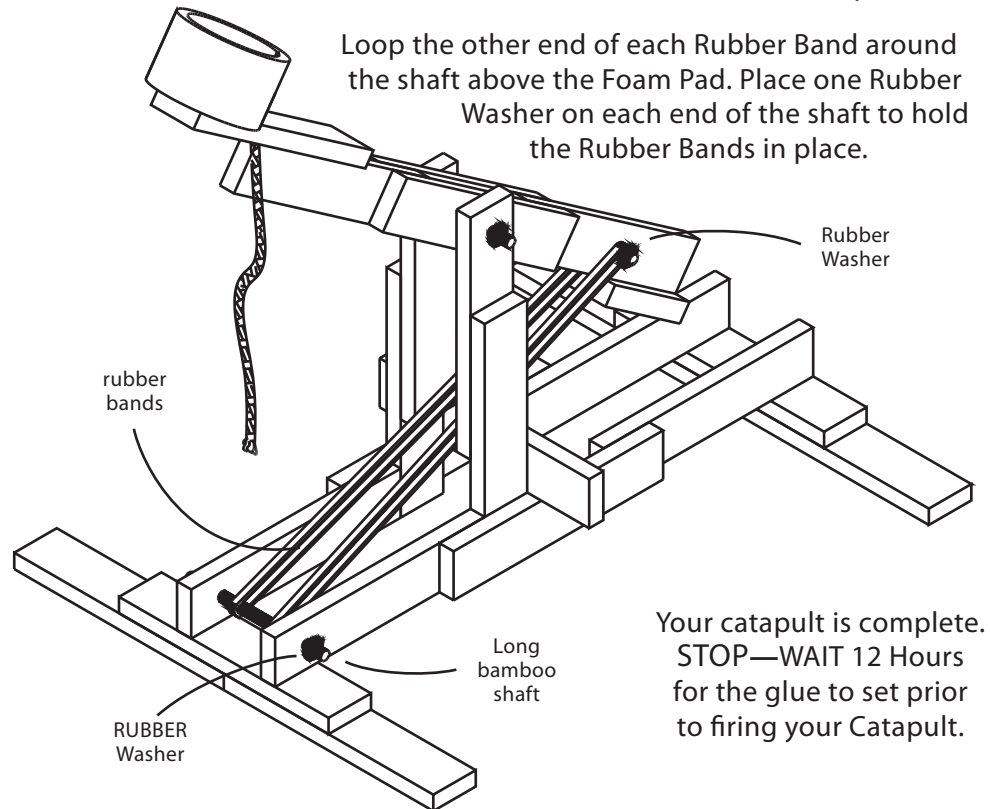
## Step 9: Attach Sling Arm

Place the *Sling Arm* into the *Catapult Frame* making sure the arm is rotated so the Foam Pad faces the *Arm Anchor*.



## Step 10: Complete Catapult

Slide the longest Bamboo Shaft through the holes in the *Catapult Frame*, threading through the Rubber Bands as you go. Place one Rubber Washer on each end of the shaft to hold the shaft in place.



Your catapult is complete.  
STOP—WAIT 12 Hours  
for the glue to set prior  
to firing your Catapult.