

Trebuchet Construction

Sequence of the construction (tip: wait to tighten pieces until angles are accurate)

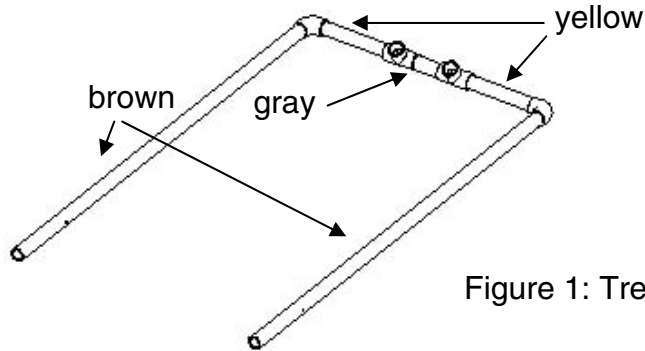


Figure 1: Trebuchet Base

Base Construction:

1. Connect two T-pipes together using the 5 in. pipe (gray).
2. Attach one (yellow) 11.25 in. pipe to the other ends of the t-pipes, leaving the center connectors of the T-pipes pointing up at an angle.
3. Place one elbow pipe on each open end of the 11.25 in. pipes.
4. Find two 5 ft. lengths of pipe (brown) with only one hole drilled in ends. Connect these pipes to the open end of the elbows with the holes at the far end, not near the elbows.

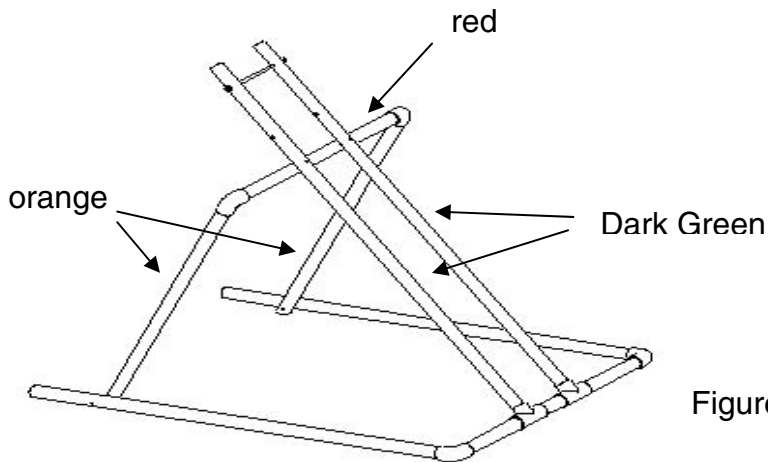


Figure 2: Support System

Support Frame:

5. Using the 43 in. pipes (orange) with ends cut at 45° angle, place the angled end on the floor and on the inside of the base frame facing the closed end of the base. Use a 4 in. bolt to attach to the five foot length of pipe. Place a washer on each end of the bolt.
6. Put one elbow on the end of each 43 in. pipe.

7. Connect the elbow pipes together with the 30 in. pipe (red).
8. Then, take the remaining 5ft. lengths of pipe (green), which should have three sets of holes drilled into them, and insert them in to the t-pipe connectors on the base support, making sure that the holes are placed at the far end, away from the connection.
9. Using the smallest and lowest set of holes on the five foot long pipes, bolt each of the 5 ft. pipes to the 30 in. cross bar using 4 in. bolts. Place one washer on either end on the bolt and tighten.

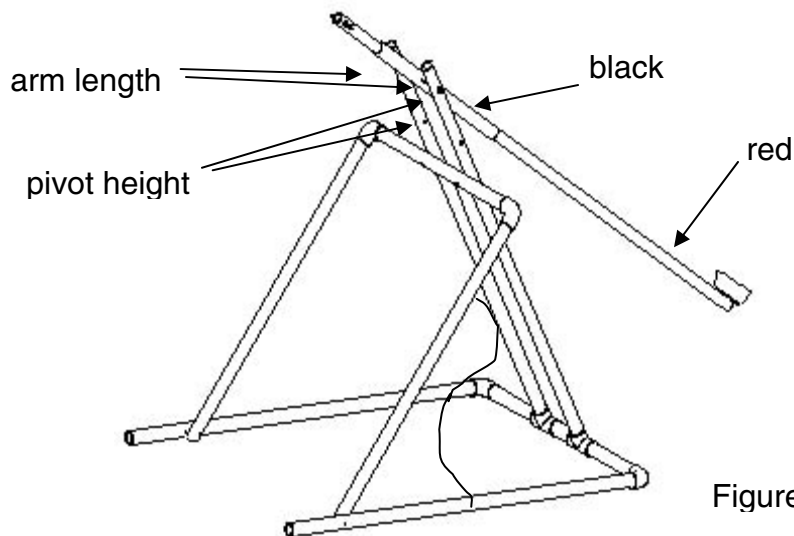


Figure 3: Completed Trebuchet!

Launch Arm:

10. Take the 25 in. pipe (black) and place it over the longest pipe (86 in.-red). Line up the holes so that you can thread the 10 in. bolt through both pipes. First, thread a washer onto the ten inch bolt, then thread the bolt through the outside of the 5ft. pipe. Once through, put a two inch piece of pipe over the bolt. Then thread the bolt through the launch arm pipes. Once through the launch arm, put on another two inch pipe, thread the bolt through the other 5ft. support pipe, place the remaining washer on the bolt and tighten with the nut.
11. Thread the 5 in. bolt through the top most hole of the launch arm, placing one nut and one washer on either side of the pipe; this is your counter weight mechanism.
12. Take the small plastic container and affix it to the other end of the launch arm using the 2 in. bolt, placing a washer on each end. This serves as your launch basket.
13. Tie the rope to the bottom of the two inch bolt. You can then use the rope as your trebuchet release.

Variables:

- Weight or mass of the counterweight
- Length of the arm*
- Height of the arm*
- Release point (with release device/string)

*(Hint, changing the length and/or height of the arm as well as the release point changes the angle of release - the angle is crucial.)