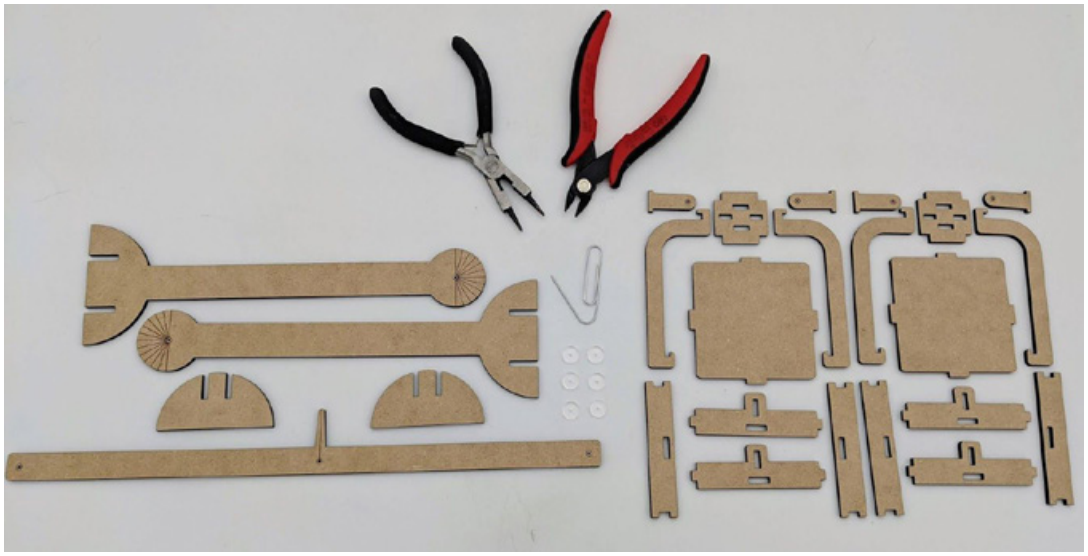
Balance Scale Assembly Instructions

Assemble the Stand

1. Remove printed pieces from the print bed and peel off any masking. The balance scale assembly will require all parts shown.

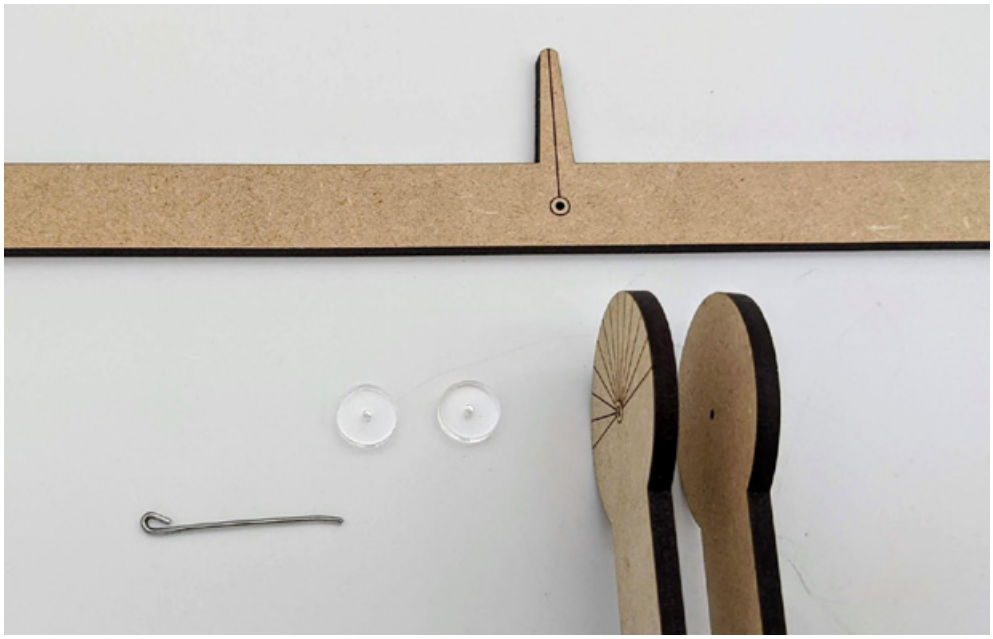


2. Construct the stand, which holds the balance arm. Take the two long wooden pieces with notched bottom edges and slot them into the two notched half-circles to assemble the stand.

Assemble the Balance Arm

3. Add the balance arm to the stand. The balance arm is the long, straight wooden piece with a tall bump in the middle. Just below the bump there is a small hole to mount the arm on an axle. Cut and bend a standard paper clip to construct the axle. Unbend one arm of a standard paper clip and use the pointed nose pliers to curl the free end into a loop. Cut the looped arm away from the rest of the paper clip with the wire cutters. When cutting or bending the ends of the clip, try to keep the rest of the paper clip as straight as possible. The paper clip forms an axle for the balance arm, and the straighter the paper clip is, the more easily the balance scale will pivot.

   Caution: when cutting the paper clip with the wire cutters, small, pointed pieces can easily fly off at high speeds. This part of the project should be done by an adult wearing glasses or safety goggles, with no other nearby observers.



4. Slide the straight end of the paper clip through the two parallel holes in the top of the stand. It will pass through both washers and the hole in the center of the balance arm. Starting from the outside of the stand, the wire should pass through these layers in the following sequence: → stand → washer → balance arm → washer → stand→.

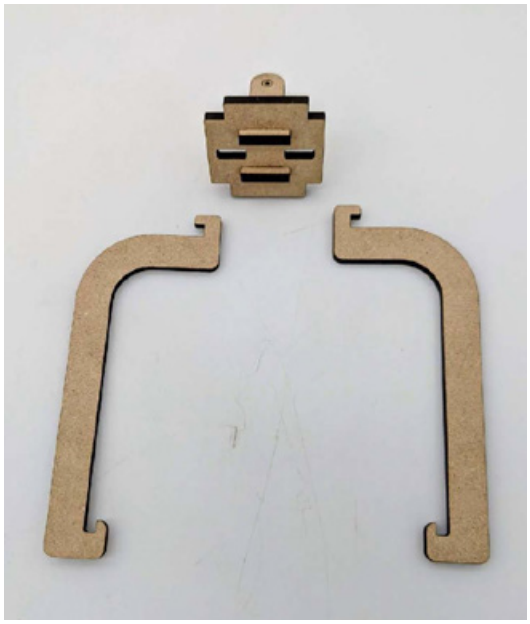
5. Once the wire has passed through all of the layers, carefully use the pointy-end pliers to curl the loose end of the paper clip wire into a loop, so the wire won't slip back out, and so that no sharp edges are left exposed. While curling the end of the wire, take care not to bend or warp the straight portion of the wire. The balance scale works best if the axle is perfectly straight. Once the arm is attached, try rotating it to be sure it swivels around the paper clip freely and easily. If there is any kind of resistance to rotation, it will throw off the scale's accuracy.

Assemble the Baskets

6. Gather the pieces shown to assemble one of the two baskets.

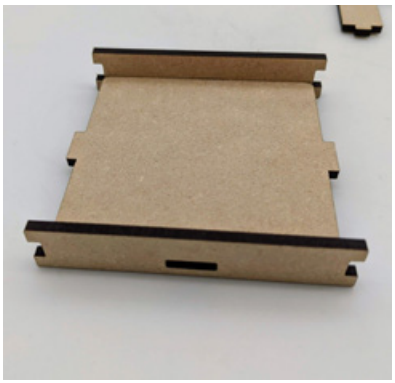
7. The small piece with four rectangular slits holds the two round-edged wooden pieces to form a pivot. Push the round-edged pieces through the two parallel slits as far as they will go.

8. The two long curved pieces shown are connecting arms which attach the basket to the pivot. Lay out the connecting arms and the pivot base you just assembled in the same orientation shown.

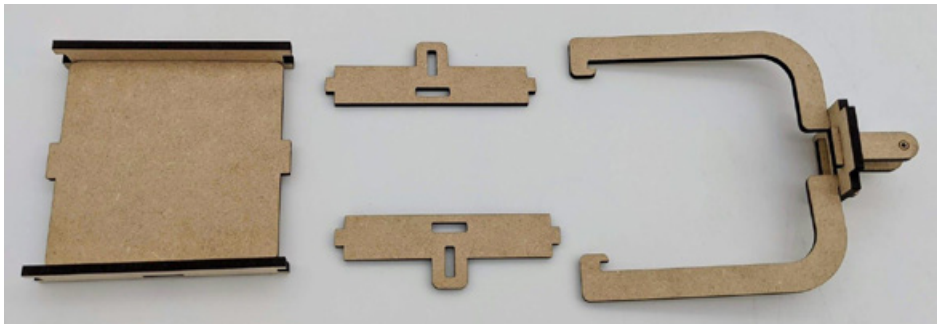


9. Insert the top ends of the connecting arms upwards into the two unoccupied slits in the pivot base. Push the ends of the connecting arms upwards as far as they will go, then gently slide each connecting arm outwards towards the edge of the pivot base. In this position, the notch in each connecting arm grips the pivot base to help secure them together.

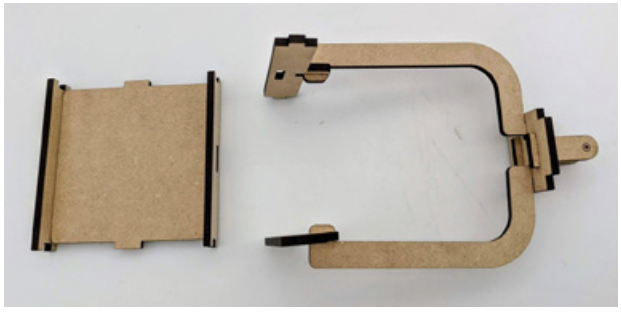
10. Assemble the basket. Find the large square wooden piece with tabs protruding from its sides. This piece forms the base of the basket. Take the two straight pieces with notches in their ends and slot them over the tabs to form two of the sides of the basket.

11. Attach the basket to the pivot piece. Lay out the pivot with the connecting arms attached, the partially assembled basket, and the two remaining sides of the basket



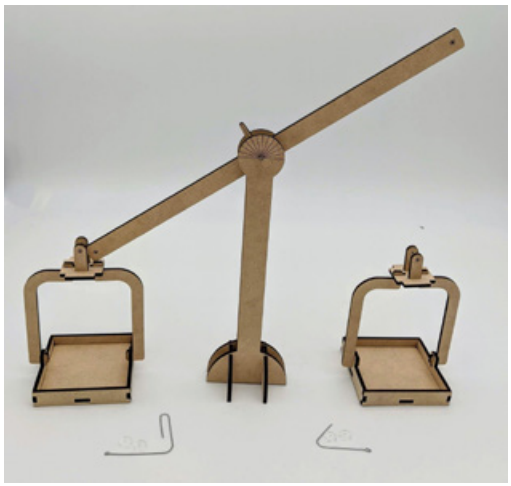
12. Slide the “hooks” at the lower ends of the connecting arms through the vertical slots in the two basket sides. Push the hook through the vertical slot as far as it will go, then gently slide the basket side down along the connecting arm into the notch in the hook. This prevents the basket from slipping off the connecting arm.



13. Once two basket sides are hooked onto the connecting arms, raise the pivot upright so that the basket sides align with the open edges of the basket. Push the sides together until the slots slip over the tabs to complete the basket assembly. Friction will hold it together quite well, but to attach the pieces even more securely, add a few drops of glue where the separate wooden pieces meet to reinforce the connection.

14. Repeat the construction process with the remaining wooden pieces to create the second basket assembly. When the scale is fully assembled, one basket hangs from each end of the pivot arm. The baskets need to be able to swing freely when the pivot arm rotates, so they'll be secured using the same paper-clip axle technique that attaches the pivot arm to the base.

15. Place each basket assembly near one end of each pivot arm as shown. The holes in the basket pivots should line up with the holes in the ends of the pivot arm.



16. To attach each basket to the arm take a paperclip, unbend one side, and using pliers, curl the free end into a small loop. Carefully cut that side away from the rest of the clip so that you now have a small straight piece of wire with a loop at one end.

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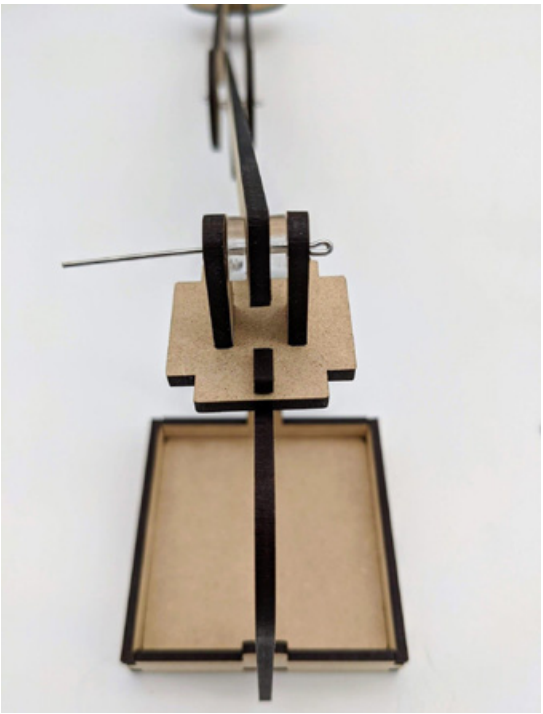
17. Take two acrylic washers, and slide the straight end through the holes in the pivot, through the washers and through the pivot arm in the following order: → pivot → washer → balance arm → washer → pivot →. When connecting the basket to the axle, try to keep the wire as straight as possible so that the basket may rotate freely.



18. When the wire is completely inserted, carefully trim and bend the free end of the wire back over itself to keep the axle from slipping out. Be sure that the sharp end of the wire is not left exposed.

19. Repeat this process to attach the other basket to the balance arm. Once both baskets are attached, the balance scale is complete.