

## •• Food Rescue Programs

[www.ciwmb.ca.gov/Reuse/Links/Food.htm](http://www.ciwmb.ca.gov/Reuse/Links/Food.htm)

## •• School Materials and Supplies

### • L.A. SHARES (NP)

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Los Angeles, CA 90027  
(213) 485-1097  
Fax: (213) 485-9237  
[www.lashares.org](http://www.lashares.org)

### • Resource Area for Teachers (RAFT) (NP)

1355 Ridder Park Drive  
San Jose, CA 95131  
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[raft@raft.net](mailto:raft@raft.net)  
[www.raft.net](http://www.raft.net)

# Appendix D

## ••• Worm Bin Assembly Instructions

### •• Plastic Worm Bin

Transforming a plastic storage container into a worm bin is easy. This bin can house approximately one pound of worms, which will process approximately one pound of food waste each day.

#### • Materials

- One nontransparent plastic storage container (21" long x 15" wide x 12" high) with a tight-fitting lid
- Four plastic bottle caps or wooden blocks (scrap wood blocks will work)
- Four 5/8" screws or "super glue"

#### • Tools

- Power drill with 1/4" bit

**Please be safe!** Wear earplugs and eye protection when drilling.

### • Assembly

Drill holes in the bottom of the plastic bin, approximately three inches apart, for ventilation and drainage. Using either the screws or glue, attach one wooden block or plastic bottle cap underneath each of the four corners of the bin. These "feet" will allow air to circulate and liquid to drain from the base of the worm bin. Place a sheet of plastic or a tray underneath the bin to collect any liquid or castings. (Hint: An old TV tray or cookie sheet works great!)

### •• Large Wooden Worm Bin

Build a wooden worm bin "estate"! Basic carpentry skills are required to construct this wooden worm bin, but if you follow the directions and diagrams, the project should be relatively simple. A wooden worm bin breathes well, so it may occasionally need watering to maintain the proper moisture content. This worm bin can house approximately four pounds of worms, which will process approximately four pounds of food waste each day.

#### • Cost

This wooden bin can be built for about \$30 with new wood and hardware, or for less money if you use recycled or scrap materials.

#### • Materials

##### Lumber

- One 4' x 8' sheet of 1/2" exterior grade plywood
- One 8-foot, 1" x 2" board

##### Hardware

- Thirty-two 1" galvanized screws
- Eight 1-1/2" galvanized screws
- Two 3" hinges
- Approximately 12 galvanized screws, 1/2"

#### • Tools

- Tape measure
- Saw
- Two sawhorses
- Long straight-edge or chalk snap line
- Power drill with 1/4" bit

**Please be safe!** Wear earplugs, eye protection, and a dust mask when sawing, hammering, and drilling.

• **Assembly**

**Preparation**

1. Measure and cut the sheet of plywood as indicated in Diagram 1. You will then have two side pieces, two end pieces, a base, and a top.

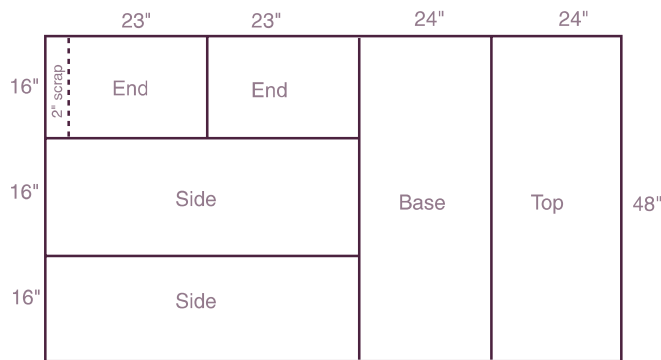


Diagram 1

**Bin**

1. Cut four 16" pieces from the 1" x 2" board.
2. Place the 1" side of one piece against the 16" edge of an end panel. Position the piece so it is flush against the panel edge and corners. Secure the piece to the end panel with three 1" screws. Repeat this process for the other 16" panel edge (Diagram 2).
3. Repeat step 2 for the other end panel.
4. Secure the side panels to the end panels by drilling four 1" screws through the end of each side panel into each 1" x 2" piece at each corner of the box.

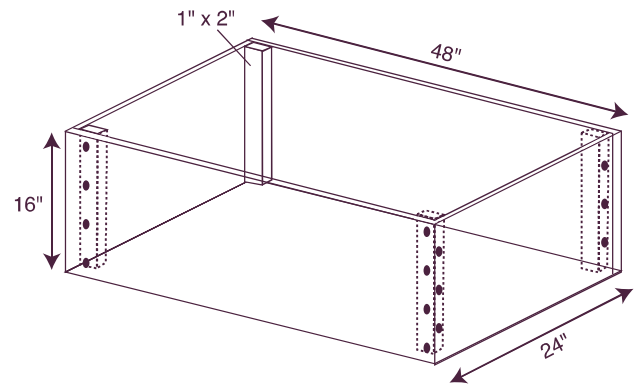


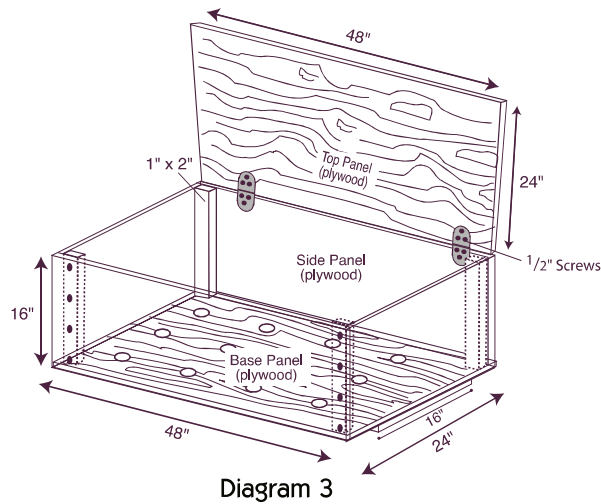
Diagram 2

**Base**

1. Set the base panel on top of the box "walls" so the panel edges are flush with the walls.
2. Secure the base panel to the walls by drilling one 1" screw through the panel into the 1" x 2" piece at each corner of the box.
3. Using a 1/4" drill bit, drill holes into the base panel. One hole every three to four inches should allow for sufficient ventilation.
4. Cut the remaining 1" x 2" board into two 16" pieces. These will be the "feet" of the bin.
5. Set one piece on each of the base panel's short ends, so the 2" side of each piece is against the panel.
6. Secure each 1" x 2" piece using four 1-1/2" screws.
7. Flip the box over, so that the feet are touching the ground (Diagram 2).

**Lid**

1. Attach the two hinges to one side of the top panel (Diagram 3) using 1/2" screws.
2. Secure the lid to the box by drilling 1/2" screws through the bottom part of each hinge into the inside of one side panel. You may need extra hands to do this!



## •• Cinder Block Worm Bin

Cinder blocks are a great material to use for an outdoor worm bin and can be assembled in no time at all. The blocks are very sturdy and aid in regulating the internal temperature of the bin. Also, if at a later date you decide to vermicompost with a different type of bin, the cinder blocks can be reused after a good spray-off to clean it away of castings. These are instructions for building a cinder block worm bin with the dimensions of 4' wide x 3' long x 2' high. This size bin can house approximately six pounds of worms, which will process approximately six pounds of food waste per day.

### • Cost

The size bin you choose determines the cost of the materials. Determine the size by analyzing the space you have available on which to house the bin and by the amount of food you are planning to process. Cinder blocks and materials for a lid can be purchased at your local hardware store.

### • Materials

#### Cinder Blocks

- 36 cinder blocks (12" long x 6" wide)

Note: This size cinder block will form a 4' x 3' rectangle. If your rectangle is any other size, you will need to modify the lumber sizes and instructions.

#### Lumber

- 4'2" x 3'2", exterior grade, 1"-thick plywood
- Two 3' lengths of 1" x 4" lumber
- Two 4'2" lengths of 1" x 4" lumber

#### Hardware

- 1-3/4" screws (at least 4.)
- 3/4" screws (approximately 38, depending on the number of holes in the brackets and hinges you buy)
- 4-8 L-shaped brackets (Measure the distance between the cinder block hole and the block's closest outside edge. Then add 1" to that dimension. Purchase brackets which have at least one "leg" equal to that measurement.)
- 2 hinges
- 1 latch and needed screws (optional, if you want to secure lid)
- One 85" length of 1/2"-thick chain
- Staples for heavy-duty staple gun

#### • Tools

- Tape measure
- Screwdriver or electric drill
- T-Square or other device to help form right angles
- Saw
- Heavy-duty staple gun

**Please be safe!** Wear earplugs, eye protection, and a dust mask when sawing, hammering, and drilling.

## • Assembly

Select an outside area where you will house your bin. Keep convenience and ease of maintenance in mind.

### Bin

1. Lay out the first layer of cinder blocks, to form a 4' x 3' rectangle (Diagram 1). Be sure to have the holes of the blocks facing upwards. Make sure the ends of the blocks are tight against one another.

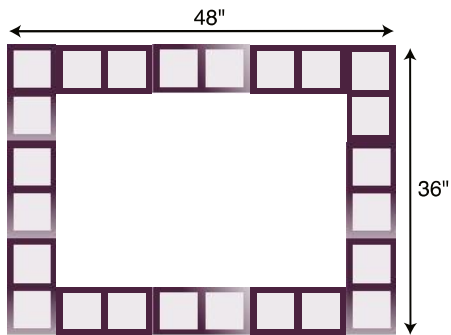


Diagram 1

2. Add the second and third layers of blocks, alternating the blocks for each layer so that the edges of the blocks line up in rows 1 and 3 only. Make sure that the top level of blocks is flush, so that the lid will lie evenly (Diagram 2).

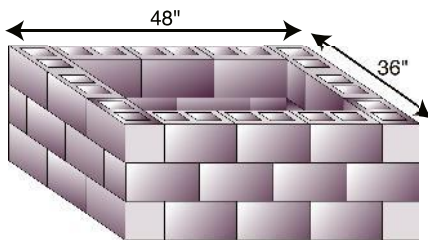


Diagram 2

### Lid

1. Measure the outside perimeter of your newly formed bin to be sure it is 4' x 3', as the instructions that follow are intended for those exact dimensions.

2. To make the lid frame, screw together the 3' and 4'2" length pieces of lumber, using the 1-3/4" screws to form a rectangular frame around the rim of the cinder block bin structure (Diagram 3).

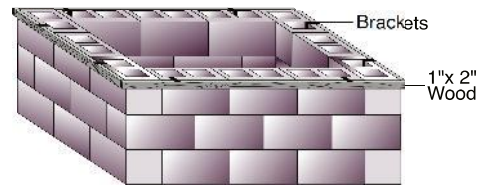


Diagram 3

3. Use four to eight brackets (either one or two on each side of the frame, depending on your preference) to secure the frame to the cinder blocks (Diagram 3). To do this, screw one leg of each bracket into the top of the frame using 3/4" screws; the other leg will extend into the cinder block hole.

4. Attach hinges to one of the 4'2" sides of the plywood lid using 3/4" screws (Diagram 4). As an option, you may decide to attach a latch to the side opposite the hinges in order to further guard against rodents and other unwanted critters.

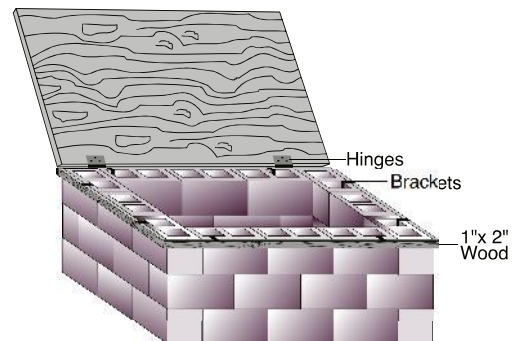


Diagram 4

5. Place the lid on top of the bin so that the hinged side is at the back and the latch side is at the front. Screw the hinges into the bin frame to secure the lid to the bin using 3/4" screws. Attach the bottom part of the latch to the front of the bin frame and check to see that it opens easily.

6. Using the staple gun, attach one end of the chain to the outside edge of one side of the bin frame. Attach the other end of the chain to the outside edge of the lid.

For additional information regarding worm suppliers, worm bin suppliers, and lessons from Closing the Loop, visit the CIWMB website at:  
[www.ciwmb.ca.gov/Schools/Curriculum/Worms/](http://www.ciwmb.ca.gov/Schools/Curriculum/Worms/).

### ••Worm Suppliers

Our website provides the most current supplier information:  
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For additional activities, please go to our website at: [www.ciwmb.ca.gov/Schools/Curriculum/Worms/](http://www.ciwmb.ca.gov/Schools/Curriculum/Worms/)

# Cheap and Easy Worm Bin!

Composting with redworms is great for apartment dwellers who don't have yard space, or for those who don't want to hike to a backyard compost bin with their food scraps. Some kids like to keep worms for pets! By letting worms eat your food wastes, you'll end up with one of the best soil amendments available—worm castings. This is the cheapest and easiest to manage worm bin system that I've seen:

## Materials Needed to Make an Easy Harvester Worm Bin:

- Two 8-10 gallon plastic storage boxes (dark, not see through!) as shown in pictures Cost: about \$5 each
- Drill (with 1/4" and 1/16" bits) for making drainage & ventilation holes
- Newspaper
- About one pound of redworms



### Step 1

Drill about twenty evenly spaced 1/4 inch holes in the bottom of each bin. These holes will provide drainage and allow the worms to crawl into the second bin when you are ready to harvest the castings.

### Step 2

Drill

ventilation holes about 1 - 1 1/2 inches apart on each side of the bin near the top edge using the 1/16 inch bit. Also drill about 30 small holes in the top of **one** of the lids.



### Step 3



Prepare bedding for the worms by shredding Newspaper into 1 inch strips. Worms need bedding that is moist but not soggy. Moisten the newspaper by soaking it in water and then squeezing out the excess water. Cover the bottom of the bin with 3-4 inches of moist newspaper, fluffed up. If you have any old leaves or leaf litter, that can be added also. Throw in a handful of dirt for "grit" to help the worms digest their food.



**Step 4**



Add your worms to the bedding. One way to gather redworms, is to put out a large piece of wet cardboard on your lawn or garden at night. The redworms live in the top 3 inches of organic material, and like to come up and feast on the wet cardboard! Lift up cardboard to gather the redworms. Or, if you wish to purchase worms, the [Cooperative Extension](#) office can give you names of [suppliers in Whatcom County](#). An earthworm can consume about 1/2 of its weight each day. For example, if your food waste averages 1/2 lb. per day, you will need 1 lb. of worms or a 2:1 ratio. There are roughly 500 worms in one pound. If you start out with less than one pound, don't worry they multiply very quickly. Just adjust the amount that you feed them for your worm population.

**Step 5**

Cut a piece of cardboard to fit over the bedding, and get it wet. Then cover the bedding with the cardboard. (Worms love cardboard, and it breaks down within months.)

### Step 6

Place your bin in a well-ventilated area such as a laundry room, garage, balcony, under the kitchen sink, or outside in the shade. Place



the bin on top of blocks or bricks or upside down plastic containers to allow for drainage. You can use the lid of the second bin as a tray to catch any moisture that may drain from the bin. This "worm tea" is a great liquid fertilizer.



### Step 7

Feed your worms slowly at first. As the worms multiply, you can begin to add more food. Gently bury the food in a different section of the bin each week, under the cardboard. The worms will

follow the food scraps around the bin. Burying the food scraps will help to keep fruit flies away.

What do worms like to eat? Feed your worms a vegetarian diet. Most things that would normally go down the garbage disposal can go into your worm bin (see the list below). You will notice that some foods will be eaten faster than others. Worms have their preferences just like us.

## Feeding your worms:

### Worms LOVE

Breads & Grains  
Cereal  
Coffee grounds & filter  
Fruits  
Tea bags  
Vegetables

### Worms HATE

Dairy Products  
Fats  
Meat  
Feces  
Oils



When the first bin is full and there are no recognizable food scraps, place new bedding material in the second bin and place the bin directly on the compost surface of the first bin. Bury your food scraps to the bedding of the second bin. In one to two months, most of the worms will have moved to the second bin in search of food. Now the first bin will contain (almost) worm free vermicompost. (You can gently lift out any worms that might remain, and place them in the new bin, or put them into your garden!)

## Troubleshooting

| Problem                             | Probable Cause     | Solution                     |
|-------------------------------------|--------------------|------------------------------|
| Worms are dying or trying to escape | Too wet            | Add more bedding             |
|                                     | Too dry            | Moisten bedding              |
|                                     | Bedding is used up | Harvest your bin             |
| Bin stinks!                         | Not enough air     | Drill more ventilation holes |
|                                     | Too much food      | Do not feed for 1-2 weeks    |
|                                     | Too wet            | Add more bedding             |
| Fruit Flies                         | Exposed food       | Bury food in bedding         |

Check out [Composting with Redworms](#) for lots more information about caring for worms. If you want to use your carpentry skills, you can view plans for a [wooden worm bin](#).