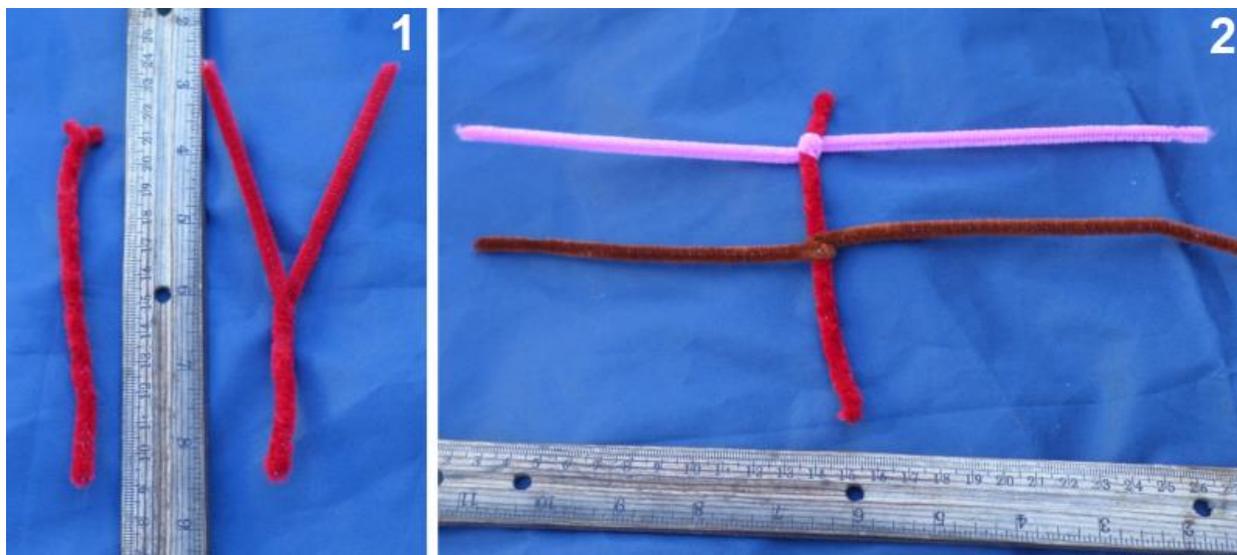


## GALLEON MISSION PROP BUILDING INSTRUCTIONS & PHOTOS

### Coral

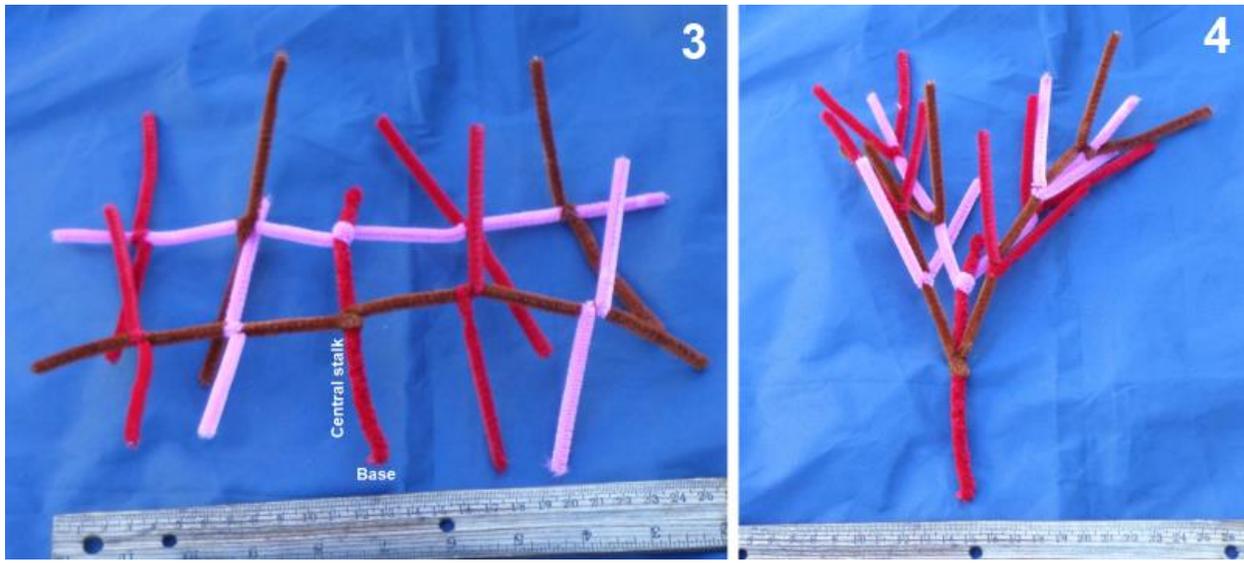
The coral colony is constructed from brown, red and pink chenille pipe cleaners. Colors may vary in different coral colonies. The base of the coral colony is a ½-inch PVC tee. To construct a coral:

1. Fold a red chenille pipe cleaner in half and twist it tightly together. This double strength pipe cleaner is the central stalk of the coral colony.
2. Take a brown pipe cleaner and wrap it three times around the red central stalk pipe cleaner, about half way between the two ends. Take a pink pipe cleaner and wrap it three times around the red central stalk pipe cleaner, about halfway between the brown pipe cleaner and one end.



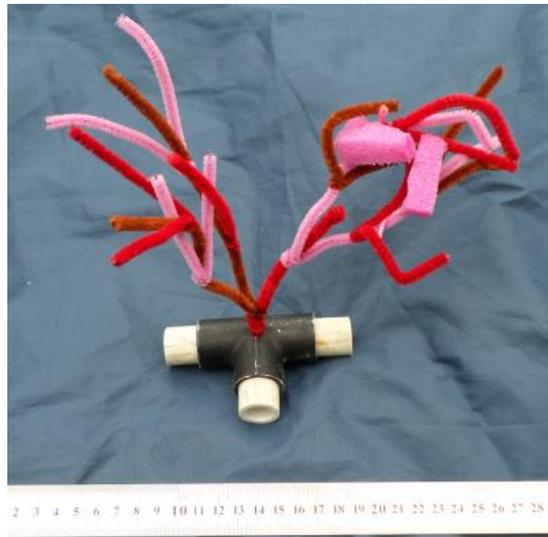
**Galleon mission build photo #1: 1) The central stalk of the coral. Completed central stalk on left of ruler, half twisted central stalk on the right of the ruler. 2) Additional brown and pink chenille pipe cleaners added to the central stalk of the coral colony.**

3. Cut a red pipe cleaner in half (two 15 cm lengths). Cut a pink pipe cleaner in half (two 15 cm lengths). Wrap a red pipe cleaner three times around one side of the brown pipe cleaner, about 5 cm from the central stalk. Wrap a pink pipe cleaner three times around the same side of the brown pipe cleaner, about 10 cm from the central stalk. Use the other 15 cm red and pink pipe cleaners on the brown pipe cleaner on the other side of the central stalk.
4. Cut a red pipe cleaner in half (two 15 cm lengths). Cut a brown pipe cleaner in half (two 15 cm lengths). Wrap these around the pink pipe cleaner that is wrapped around the central stalk, using the same method as step 3.
5. Twist all the pipe cleaners so the branches bend in one direction. Design note: The easiest way to do this is to grab the base with one hand, form a circle with your thumb and index finger of your other hand and run it up the central stalk two or three times. The base of the stalk is the side of the central stalk that does not have the second pipe cleaner (the longer side of the central stalk).



**Galleon mission build photo #2: 3) Eight additional side branches added to the coral. Note the central stalk and base of the coral. 4) Coral colony with all branches positioned.**

6. Drill two 3/16-inch holes into the center side of a ½-inch PVC tee. The holes should be 0.5 cm apart. Push the base of the center stalk into one hole and bend it out the other. Twist the ends of the base together to form a tight, strong base. The tight, strong base should be able to hold the coral colony upright in air.
7. Cut three 3 cm lengths of PVC pipe. Insert a 3 cm length of pipe into each opening of the ½-inch PVC tee.
8. Cut two small sections of foam flotation, approximately 2 cm x 1 cm x 0.5 cm in size. Use short lengths of string or pipe cleaners to attach the two floats to the top of the coral.



**Galleon mission build photo #3: Completed coral colony with base.**

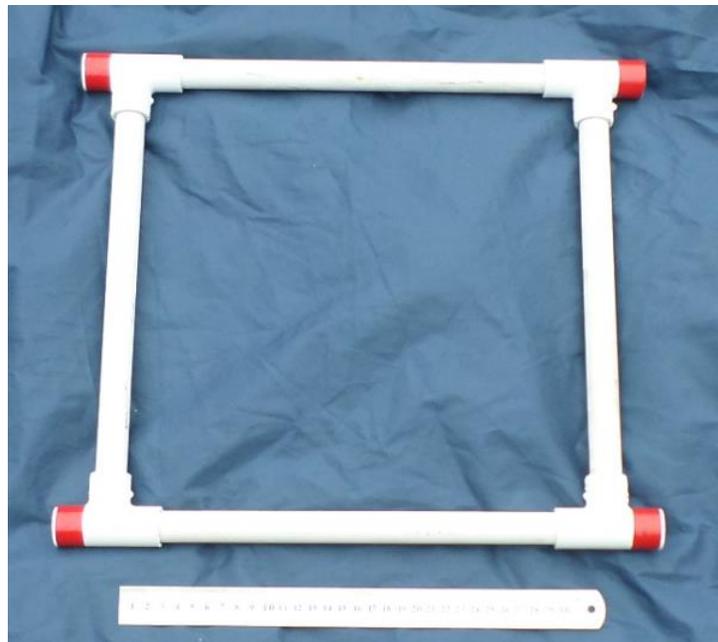
**Design note:** The flotation added to the coral holds the branches up in the water column. The additional PVC pipe in the tee provide ballast to offset the buoyancy of the flotation.

Three corals are needed for the Spanish Galleon mission.

## Designated Area

The designated area where the corals are transferred to is constructed from ½-inch PVC pipe and ½-inch tees. To construct the designated area:

1. Cut four 30 cm lengths of ½-inch PVC pipe. Using four ½-inch PVC tees, create a square with the PVC tees at each corner.



**Galleon mission build photo #4: Designated area.**

**Design Note:** Use colored tape around the edges of the tees to make the designated area more visible from the surface.

## Urchins

The urchins are simulated by O-balls. Two O-balls are included with the kit. Additional or replacement O-balls can be found in the baby or toy departments of big box stores (Walmart, Target) or toy stores (Toys-R-Us). A ½-inch 90° PVC elbow is inserted into each Urchin to weigh and stabilize the urchin. To construct the urchin:

1. Insert a ½-inch PVC 90° elbow through a larger hole in the Urchin.

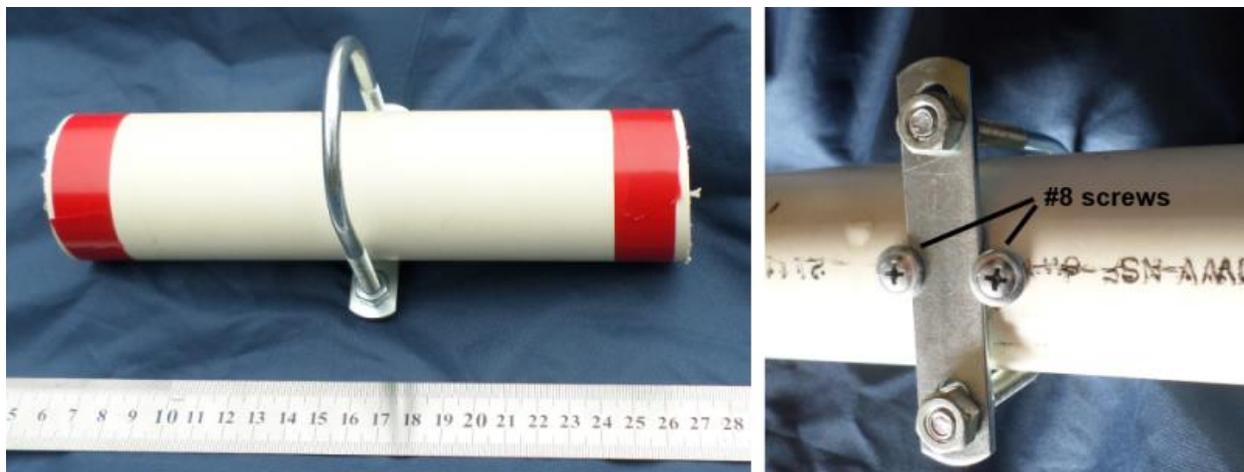


Galleon mission build photo #5: Urchin.

## Cannon

The cannon is constructed from 1 ½-inch PVC pipe with a #310 U-bolt as a lift point. The U-bolt is secured in place with two additional nuts and two #8 x 1-inch self-drilling lath screws. To construct the cannon:

1. Cut a 20 cm length of 1 ½-inch PVC pipe.
2. Attach a #310 U-bolt around the mid-point of the 1 ½-inch pipe. Use ¼-inch x 20 nuts both above and below the metal plate on the #310 U-bolt to secure the metal plate on the U-bolt. Additional nuts are included in the kit.
3. Drill two 3/16-inch holes on either side of the metal plate of the U-bolt and use two #8 x 1-inch screws to secure the metal plate to the PVC pipe.



### Galleon mission build photo #6: Cannon.

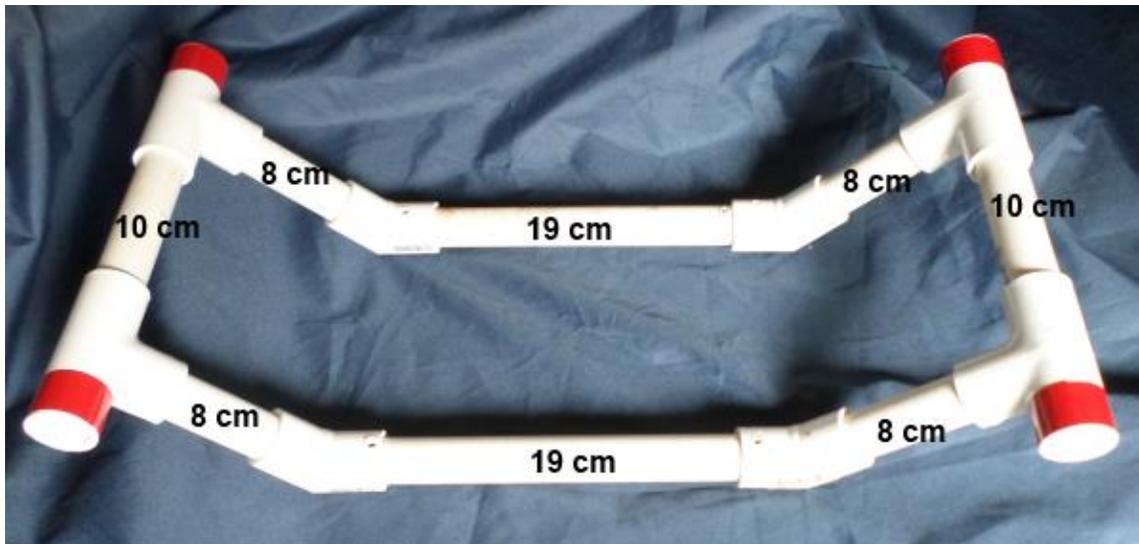
4. Use a black sharpie to neatly write one of the three build dates on the underside of the cannon (not shown).

**Design Note:** Use colored tape around the edges of the pipe to make the cannon more visible from the surface.

### Platter

The platter is constructed from a framework of ½-inch PVC pipe with a 2-gallon white bucket lid screwed to the framework. So construct the platter:

1. Cut two 19 cm lengths of ½-inch PVC pipe. Attach a 45° PVC elbow to each end of the two 19 cm lengths, four 45° elbows in all.
2. Cut four 8 cm lengths of ½-inch PVC pipe. Insert the four 8 cm lengths into the open ends of each of the four 45° elbows.
3. Cut two 10 cm lengths of ½-inch PVC pipe. Attach the side opening of a tee to each end of both pipes, four tees total. Attach the middle openings of the four PVC tees to the ends of the four 8 cm lengths of pipe. This is the framework for the platter.



**Galleon mission build photo #7: Framework for platter.**

4. Drill four 3/16-inch holes through the plate and into the 45° elbows at each corner of the platter. Use four #8 x 1-inch self-drilling screws to secure a 2-gallon bucket lid to the middle of the platter framework.
5. Use a black sharpie to neatly write the name of one of the three home port cities on the underside of the platter (not shown).



**Galleon mission build photo #8: Platter.**

**Design Note:** Use colored tape around the edges of the tees to make the platter more visible from the surface.

### **Aluminum Cans**

The four aluminum cans are created from 1 ¼-inch PVC coupling. Two #8 x 1-inch screws are inserted into the cans to decrease rolling along the pool bottom. To construct an aluminum can:

1. Screw two #8 x 1-inch screws into 1 ¼-inch coupling, approximately 2 cm apart.



**Galleon mission build photo #9: Aluminum can.**

Four aluminum cans should be constructed.

**Design Note:** Use colored tape around the edges of the tees to make the platter more visible from the surface.

## GALLEON MISSION PARTS LIST

Total Parts needed:

240 cm	½-inch PVC pipe	9 x 3 cm, 4 x 30 cm, 2 x 19 cm, 4 x 8 cm, 2 x 10 cm
20 cm	1 ½-inch PVC pipe	
11	½-inch PVC tees	
4	½-inch 45° elbows	
2	½-inch 90° elbows	
4	1 ¼-inch PVC coupling	
2	O-balls	
1	2-gallon bucket lid	
15	#8 x 1-inch self-drilling screws	This included 1 additional screw
1	#310 U-bolt	
4	¼-inch x 20 nuts	This includes 2 additional nuts
24	Chenille (pipe cleaners)	Split between 3 different colors of pipe cleaners
1	Pack of colored electrical tape	

2-gallon bucket lid	Home Depot Model # RG502L/10, Internet #204082810
#8 x 1-inch self-drilling screws	Home Depot Model # 801052, Internet # 204275120, SKU #334627
#310 U-bolt	Home Depot model #806826, internet # 204273753, SKU # 117996
¼-inch x 20 nuts	Home Depot Model #27310, Internet # 203436112, SKU #566839
Pack of colored electrical tape	Home Depot Model #GTPC-550, Internet # 100054213, SKU# 715157

### Corals:

27 cm pipe (9 x 3 cm lengths)

3 tees

24 chenille lengths – split evenly between 3 different colors.

### Designated area:

120 cm pipe (4 x 30 cm lengths)

4 tees

### Urchin:

2 O-balls

2 90° elbows

### Cannon:

20 cm 1 ½-inch pipe

#310 U-bolt

4 additional nuts (1/4-inch x 20) (two come with #310 U-bolt)

2 #8 x 1-inch self-drilling Lath screws.

### Platter:

90 cm pipe (2 x 19 cm, 4 x 8 cm, 2 x 10 cm lengths)

4 tees

4 45 elbows  
1 2-gallon bucket lid  
4 #8 x 1-inch self-drilling Lath screws.

Aluminum Cans:

4 1 ¼-inch coupling  
8 #8 x 1-inch self-drilling Lath screws

**Tools needed:**

Drill with 3/16-inch drill bit and phillips head driver bit (or screwdriver)  
Pliers