



HiRISE

High Resolution Science Imaging Experiment 1/10 Scale Detailed Model



Credit: Ball Aerospace

The Ball-built HiRISE telescope flies onboard the Mars Reconnaissance Orbiter (MRO) spacecraft, which NASA launched in 2005. As MRO orbits Mars, HiRISE images wide swaths of its surface.

HiRISE is the most powerful telescope ever sent to Mars, so it shows us greater detail than ever before. Using visible wavelengths (what our eyes use), it sees features as small as 3 feet (1 meter) across. The amazing HiRISE pictures of craters, gullies, avalanches and more have expanded our understanding of Mars' geography and how these features actively change. The high-resolution images also help us identify landing sites for future robotic and crewed missions.

HiRISE uses near-infrared wavelengths as well, which enables it to detect the Red Planet's minerals. This data helps scientists look for signs of water and life. To read more:
<https://mars.nasa.gov/mro/mission/instruments/hirise/>

Make your own HiRISE model, and display it on the stand or hang it from the ceiling.

GO BEYOND.®

D1352 HiRISE EPO

GENERAL ASSEMBLY INSTRUCTIONS

Read all Instructions carefully before beginning; become familiar with the pieces of the kit and, if you have not done paper modeling before, practice some of the folds, curves and forming techniques on scrap paper before proceeding with actual parts. If you follow the instructions, you should not experience any great problems. Care and accuracy in cutting and folding are the main requirements for good results. Your most valuable instruction is the LINE CODE. Study it, follow it, and if you get into trouble, check your work against the code.

NUMBERING CODE

- Parts are numbered in sequence of assembly.
- Related parts or subassemblies are lettered a, b, c, etc.
- **Black** numbers denote the part.
- **Blue italicized** numbers indicate location of that part on another assembly.
- **Red numbers** are for alignment.

LINE CODE

Part outline (cut lines)	
Score and bend <u>up</u> (toward you)	
Score and bend <u>down</u> (away from you)	
Location of an attaching part	
Optional outline (cut lines)	
Cut Here!	
Cut Here! (Optional)	

TOOLS

- Scissors (for cutting all curved lines)
- An X-Acto knife (use a new blade)
- A scribe or blunt-edged knife, small knitting needle or large smooth sewing needle (for scoring folds)
- A true straight edge, preferably a metal ruler
- Dowel or round pencil (for forming curved parts)
- Rubber or foam pad, (for forming curved parts)
- A cutting board (cardboard is OK)
- Tweezers (for holding and bending small parts)
- Toothpicks (for glue applications)

OTHER USEFUL TOOLS

- Small manicure scissors (cutting smaller parts)
- Pinking shears (May be used to carefully cut triangular glue tabs on many parts, disregarding the 'teeth' as drawn. Make certain the lower point of triangles falls exactly on the score fold line.)

GLUE AND CEMENT

White glue (Elmer's, etc.) works best and is recommended. Contact cement is desirable to prevent warping. Rubber cement is not recommended. It is best to use glue very sparingly; too much results in warping and excessive drying times. Keep glue off all printed surfaces. Applying glue to the glue tabs with a toothpick assists in controlling this procedure. Do not try to glue too much at a time on any part. Glue 4 or 5 tabs at a time, and let them dry before going on. When applying glue to parts made of several paper thicknesses, use a scrap of paper to quickly spread a thin, even coat over the entire back side of the part; then fold together and place under a weight to prevent warping. Be sure to put the parts inside folded wax paper to keep them from sticking to the weight. Remember: check your assembly for alignment; it helps!

PROCEDURE

1. **SCORE** each part before cutting out.
2. **CUT OUT** and assemble in numerical sequence.
3. **FOLD** parts as instructed by line code.
4. **CHECKFIT** each part before gluing, matching small alignment tickmarks as indicated.
5. **ASSEMBLE** and do not use too much glue; wipe off excess.

GENERAL TECHNIQUES AND METHODS

1. Cut out parts only as needed. Construction follows in numerical order. Cut on *CENTER* of black lines.
2. All parts have been designed to close tolerance, but *ALWAYS* checkfit *DRY* parts before gluing. A good procedure is to score, fold, dry checkfit, trim if necessary, then glue.
3. Shape each part thoroughly so that it assumes its final shape by itself *BEFORE* gluing. This will assure easier gluing and better accuracy for the parts. This procedure also allows you to find any places that need trimming before gluing. Some modelers photocopy the entire sheet of parts before building, for reference purposes, since parts are basically laid out much the way they go together. Also, if this is done, one has a pattern from which to rebuild a part should the original become damaged.
4. You may wish to color the cut paper edges, particularly on thicker parts.

PARTS FORMING

SCORING

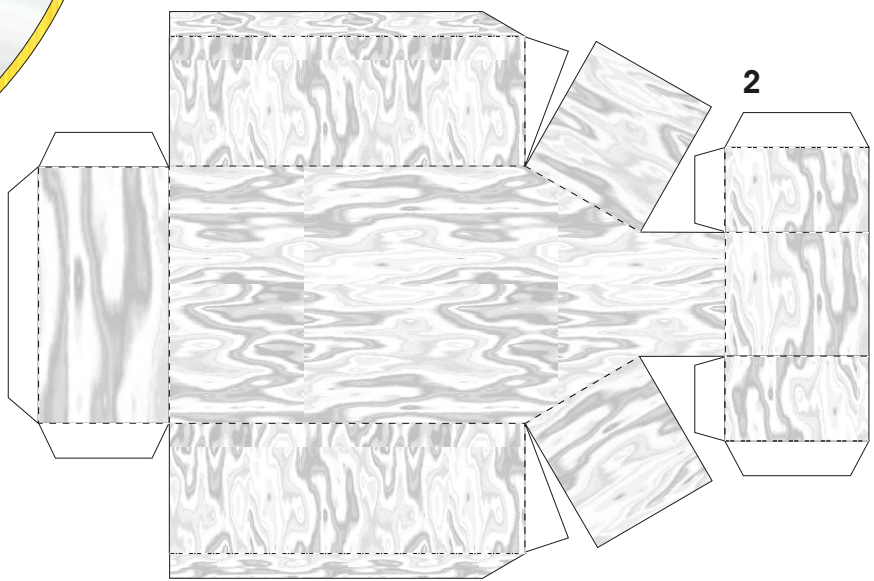
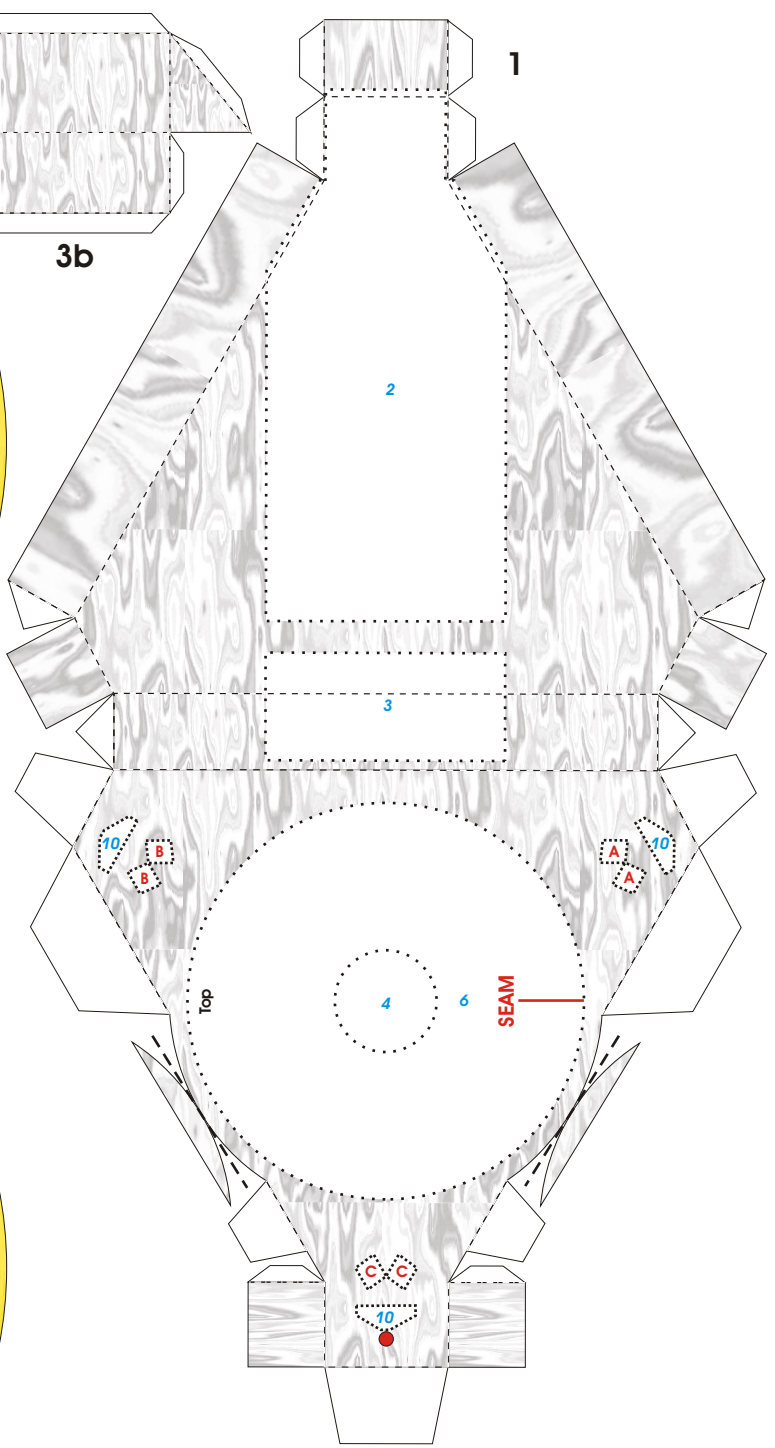
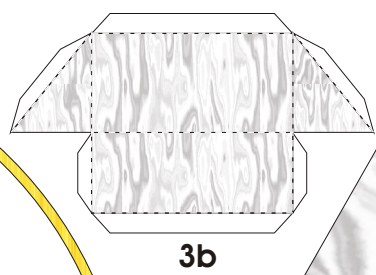
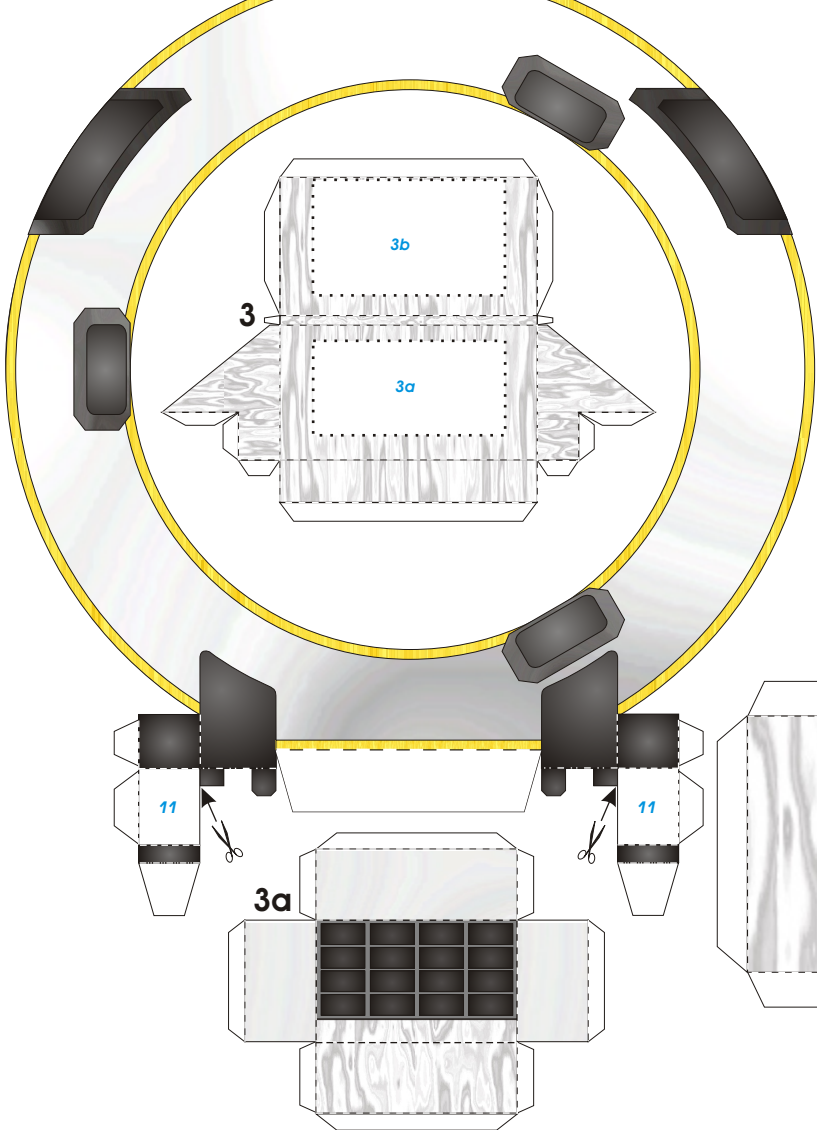
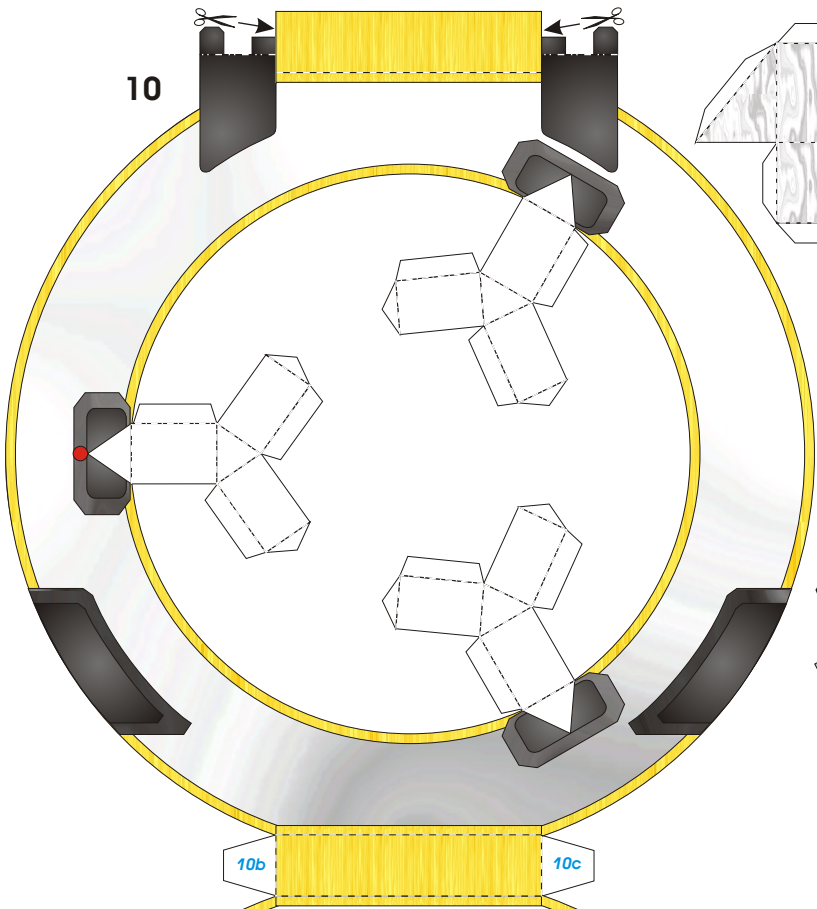
Use a scribe or round-ended tool -- see 'TOOLS' for description. Scoring is done to assist in making perfectly formed bends. The 'scoring' slightly weakens the paper's stiffness where the fold will be. This should always be done before the part is cut out.

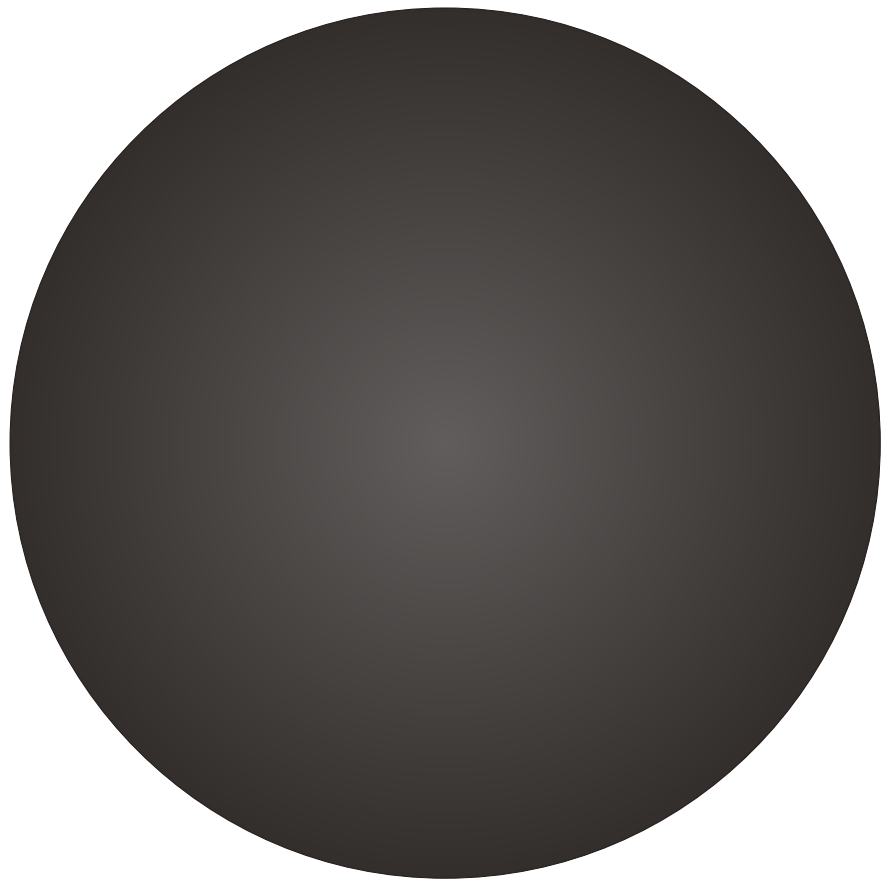
CYLINDERS

Glue tabs or strips should remain attached during forming. To form a cylinder, slide a dowel or round pencil over the part, using a rubber or foam pad underneath. Face part up or down as required. Part will curve up at the ends, becoming cylindrical. Repeat forming process until desired shape is attained; then cut the glue tab or strip. Additional shaping may be necessary.

GLUING

Glue Tabs - Align parts as directed. Always glue only 4 to 6 tabs at a time unless otherwise indicated.





Back side of part 10

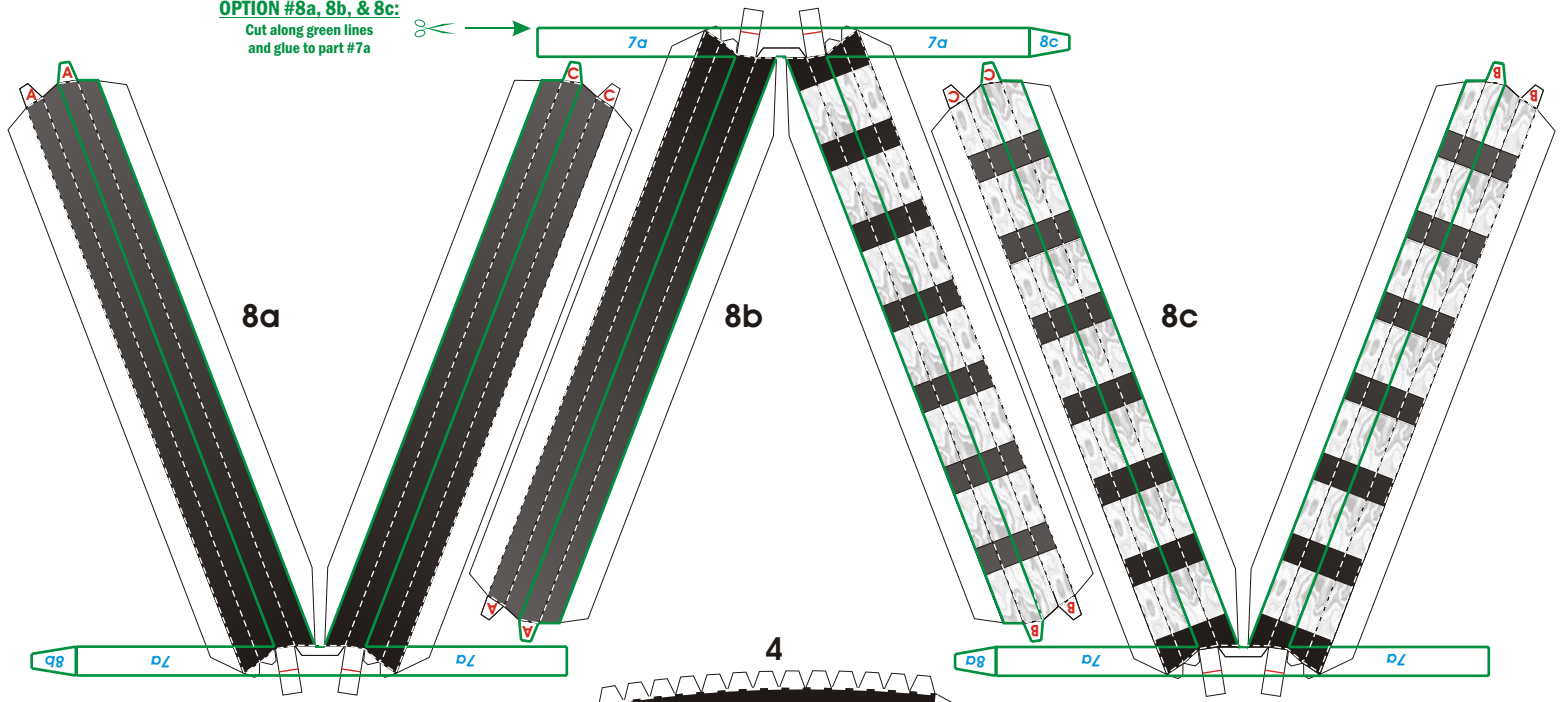
Mars Reconnaissance Orbiter



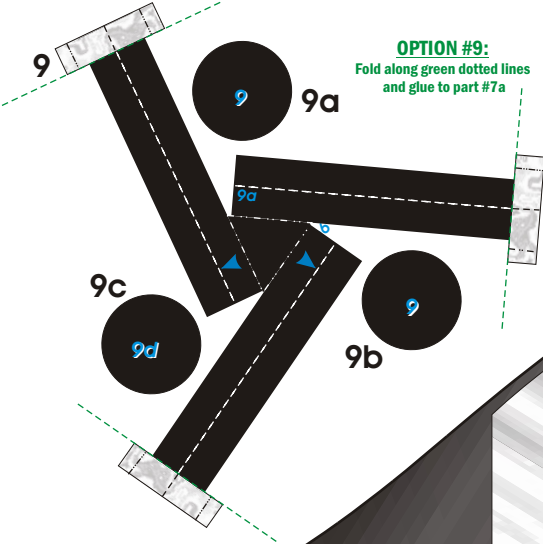
Credit: NASA

OPTION #8a, 8b, & 8c:

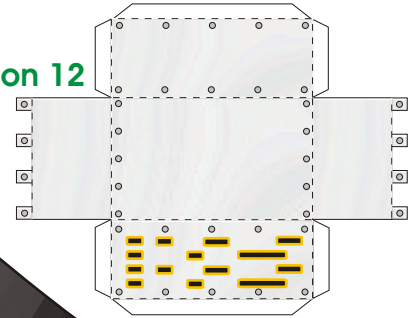
Cut along green lines
and glue to part #7a

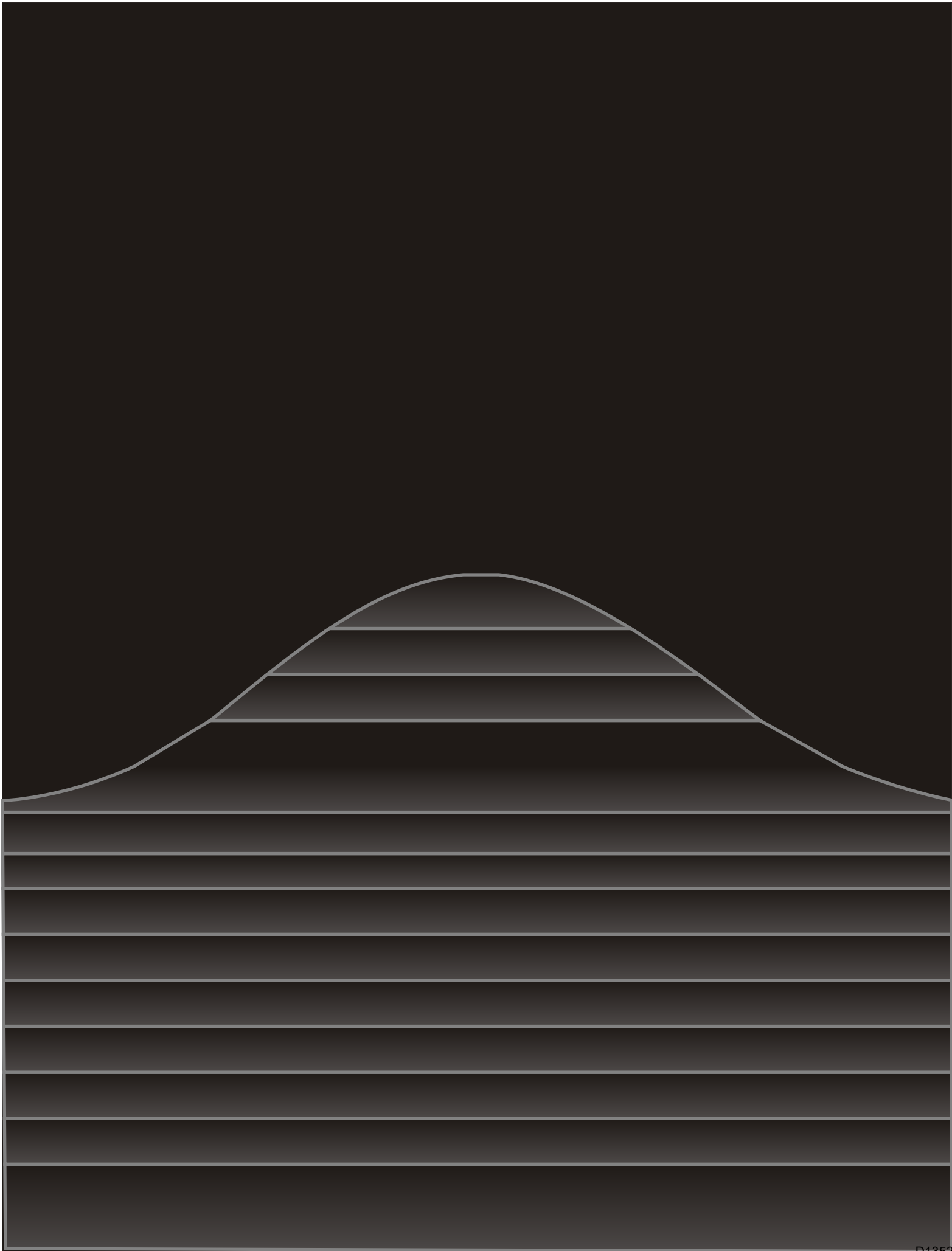


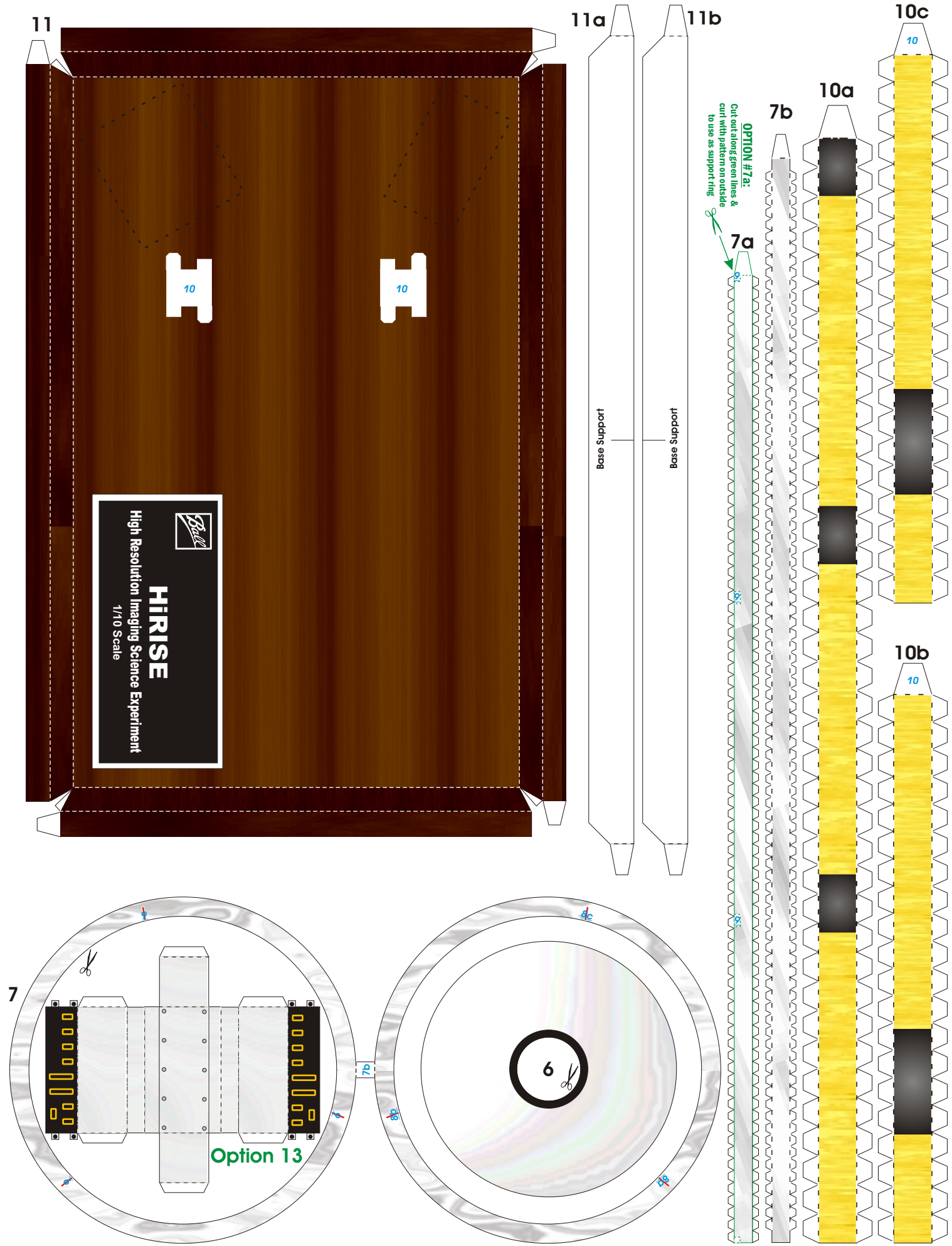
OPTION #9:
Fold along green dotted lines
and glue to part #7a



Option 12








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 1/10 Scale

OPTION #7a:
 Cut out along green lines &
 curl with pattern on outside
 to use as support ring

