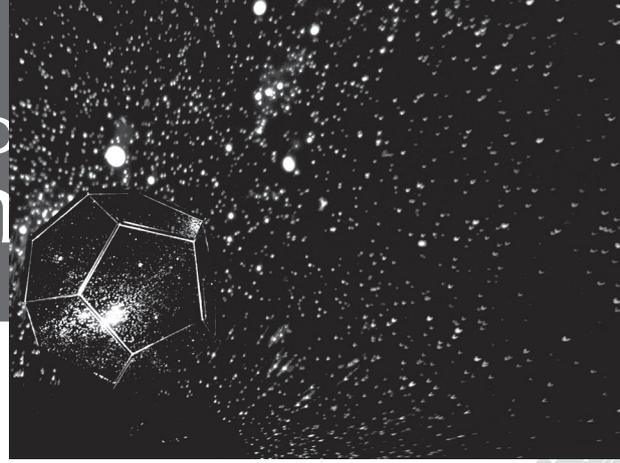


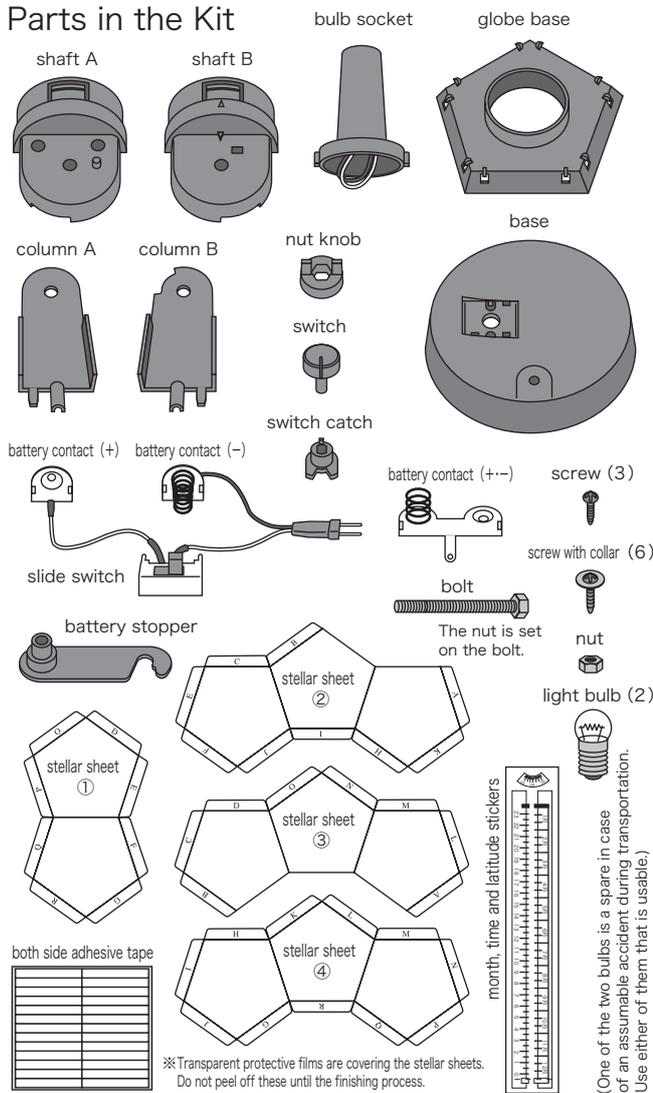
The Ultimate Pinhole Planetarium

Instructions for Assembling and Operating



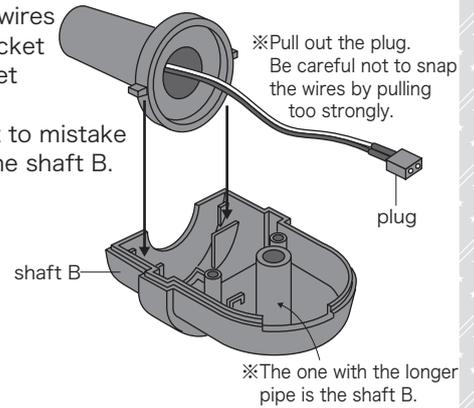
Stellar sheets, both side adhesive tapes and stickers are in the backside of the styrene case.

Parts in the Kit

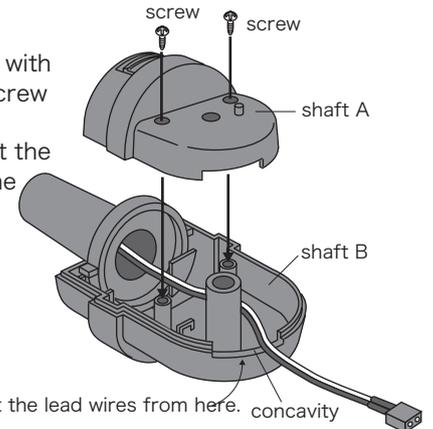


Assembling the Pedestal

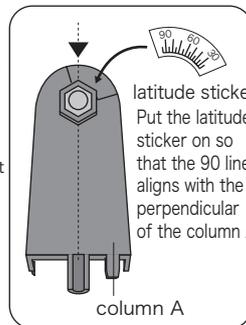
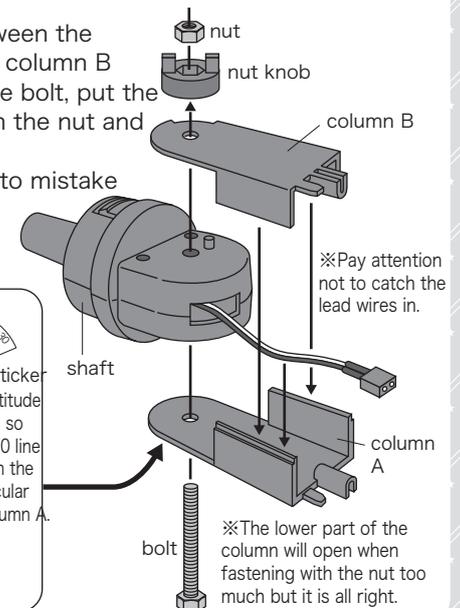
1 Pull out the lead wires from the bulb socket and set the socket in the shaft B. Pay attention not to mistake the shaft A for the shaft B.



2 Cover the shaft B with the shaft A and screw at two points. Be sure to pull out the lead wires from the concavity.



3 Put the shaft between the column A and the column B and then insert the bolt, put the nut knob and then the nut and screw these on. Pay attention not to mistake the column A for the column B.



Things you will need Phillips screwdriver (3mm in diameter) scissors, new size AA battery (2)

CAUTION Please read the following instructions before assembling this kit.

- Use caution when handling some metallic parts that are made thin and sharp. Improper use may cause injury.
- To avoid the risk of suffocation, use caution not to swallow small parts.
- Remove batteries after using the kit and keep away from babies and children.

Two size AA batteries are required. Improper use of the batteries may cause the generation of heat, explosions or leaks. The following precautions should be taken:

- Do not use rechargeable batteries, such as nickel cadmium batteries or oxyride batteries.
- Ensure that the positive and negative terminals on the batteries are facing the right way.
- If liquid leaked from batteries gets in an eye, rinse it well in a lot of water immediately and consult a doctor. When liquid stick to skin or clothes, wash it up with water immediately.
- Remove batteries after an experiment.

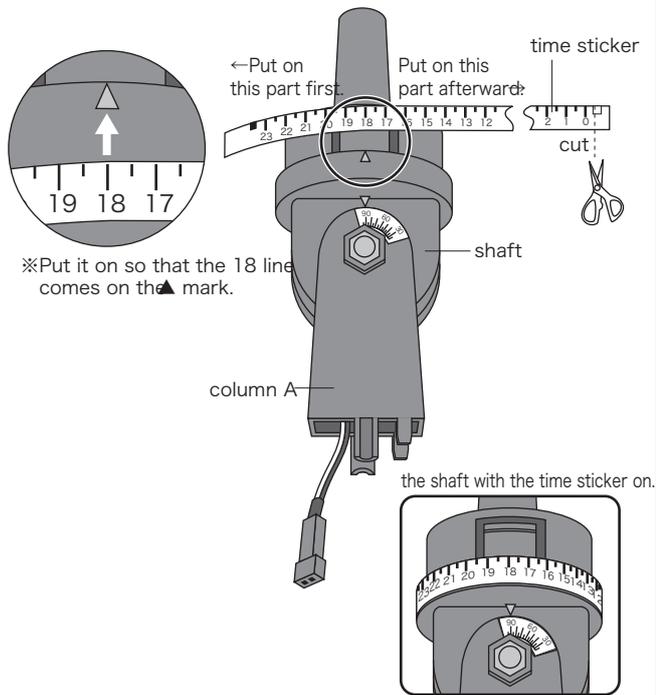
- ★ Please read the assembly instructions and cautions carefully before using the kit.
- ★ Instructions and cautions in this booklet should always be followed for safety. Do not use any materials that have become damaged or deformed while in use.
- ★ Keep this kit away from babies and children.

- The plastic materials used in this kit
body (black) : HIPS stellar sheet (black) : PP ※ Vinyl chloride resin is used for the covers of the lead wires.
- The metallic materials used in this kit
battery contact: nickel plated iron, screw, bolt, and nut: chromium-plated iron

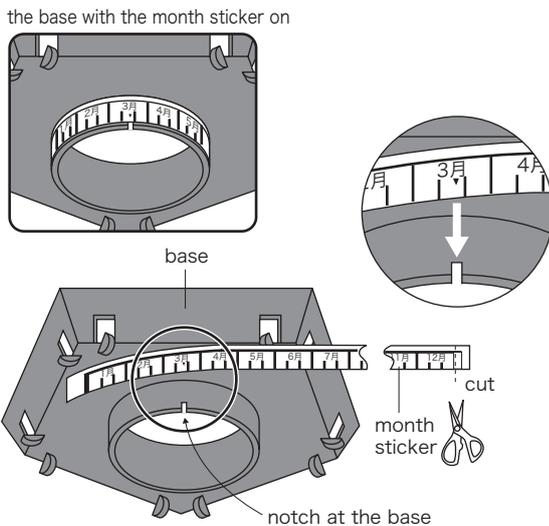
★ When disposing of the kit, please follow the recycling regulations in your area.

Putting on the Month and the Time Sticker

- 4** Put on the time sticker so that the 18 line comes on the ▲ mark. Then put the left part around first and the right part around next, and finally cut it at the dotted line to join.

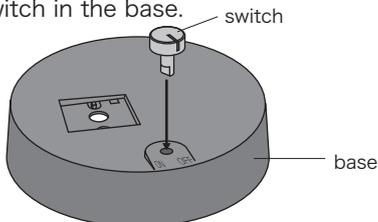


- 5** Put the month sticker on the base. Bring the ▼ mark at the 3 on the month sticker to the notch at the projecting ring of the base. Then, put the left part around first and the right part around next, and finally cut it at the dotted line to join likewise.

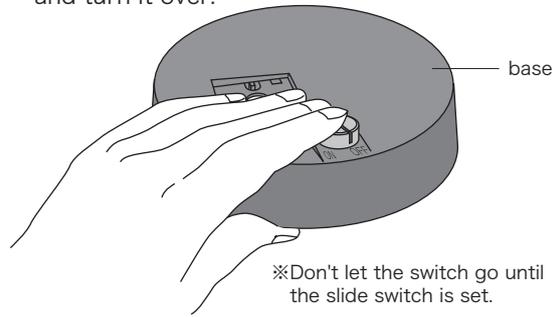


Assembling the Base

- 6** Insert the switch in the base.

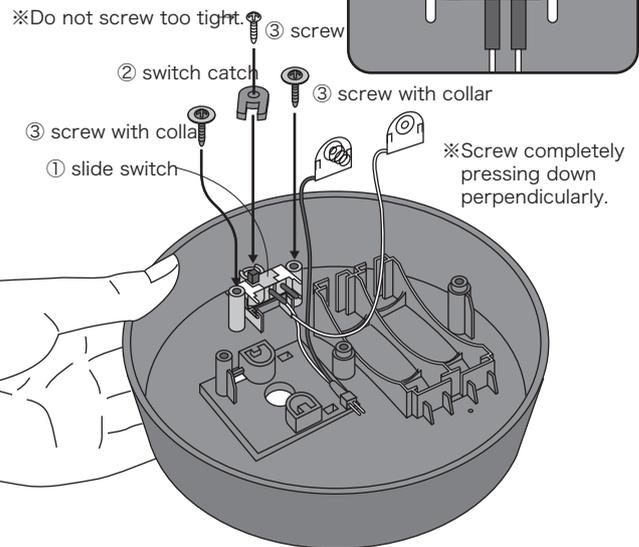


- 7** Set the switch at the off position and hold it with a hand and turn it over.



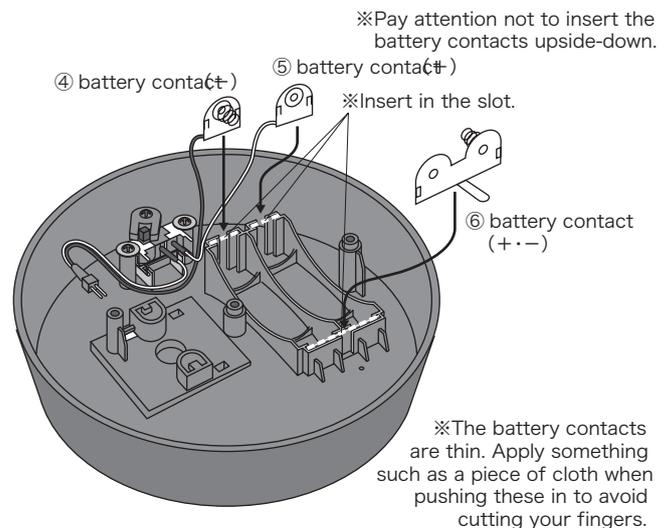
Attach the parts to the base in ①~③ order.

- ① Set the slide switch holding the switch off. Keep the black switch part of the slide switch left-most while setting.
- ② Set the concavity of the switch catch on the black switch part of the slide switch.
- ③ Fasten the switch catch with a screw and then fasten the slide switch with screws with collar.

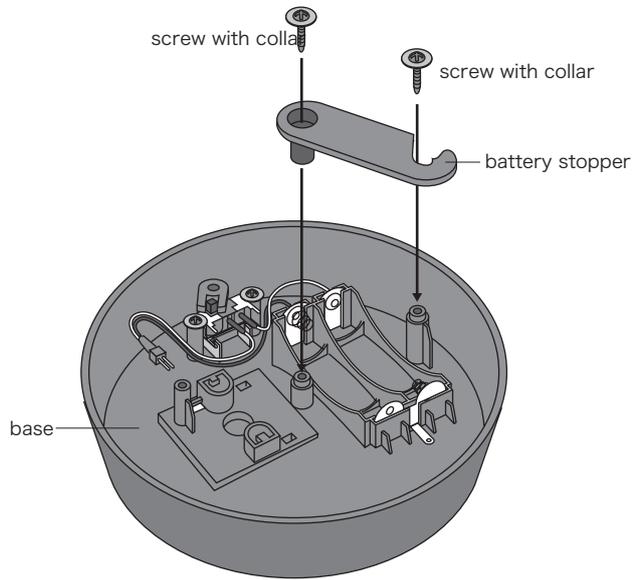


- 8** Attach more parts to the base in ④~⑥ order.

- ④ Insert battery contact (+) into the battery box.
- ⑤ Insert battery contact (-) into the battery box.
- ⑥ Insert battery contact (+, -) into the battery box.

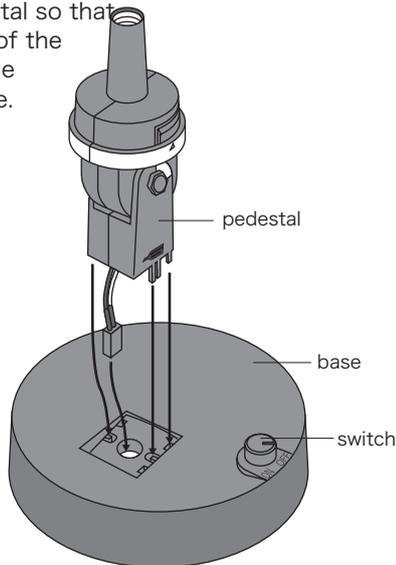


- 9 Attach the battery stopper with screws with collar.

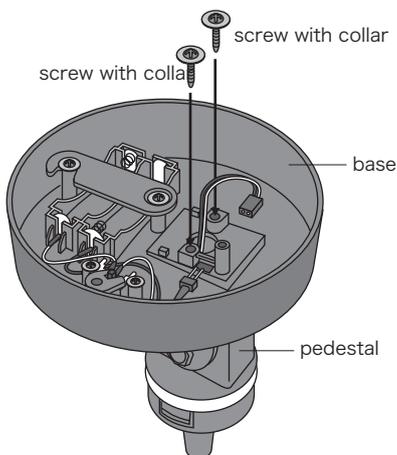


Attaching the Pedestal to the

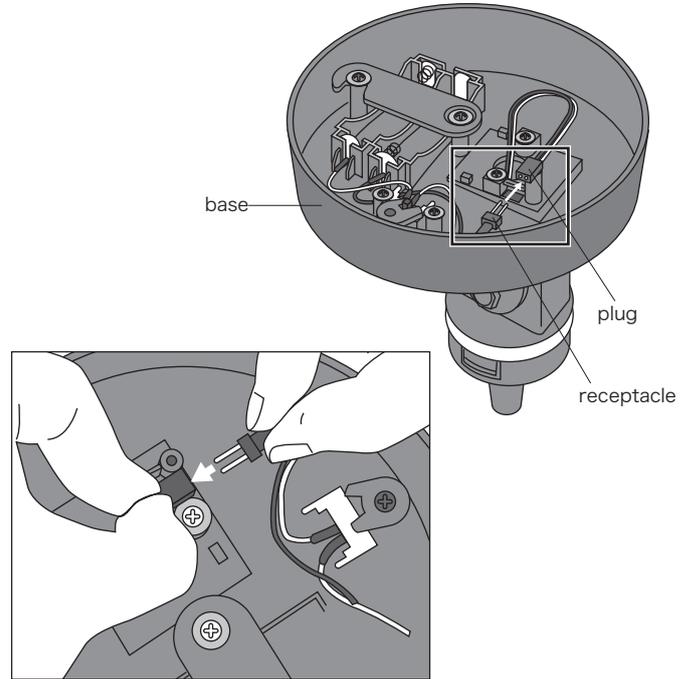
- 10 Set the pedestal assembled 4 on the base. First, put the plug through the round hole in the base and insert the pedestal so that the projections of the pedestal fit in the holes in the base.



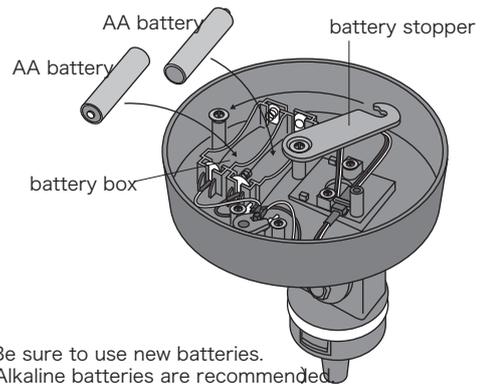
- 11 Turn over the base and fasten the pedestal with screws with collar.



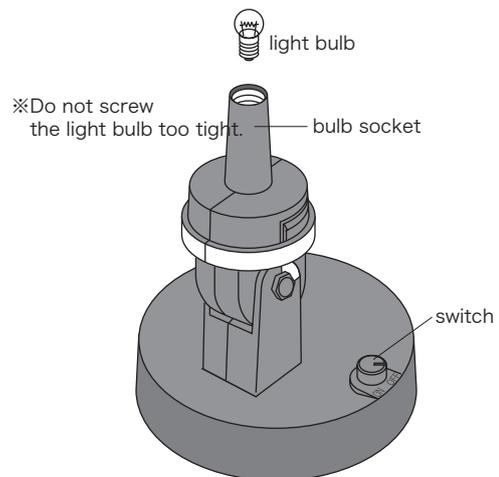
- 12 Connect the plug of the bulb socket to the receptacle of the slide switch. Connect them firmly.



- 13 Put the new AA batteries in so that they matches with the marks of the battery box and fasten with the battery stopper.



- 14 Screw the light bulb in the socket. Make sure the bulb lights up turning the switch on and off.

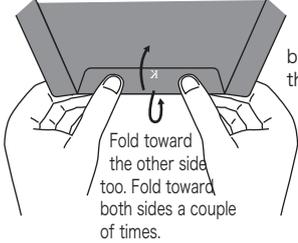


Assembling the Stellar Globe

- 15** Fold the boundary lines around the pentagons of the stellar sheets a couple of times to make creases.

Fold every boundary between the pentagons and the alphabetized parts a couple of times tightly.

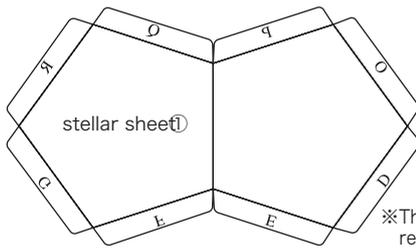
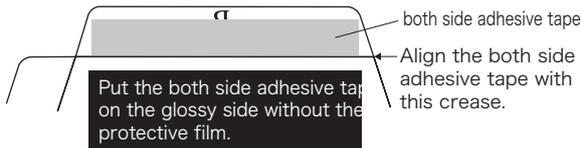
It is easier to fold toward the side without protective film first.



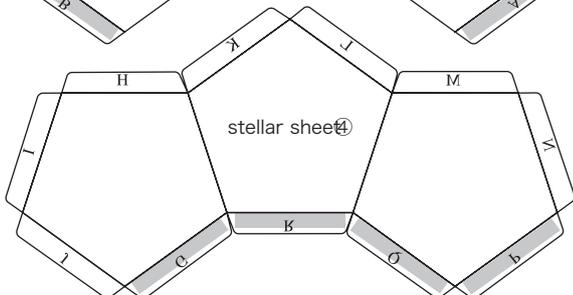
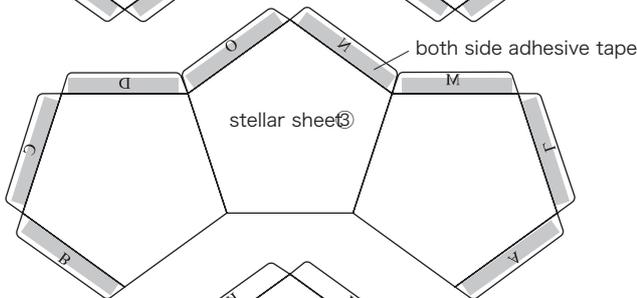
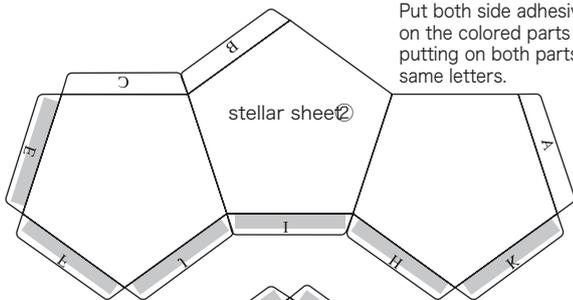
boundary of the pentagons.

※Pay attention to the obverse side and the reverse side of the stellar sheets. obverse side-Covered with protective film. Lusterless. Right sides of letters are up. reverse side-Glossy. Wrong sides of letters are up.

- 16** Put both side adhesive tapes on the reverse (obverse and without protective film) Put the adhesive tapes on either one of each two letters from A to R because the same letters are stuck together.



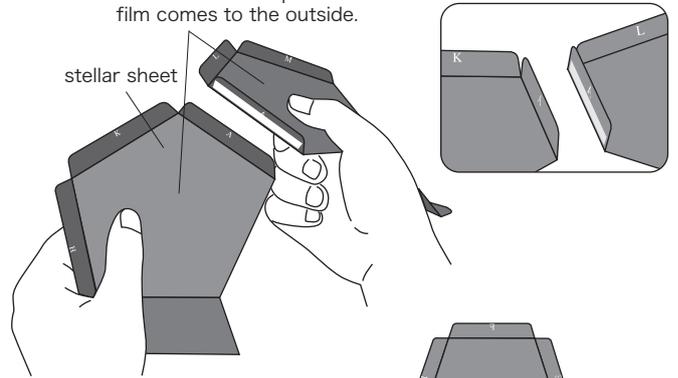
※The figures below show the reverse sides of stellar sheets. Put both side adhesive tapes on the colored parts to avoid putting on both parts of the same letters.



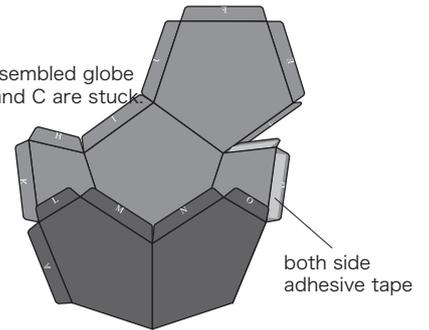
- 17** Adhere stellar sheets together. Put the parts of the same letters together so that the letters can be read from the outside. First, get on in $\rightarrow A \rightarrow B \rightarrow C$ order for easy procedure. Then find the parts that can be easily stuck together. Do as **18** to adhere neatly.

The side with the protective film comes to the outside.

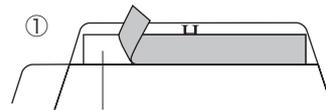
Stand every flap completely before putting the sheets together.



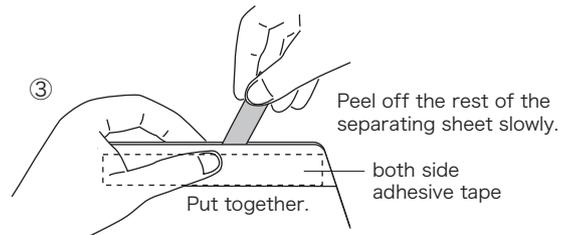
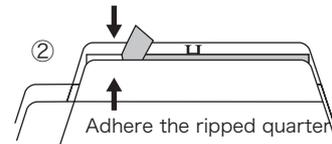
The half-assembled globe after A, B and C are stuck.



- 18** How to put the both side adhesive sheets neatly.

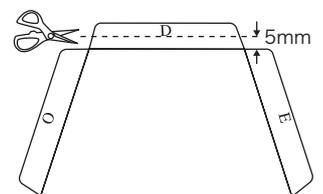
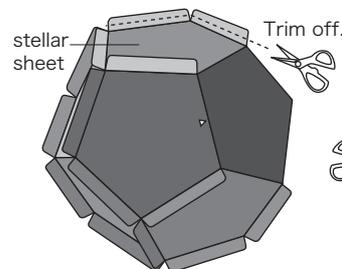


Peel off the quarter of the separating sheet and fold it.



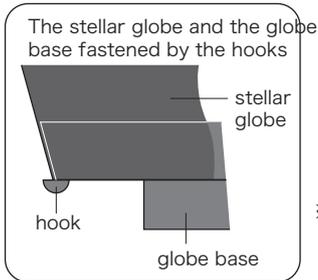
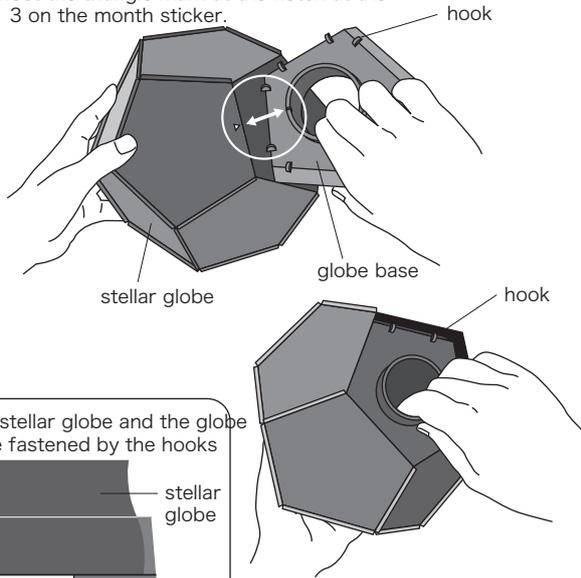
※Press with fingers firmly after peeling off the separating sheet.

- 19** After the globe is assembled, trim the edges in half (about 5mm) with scissors.



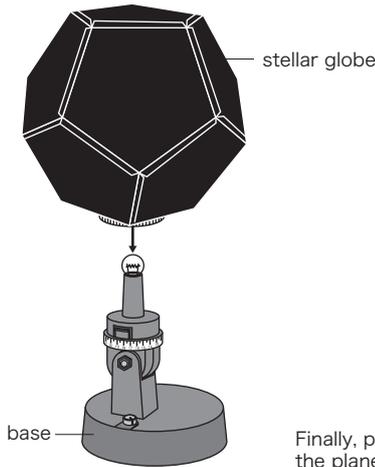
- 20 Set the globe base in the stellar globe. Hold the globe base as shown in the figure below and tilt it to put into the stellar globe. Pull it out to fit the pentagon shape, and the stellar globe and the globe base are fastened by the hooks.

※Set the triangle mark at the notch at the 3 on the month sticker.

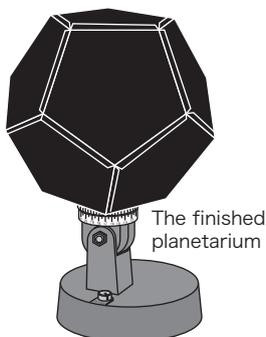
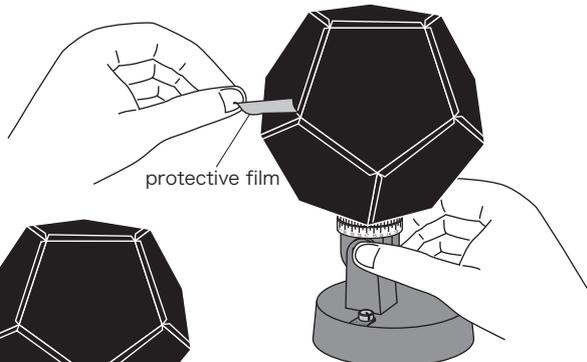


※In case the globe base and stellar globe are unsteady, use the remaining both side adhesive tapes to fasten.

- 21 Set the assembled stellar globe on the pedestal.



Finally, peel off the protective films and the planetarium is complete.

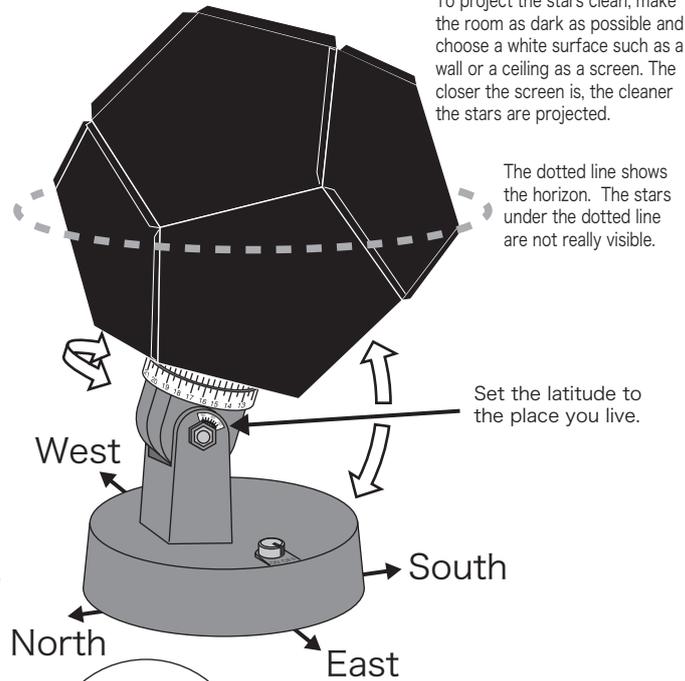


※If it's difficult to peel off the protective film, put Scotch tape on the rim of the stellar globe and peel off the tape and the protective film together.

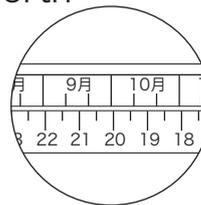
Projecting Stars

- 22 Set the latitude to the place you live. Set the time you want to observe the stars at the date you like. The stars of the time and the date will be projected.

To project the stars clean, make the room as dark as possible and choose a white surface such as a wall or a ceiling as a screen. The closer the screen is, the clearer the stars are projected.



The dotted line shows the horizon. The stars under the dotted line are not really visible.

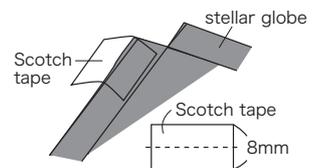


←This figure shows the position of the scales to project the night sky of October 1st at 20 o'clock.

Trouble Shooting

Q: The joints of the stellar globe stuck with both adhesive tapes are coming off. How can I mend these parts?

A: Use Scotch Tape to mend the opening as shown in the right figure. Cut the scotch tape as small as possible to finish fine. If it doesn't work, use stapler to fasten.



Q: The miniature lamp has burned out. Can I buy the replacement?

A: You can use miniature lamp on the market. Use a 0.5A/2.5V spot light bulb.

Q: The stars are not round. How to make it better?

A: The pinhole planetarium projects the shape of the filament as it is and the shape becomes conspicuous as the distance from the screen becomes longer. The stars become round when the screen and the filament is vertical. Adjust the direction to find the best position.

Q: There are linear places without stars. Why?

A: These are shadows of the rims of the stellar globe. Adjust the position of the rims so that the shadows disappear.