

Moving Copernican and Ptolemaic Systems: Assembly Instructions



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PAPER CRAFT

<http://www.canon.com/c-park/en/>

The same instructions apply to the "Copernican System" and "Ptolemaic System." See pages 2, 3, and 4 for "Copernican System" and pages 2, 3, 5 for "Ptolemaic System."



View of completed model

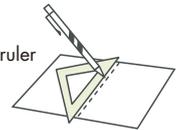
Before starting assembly: Writing the number of each section on its back side before cutting out the sections is highly recommended.
(* This way, you can be sure which section is which even after cutting out the sections.)

- Indicates where sections should be glued together.
- Indicates where to insert sections. Do not glue the sections together.
- Indicates sections that should be glued first, then cut out.

■ Assembly Instructions: Five A4 sheets (No. 1 to No. 5)

* Build the model by carefully reading the Assembly Instructions, in the parts sheet page order.

*Hint: Trace along the folds with a ruler and an exhausted pen (no ink) to get a sharper, easier fold.



Assembly Instructions



Mountain fold (dotted line)
Make a mountain fold.



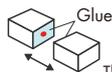
Valley fold (dashed and dotted line)
Make a valley fold.



Scissors line (solid line)
Cut along the line.



Cut in line (solid line)
Cut along the line.



Glue
The glue spot (colored dot) shows where to apply the glue.

● Glue spot (Red dot)
Glue parts with the same number together.

● Glue spot (Green dot)
Glue within the same part.

● Glue spot (Blue dot)
Glue to the rear of the other part.

Tools and materials

Scissors, set square, glue (We recommend stick glue), pencil, used ballpoint pen, toothpicks, tweezers, (useful for handling small parts)

Assembly tip



Before gluing, crease the paper along mountain fold and valley fold lines and make sure rounded sections are nice and stiff.

Caution



Glue, scissors and other tools may be dangerous to young children so be sure to keep them out of the reach of young children.

Rules specific to "Moving Copernican System" and "Moving Ptolemaic System"

- 1 The grey diagonal lines indicate the portion to be cut out. Use a circle cutter to cut circles.
- 2 In the explanatory diagrams, shows the backside of the paper, while shows the margin to which glue is to be applied.
- 3 When applying glue to a wide area, avoid applying too much glue, since doing so will deform the paper. Apply a small amount of glue along the edges of the paper, or use two-sided tape to minimize the deformation.

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A

Assemble the base. Do not attach the sides (10: Copernican System; 11: Ptolemaic System) yet.

B

Roll up carefully and glue.

C

Fit into the hole on the base and glue the six flaps to which glue is to be applied.

D

Glue disc 3 to the base, aligning the circular parts of both, using the minimum amount of glue. The orientation of the disc makes no difference.

Disc on which star signs are described.

E

Roll up 4 carefully and glue. Overlap on 5 and glue together each gear.

F

Place 10, aligning the center holes of the white disc and the base and insert E from the bottom side of the base.

White disc.

Do not glue.

Pull through the six flaps to which glue is to be applied.

Fold back and glue.

Make sure the white disc and gears revolve simultaneously and freely, while the disc on which star signs are described remains fixed.

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G

Insert from the bottom side and glue to the backside of the paper.

H

Insert the gears from both sides of the shaft and glue at the specified position. Glue the backsides of the gears to increase strength.

I

Insert the shaft of the gear into the hole. Do not glue.

J

F

Fit the mechanical part into the base so that the gears mate. Insert the square rod into the center hole of the base. Make sure that the end of the gear shaft emerges from the hole on the left side.

K

Make sure that the mechanical part fits correctly and glue inside the base (at three positions on the bottom). Then glue the right side. The gear shaft will protrude from the center hole.

⑩ Copernican System
⑪ Ptolemaic System (parts of the same shape.)

L

Do not glue the parts to either the left or right side of the base.

Expand the end of the shaft to glue.

M

⑩ Disc on which the Solar System is printed.

Apply a small amount of glue along the circumference and glue carefully so that the white disc does not appear.

Copernican System → P 4.
Ptolemaic System → P 5.

"Copernican System": Assembling the sun and Copernicus to completion

N

O

Roll the face and apply glue. Bend the hair and glue, then attach the nose and neck.

Round the tip of the hair slightly with your fingers.

Insert the neck fully and glue into place.

P

Fold the hair in the middle and glue together, then cut out along the profile line.

Q

Insert fully and glue into place.

R

Attach the face and arms and round the fingertips slightly. Allow the doll to hold the astrolabe and glue to the appropriate position, using the minimum of glue.

The astrolabe was a device used for astronomical observations in Muslim and European countries in the Middle Ages. It was used for various purposes including astronomy, astrology, positioning during sea voyages, and location surveys.

S

Glue the sun on top of the square rod at the center and Copernicus to the Earth in any direction you like (the Earth has no flaps to which glue is to be applied). The assembly is now complete. Display the model together with the name plate.

By turning the handle on the base in the direction of the arrow, you can have the planets of the Solar System, including the Earth, revolve around the sun, which remains stationary at the center. This shows the basic concept of the Copernican System. Note that this paper craft model cannot show all details correctly, such as the shape of the planet's orbit or difference in periods of revolution. To learn more, read the discussion on this website, or visit a library.

Finished!

"Ptolemaic System": Assembling the Earth and Ptolemy to completion

N

O

Roll the face and glue into position. Bend the hair and glue into position. Attach the nose and neck.

Insert the neck fully and glue into position.

P

Q

R

Attach the face and arms, bend the wrists, and allow the hands to hold Jacob's staff, and glue into place at the appropriate position.

Jacob's staff is a tool used to measure a long distance between two objects making use of the trigonometric method. Also called the "cross-staff" due to its shape, but has no direct relationship to Christianity.

S

Glue the Earth on top of the square rod at the center and Ptolemy to the Earth facing the front (the Earth has no flaps to which glue is to be applied). Assembly is complete! Set up the model together with the plate.

Turn the handle on the base in the direction of the arrow to have the sun and the planets revolve around the Earth, which remains stationary at the center.

This illustrates the basic concept of the Ptolemaic system. Note that this paper craft model cannot show all details correctly, such as epicycles, which were proposed to explain the retrograde motion of the planets. To learn more, read the discussion on this website or visit a library.

Finished!