

stars and planets



Miguel Neta

miguelneta@gmail.com | www.miguelneta.pt

This astronomy book is aimed at elementary school students.

Although the construction of the book can function as a standalone project, it is preferable to use it as an addition of the contents taught in the classroom.

Materials needed to prepare the book *Stars and Planets*

The materials needed to produce the book are available at www.miguelneta.pt/estrelaseplanetas. At the same address there is a video that can be useful to get an idea of the final look of the book.

The following documents are available in PDF format:

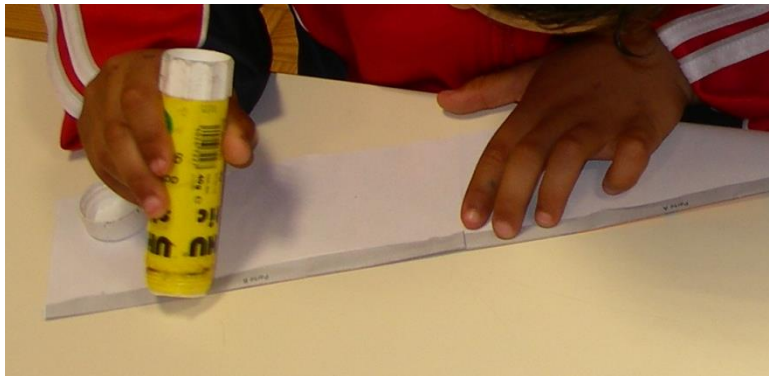
Filename	Printout in	Function
<i>Cover</i>	Paper, A4, color	To cut and paste on the book cover.
<i>Page 1</i>	Paper, A3, color	Backcover base and page 1 of the book.
<i>Page 2 and 3 – Pop-up</i>	Paper, A3, color	To cut and paste in the locations indicated on pages 2 and 3.
<i>Page 2 and 3</i>	Paper, A3, color	Base of pages 2 and 3 of the book.
<i>Page 4 and 5 – Planets images</i>	Paper, A4, color	To cut and paste, in the respective locations on page 4.
<i>Page 4 and 5 – Solar System</i>	3 acetates, A4, color	To cut, drill and unite with page 5.
<i>Page 4 and 5</i>	Paper, A3, color	Base of pages 4 and 5 of the book.
<i>Page 6 and 7 – Windows to cut</i>	Paper, A4, color	To cut and paste the locations indicated on page 7.
<i>Page 6 and 7</i>	Paper, A3, color	Base of pages 6 and 7 of the book.
<i>Page 8</i>	Paper, A3, black and white	and Pages 8 and 9 of the book.

The following materials are also needed:

Material	Function
4 black card stock, A4	They serve to unite the various pages of the book, giving it more rigidity.
1 black cardboard, A3	It will serve, after folded, as the book cover.
Scissors	To cut.
Cutter knife	To cut the black lines in the images of the document <i>Page 6 and 7 – Windows to cut</i> (Moon images).
Paper glue	To glue of pages on cards and scrapbook pages.
Punch	To cut a small hole on page 5 and acetates of the solar system (document <i>Page 4 and 5 – Solar System</i>).
Paper fastener	To join the orbits of the planets on page 5 of the book. The paper fastener should be of corresponding size to the hole made by the punch.

Building *Stars and Planets* book

The construction of the book should be taken into account steps:

Construction of	Procedures
Pages 2 and 3	<ul style="list-style-type: none"> ▪ Fold the A3 sheet in half (document <i>Page 2 and 3</i>); ▪ Cut the pop-up (document <i>Page 2 and 3 - Pop-up</i>); ▪ At the bottom of the pop-up there is a grey band divided into two parts - Part A and Part B. Cut the black line that divides these two parts; ▪ Bend the pop-up grey bands (Part A and Part B) back; ▪ Put glue on these two grey bands;  <ul style="list-style-type: none"> ▪ Glue pop-up along the dashed line in the center of pages 2 and 3, as follows: <ul style="list-style-type: none"> ▪ The grey band 'Part A' of the pop-up in the shaded area of page 2 'Glue here to Part A'; ▪ The grey band 'Part B' of pop-up in the area shading the 3 page 'Glue here part B'; ▪ Close and open pages 2 and 3 with care, to see if the glue allows you to open and close the pop-up; ▪ Glue a black A4 cardboard on the back of page 2; ▪ Glue a black A4 cardboard on the back of page 3.

Construction of

Procedures

Pages 4 and 5

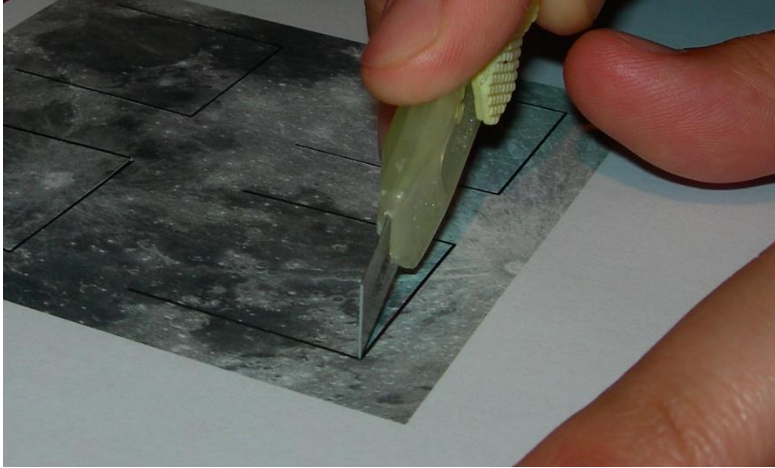

- Fold the A3 sheet in half (document *Page 4 and 5*);
- Drill the marked location in the center of page 5 with a punch or other tool for obtaining a uniform circular hole;
- Cut the images of the planets (document *Page 4 and 5 - Images of the planets*);
- Glue the images in the respective locations on page 4;
- Fold the A3 sheet to also fold the image of Jupiter, which occupies part of page 5;
- Open the A3 sheet confirming, that there is no glue attaching the pages;
- Cut the corresponding acetates of the orbits of each planet (document *Page 4 and 5 - Solar System*);
- Pierce the center of each orbit with a punch or other tool for obtaining a uniform circular hole;



- Join all orbits with the paper fastener being careful about:
 - Placing the planets so that the names remain written in a way that can be read after the placement on page 5 hole with the paper fastener;
 - Put the planets in the paper fastener in the order of proximity to the sun;



- Enter the entire paper fastener and orbits in the page 5 hole and bend the paper fastener on the back of page 5;
 - Confirm that the order of the orbits are correct, taking into account that:
 - The orbit of Mercury is above all other planets;
 - All the names of the planets are properly legible;
 - The different acetates turn easily;
 - If everything is correct, glue a black A4 cardboard on the back of page 5;
 - Glue the back of page 4 in the black cardboard glued to the back of page 3.
-

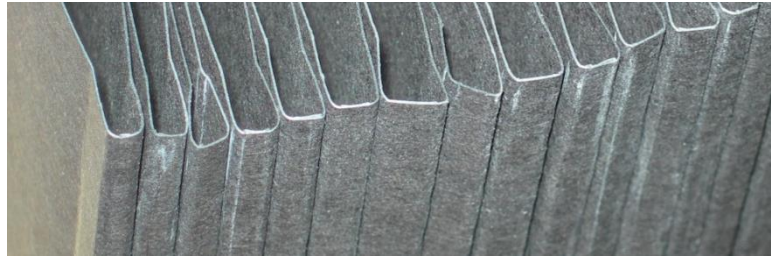
Construction of	Procedures
Pages 6 and 7	<ul style="list-style-type: none"> ▪ Fold the A3 sheet in half (document Page 6 and 7); ▪ Cut the images, one square and one rectangular (document Page 6 and 7 - Windows to cut); ▪ With the cutter knife cut the lines on the images (black lines in rectangular image and the white dotted lines in the rectangular image), a total of 24 cuts, to open the 8 windows;  <ul style="list-style-type: none"> ▪ Glue the images into place being careful not to put glue on the part corresponding to the window that will open and close;  <ul style="list-style-type: none"> ▪ Glue the back of page 6 in black cardboard glued to the back of page 5; ▪ Glue a A4 black cardboard on the back of page 7.
Page 1	<ul style="list-style-type: none"> ▪ Fold the A3 sheet in half (document Page 1); ▪ Glue the back of page 1 on the black cardboard glued to the back of page 2.
Page 8	<ul style="list-style-type: none"> ▪ Fold the A3 sheet in half (document Page 8); ▪ Glue the back of page 8 on black cardboard glued to the back page 7.

Construction of

Procedures

Cover

- Fold the A3 black cardboard in a way that creates a book spine with the same thickness of the book;



- Spread glue on the inside of the cardboard, with the exception of the inner part of the spine;
- With the cardboard open, put the constructed part of the book (page 1 to page 8) on the spine;
- Close the cover so that the book is complete;
- Cut the image to make the cover (document *Cover*);
- Glue the image on the book cover.



After drying the glue a final operation can be made: settle the margins with a guillotine.

Some documents exist in different versions to simplify printing in the case of preparing a large number of copies:

- *Cover - Double;*
- *Page 2 and 3 - Pop-up (triple);*
- *Page 6 and 7 - Windows to cut 1 (pair);*
- *Page 6 and 7 - Windows to cut 2 (triple).*

Information/clarification

For any clarification on the use of these materials you can contact me via email miguelneta@gmail.com

Miguel Neta

April 2016