



*Please write ONLY on this side of the paper*

You have 50 minutes to finish this part.

Please use only the pencil to make the drawings and mark-ups.

After you finish the work fill your student ID on the answer sheet as well on the sky map.

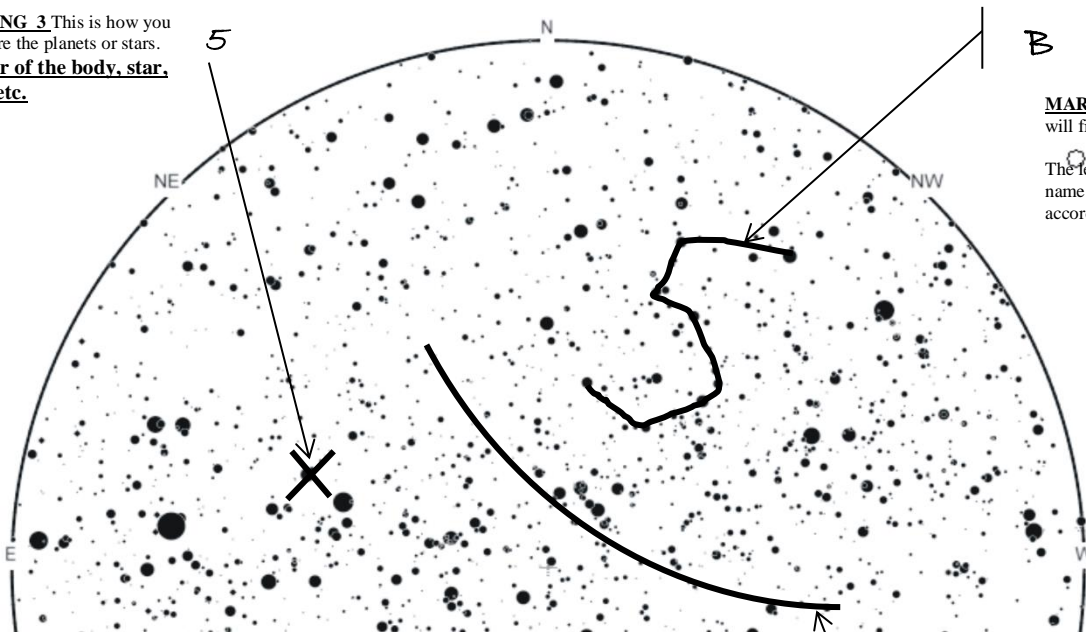
Put the 2 papers in the folder, leave on the table the compass, the ruler and the pencil.

Thank you!

In this part you will use the sky-map found in the envelope. The map represents the sky in Suceava (Latitude  $47^{\circ} 39'$  North, Longitude  $26^{\circ} 15'$  East) at 22:00 local time. The observer who took the sky-map was at very high altitude above Suceava; the Zenith point is in the center of the chart. Please use the pencil for marking and drawing lines on the sky-map. Use the indication 1, 2 and 3 to draw lines and mark objects on the map, as seen in the figure bellow.

HOW TO DRAW AND MARK ON THE SKY-MAP

**MARKING 3** This is how you will figure the planets or stars.  
Number of the body, star, planet etc.



**MARKING 2** This is how you will figure the constellations.  
The letter corresponds to the name of the constellation according to table 1

The equatorial parallel

**MARKING 1** This is how you will draw the curves/lines and indicate what it represents



*Please write ONLY on this side of the paper*

### Question

The map represents the sky in somewhere in Romania. The Zenith point is in the centre of the chart.

1. Find out the latitude of place where map have been done, draw the circumpolarity circle.
2. Draw on the map with continuous lines the celestial equator, the ecliptic, the galactic equator and the local meridian.
3. Mark on the map the cardinal points and show as 3 planets from the Solar System.
4. Identify and mark on the map the 5 brightest stars (magnitude less  $+1,00^m$ ). Number the star starting from **1** – the brightest, and continue with the fainter ones till number **5** for the faintest. Fill in the following table the Bayer name of the five identified stars

|                          |   |                  |  |
|--------------------------|---|------------------|--|
| Marking<br>on the<br>map | 1 | Name of the star |  |
|                          | 2 | Name of the star |  |
|                          | 3 | Name of the star |  |
|                          | 4 | Name of the star |  |
|                          | 5 | Name of the star |  |

5. Figure on the map 10 constellations you can identify. Each constellation you found, it will be identified on the map after the letter corresponding to its name in table 1.
6. Mark on the map the positions of the following objects:
  - a. The following Messier objects: M31, M27, M15;
  - b.  $\beta$  Cetus,  $\delta$  Ursa Minoris

7.

Estimate the sidereal time of the map; write the value in the box

|  |
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8.

Estimate the equatorial coordinates of the star Altair ( $\alpha$ Aquilae). Write your answer in the box

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