



Name: _____ Country: _____

Observational Exam – 1st attempt

1 – Estimate the field of view of this telescope, using 10mm Plössl eyepiece and *star chart-1*, showing nearby region of open cluster NGC 6231. Star chart 1 shows two angular distances. Use them as reference. Express your answer in arc minutes and tenths of it.

2 – Use *star chart-2* to estimate the magnitude of the missing star, shown as a cross, inside NGC 6231. Use the magnitude of other stars as reference.

Note: To avoid confusion between decimal dots and real stars, dots were suppressed. So, magnitude 60 corresponds to magnitude 6.0. Give your answer using one decimal figure and 0.1 precision.

3 – Point your telescope to the binary star ϵ - **Trianguli Australis** using *star chart-3* as a guide. That pair components are magnitude 4.1 and 9.3 separated by 82". Choose the best option for the correct color of each star:

Brighter: White/blue () Yellow () Red ()

Dimmer: White/blue () Yellow () Red ()

4 – Identify objects pointed by the evaluator as Open Cluster (**OC**), Globular Cluster (**GC**), Emission Nebulae (**EN**) or Planetary Nebulae (**PN**).

Object 1 () Object 3 ()

Object 2 (): Object 4 ()

5 – Use your green laser pointer to spot the stars Antares, Vega, Altair and Peacock. Also point to the constellation Corona Australis.

Material needed for each student:

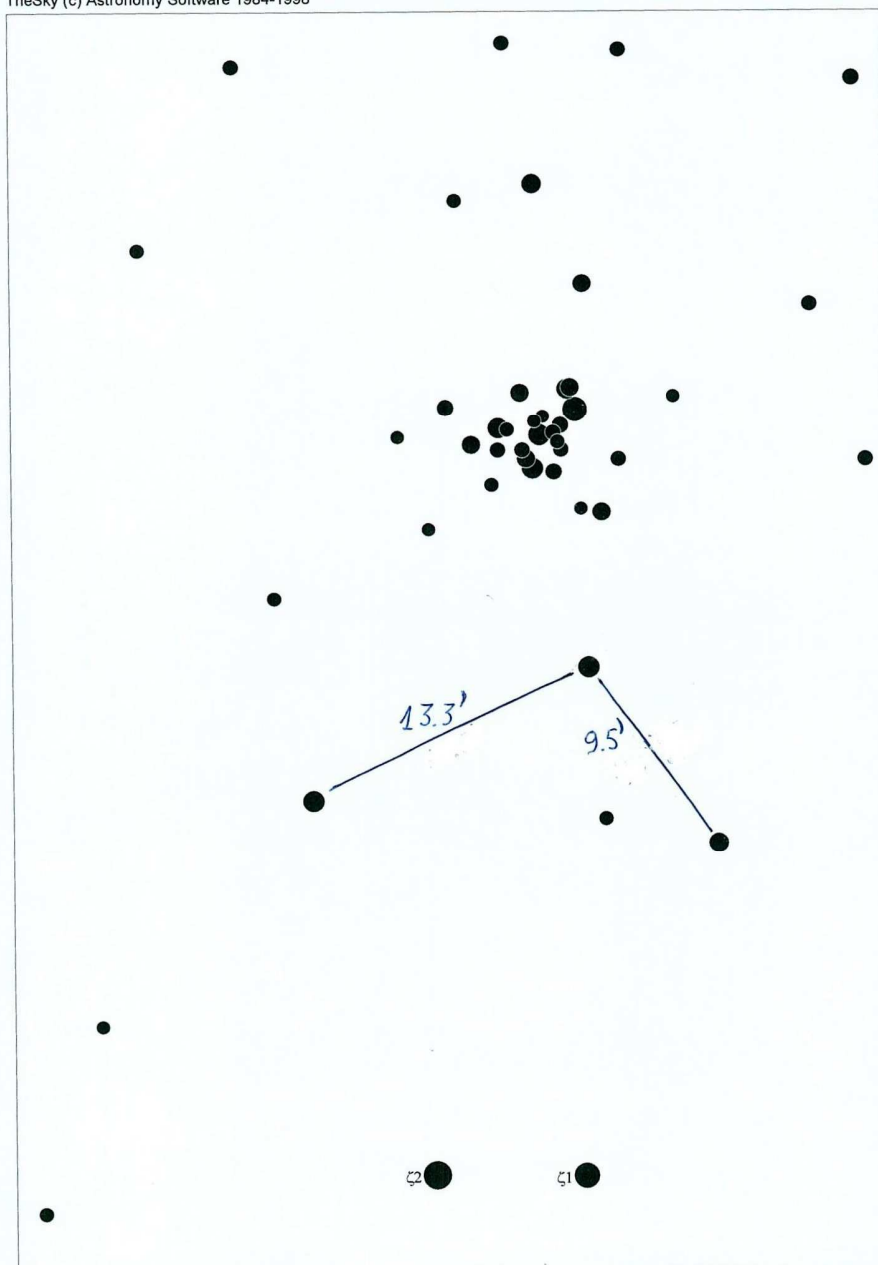
Red flashlight, green laser pointer, chair, table, pencil, rubber and clipboard.

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Chart 1 – NGC 6231 Field of view

TheSky (c) Astronomy Software 1984-1998





6th International Olympiad on Astronomy and
Astrophysics

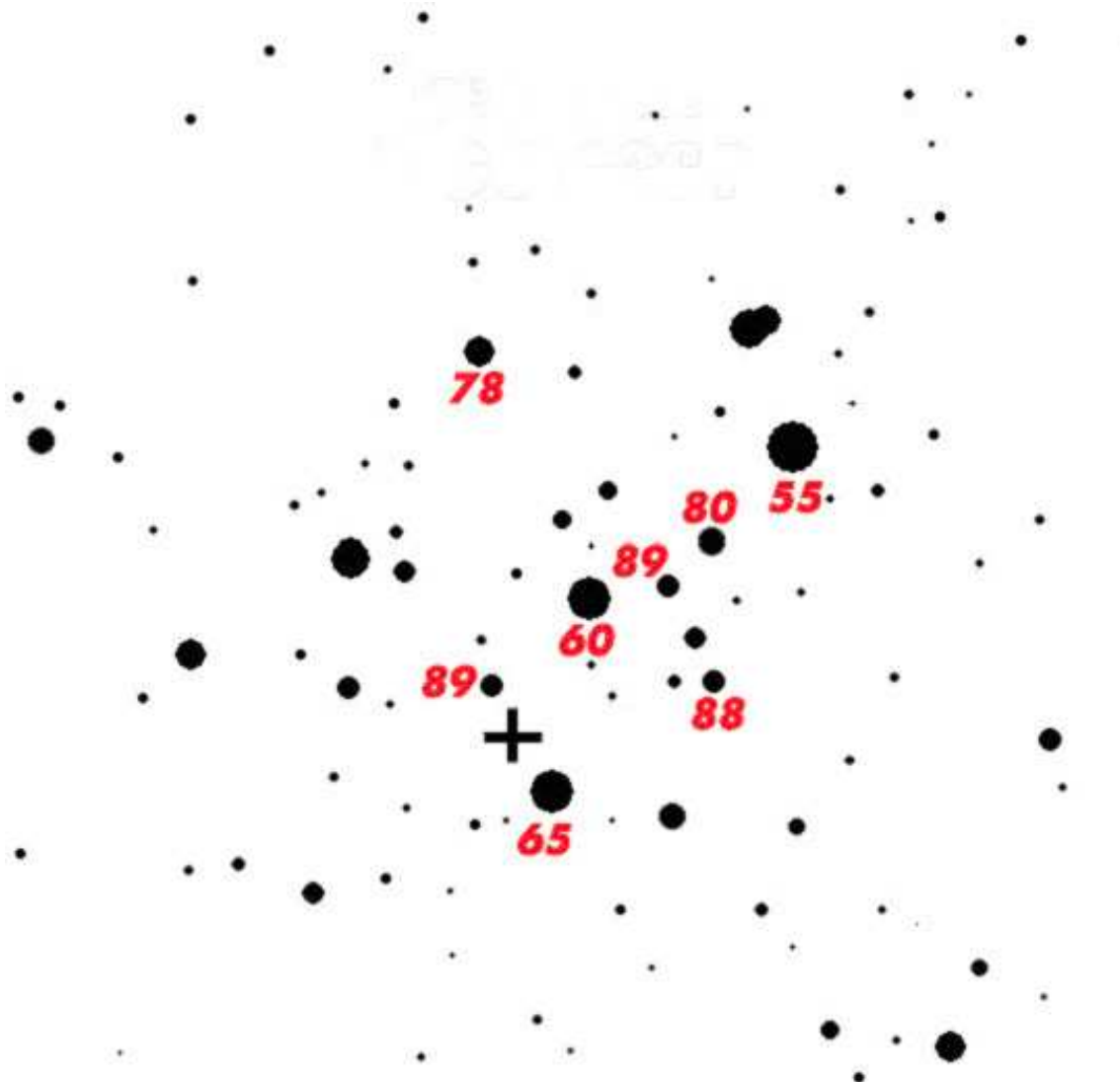
04 to 14 August, 2012 - Rio de Janeiro - Brazil



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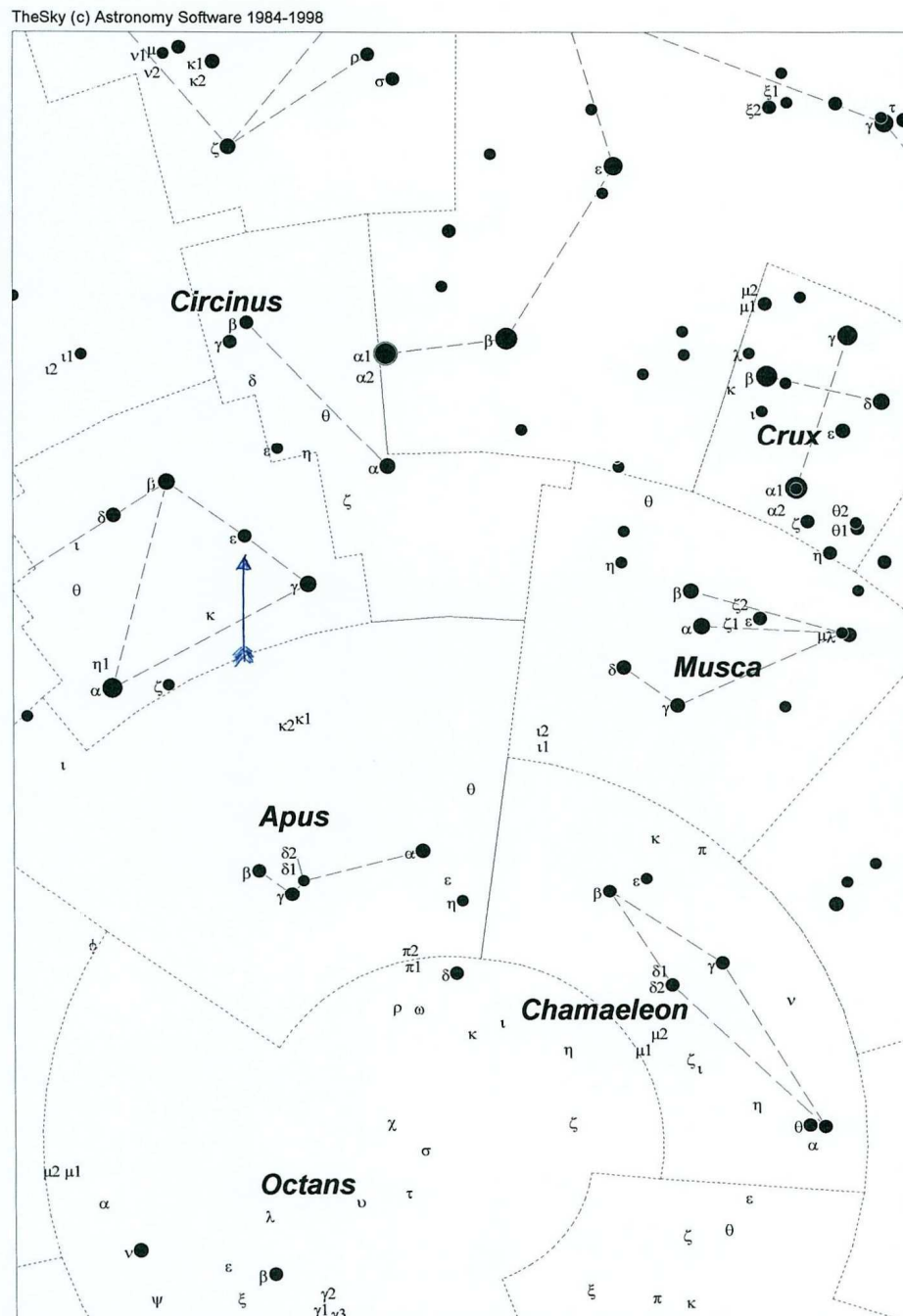
Chart 2 – NGC 6231



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Chart 3 - ☐ Trianguli Australis location





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Observational Exam – 2nd attempt

1 – Use your green laser pointer to aim at 3 zodiacal constellations of your choice.

2 – Point to β and ν scorpis (**star chart-4**), two binary stars. Use 2x Barlow + 10mm eyepiece to determine the main difference on both stars, besides differences in distance between the components and magnitude.

3 – Point your telescope to the star SAO 209318 (**star chart-5**). Pay attention to a small nebulous patch close to that star. Use your 10mm or 10mm + 2x Barlow to estimate the distance between the star and the nebulous patch, in arc minutes. (coordinates to SAO 209318 are RA: 17h50m51s and Dec: $-37^{\circ}02'$). Express your answer using 0.5' precision, knowing that field of view of the 10mm eyepiece on this telescope is 24 arcminutes or 0.4° .

4 – Point your telescope to the binary star Albireo (β -Cygni) using **star chart-6** as guide. That pair components are magnitude 3.2 and 4.7 separated by $34.8''$ (2010). Choose the best option for the correct color of each star:

Brighter: White () blue () Yellow () Red ()

Dimmer: White () blue () Yellow () Red ()

5 – Identify objects pointed by the evaluator as Open Cluster (**OC**), Globular Cluster (**GC**), Emission Nebulae (**EN**) or Planetary Nebulae (**PN**).

Object 1 () Object 3 ()

Object 2 (): Object 4 ()

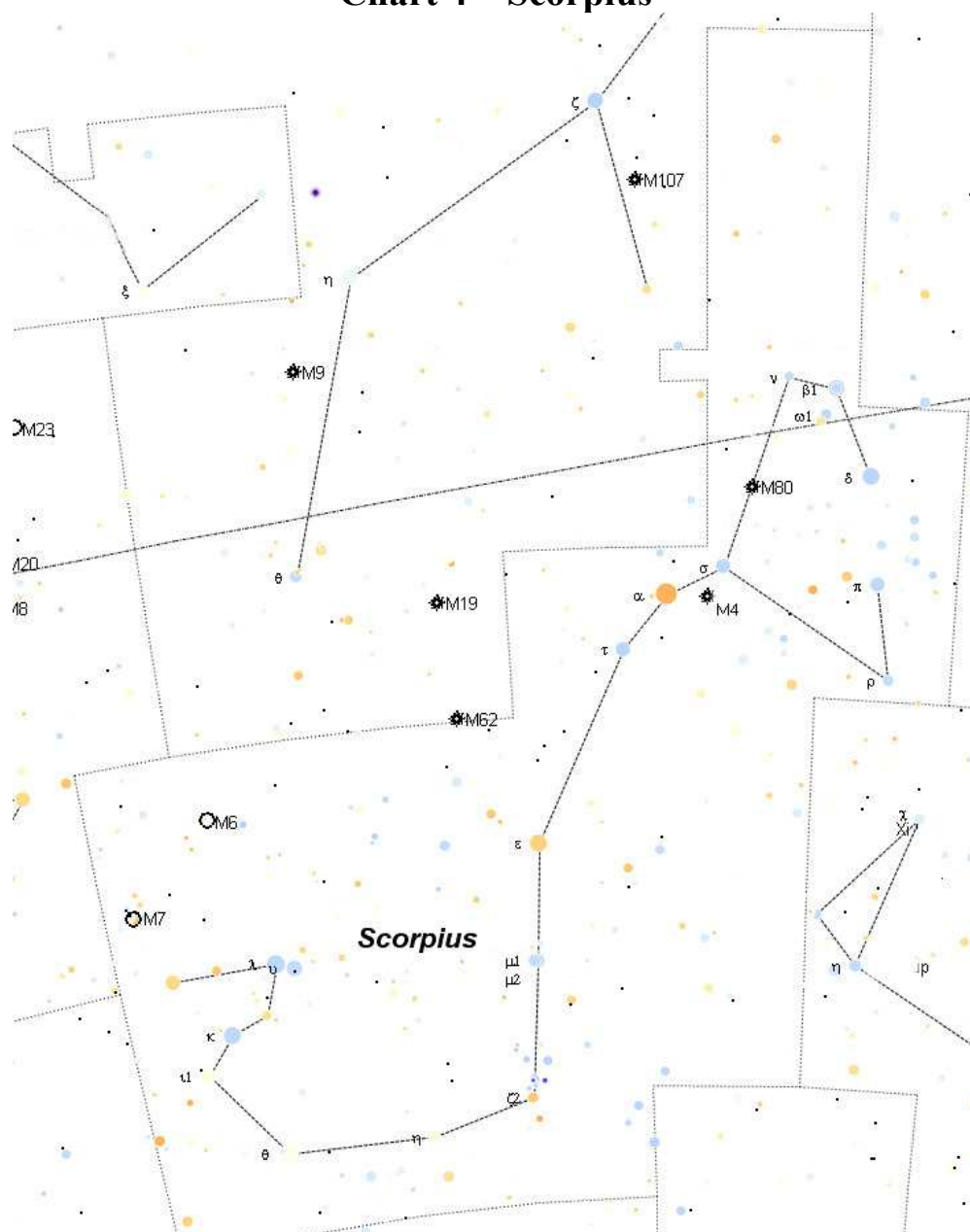
Material needed for each student:

Red flashlight, green laser pointer, chair, table, pencil, rubber and clipboard.

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Observational Exam – 2nd attempt

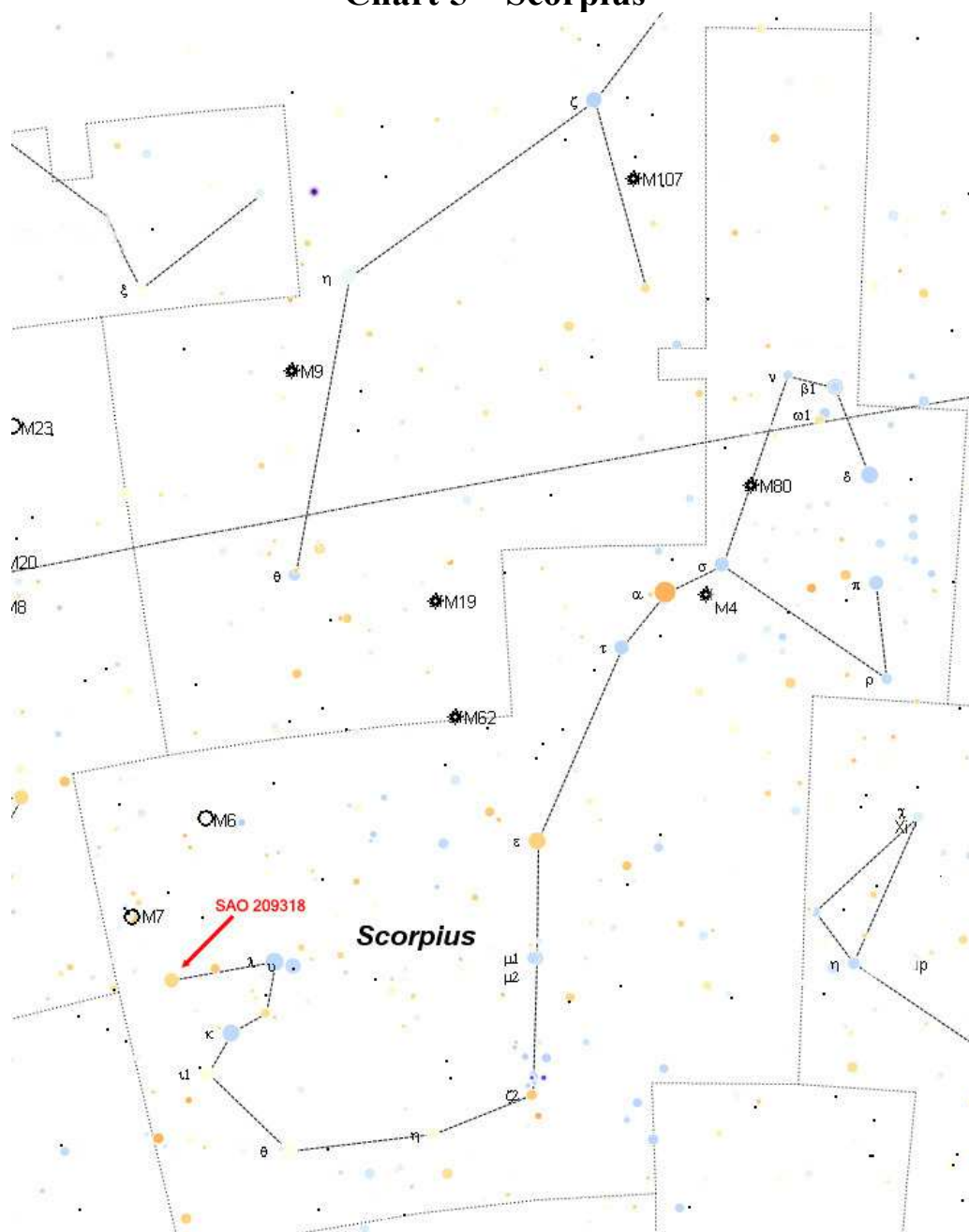
Chart 4 – Scorpius



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Chart 5 – Scorpius



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Observational Exam – 2nd attempt

Chart 6 – Cygnus

