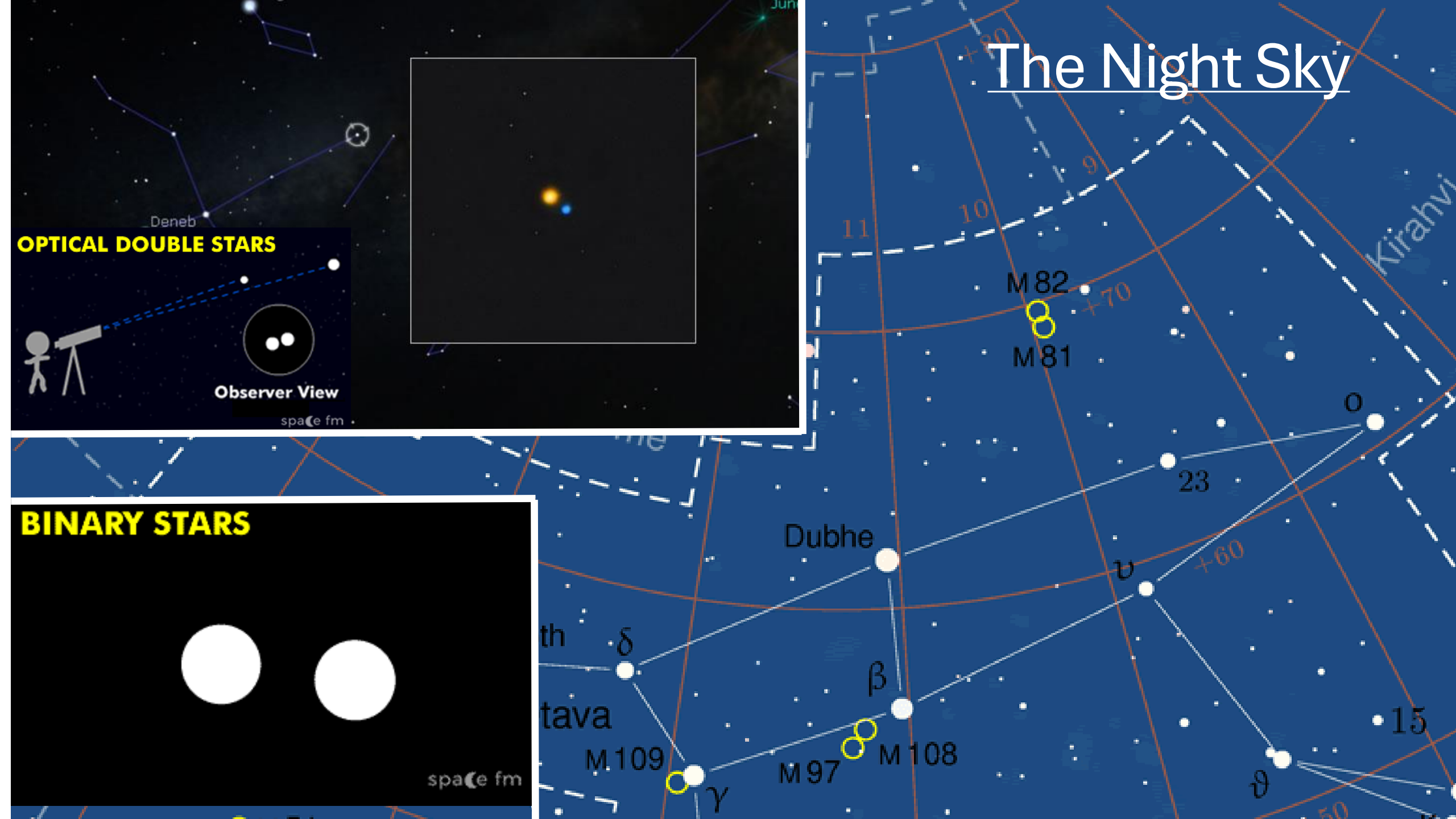
Topic 6: Celestial Observations Part One

The Night Sky



Celestial Objects

Key Constellations

Key Asterisms

Square Of Pegasus

Summer Triangle

Southern Cross

Plough

Cygnus

Example Question 1.

Answer the questions with a cross in the boxes you think are correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Figure 1 shows a group of seven bright stars in the night sky.

Figure 1

(i) Label the position of the Pole Star in Figure 1. Use the label **P**.

(1)

(ii) Label the position of the star Arcturus in Figure 1. Use the label **A**.

(1)

(iii) The stars in Figure 1 form the asterism called the:

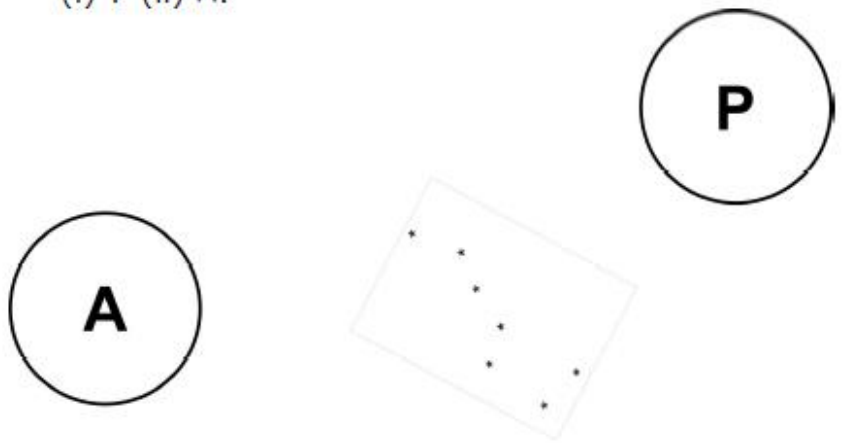
(1)

- ☒ **A** Plough
- ☒ **B** Seven Sisters
- ☒ **C** Southern Cross
- ☒ **D** Summer Triangle

(iv) The stars in Figure 1 are part of the constellation called:

(1)

- ☒ **A** Cassiopeia
- ☒ **B** Orion
- ☒ **C** Pegasus
- ☒ **D** Ursa Major

Question number	Answer
	(i) P (ii) A:  (ii) **A** Plough (iv) **D** Ursa Major

Example Question

Example Question

Example Question 2.

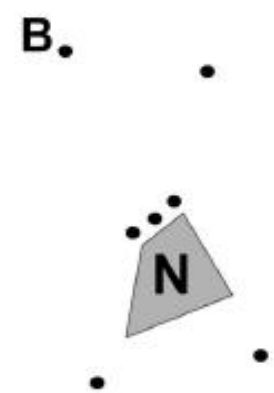
(i) Draw a sketch of the seven brightest stars in the constellation of Orion.

(2)

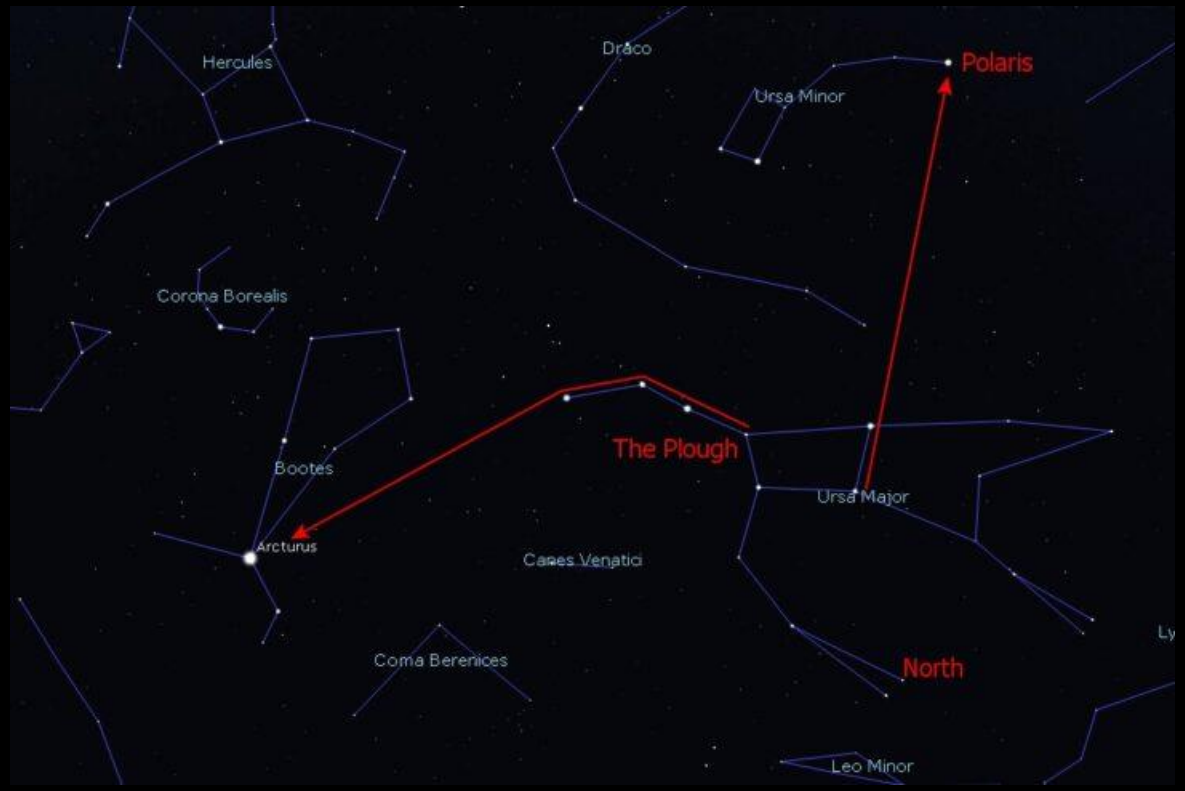
(ii) Label the position of the bright star Betelgeuse on your sketch.
Use the label **B**.

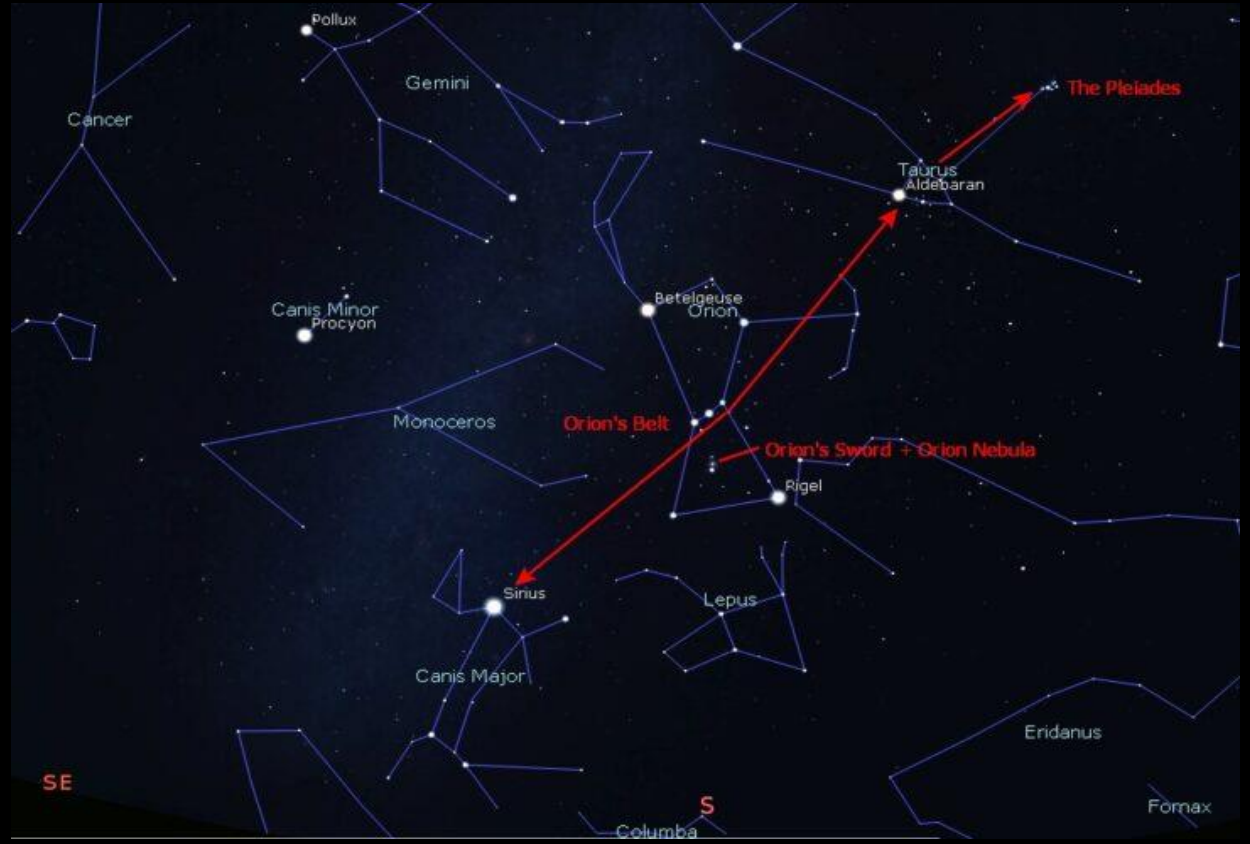
(1)

(iii) Label the position of the Orion Nebula on your sketch.
Use the label **N**.

Question number	Answer	Mark
	(i) Stars arranged with correct topology Proportions of pattern (approximately) correct  (ii) Position of Betelgeuse correctly labelled (**B**) (iii) Position of Orion Nebula correctly labelled (**N**)	**(1)** **(1)** **(1)** **(1)**

Pointers


Hercules
Draco
Polaris
Ursa Minor
Corona Borealis
The Plough
Bootes
Ursa Major
Arcturus
Canes Venatici
Coma Berenices
North
Leo Minor


Pollux
Gemini
Cancer
The Pleiades
Taurus
Aldebaran
Canis Minor
Procyon
Betelgeuse
Orion
Monoceros
Orion's Belt
Orion's Sword + Orion Nebula
Rigel
Sirius
Lepus
Canis Major
Eridanus
SE
S
Columba
Fornax


Pegasus
Andromeda

Example Question

Figure 2 shows part of the constellation of Pegasus.

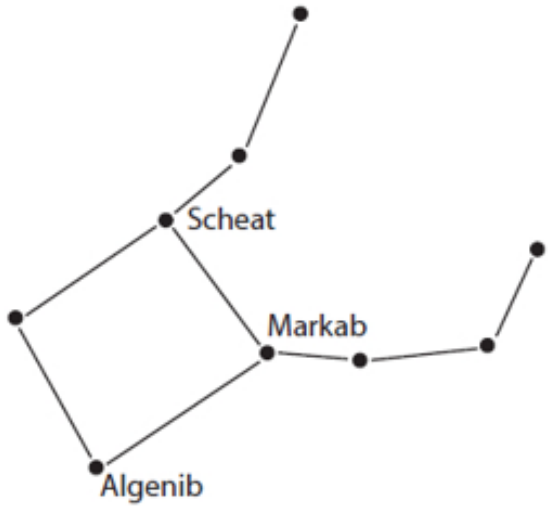
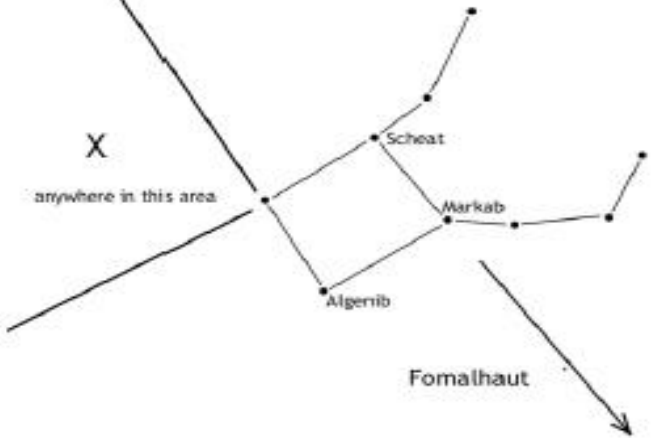


Figure 2

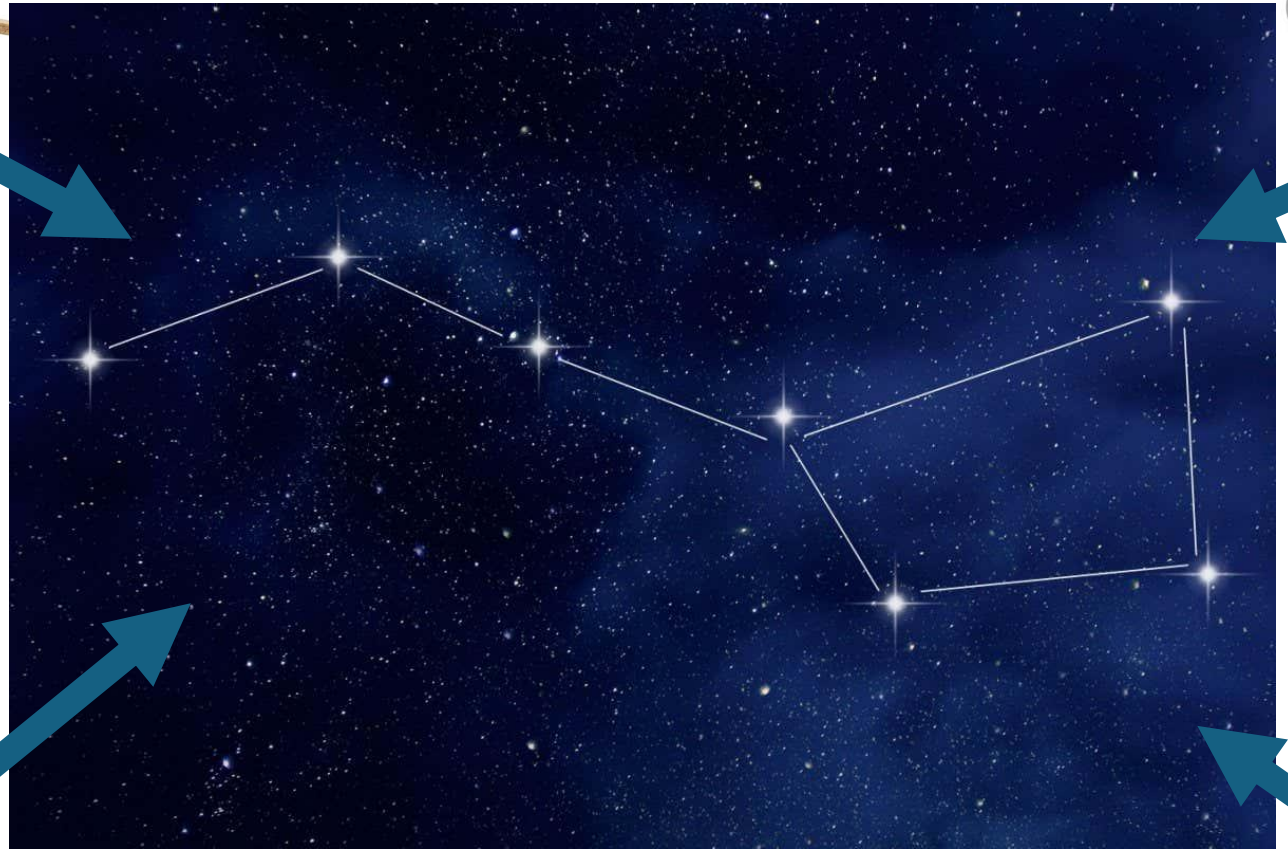
(i) Draw an arrow on Figure 2 to show how this constellation may be used to find the star Fomalhaut.

(ii) Show the approximate position of the Andromeda Galaxy (M31) on Figure 2. Use the letter **X**.

Example Question

Answer	Acceptable Answers
Fomalhaut marked in the direction shown. Andromeda galaxy marked within the indicated area. 	Projection of the line downwards

Cultural Variations



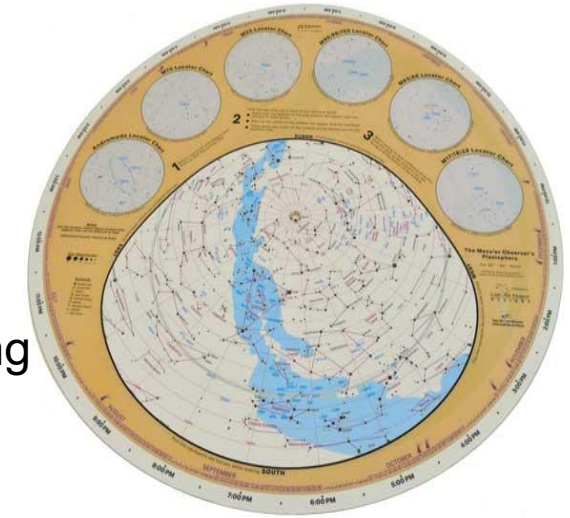
- Different cultures have **unique interpretations** of star patterns.

- **Indigenous cultures** often use stars for navigation and storytelling.

- **Greek & Roman mythology** forms the basis for most Western constellations.
- **Chinese astronomy** has a different system with its own named stars and asterisms.

Star maps and charts tend to show what is in the sky during a month or season. Frequently there are two maps, one showing the view of east to west towards the south, the other showing the view of west to east towards the north.

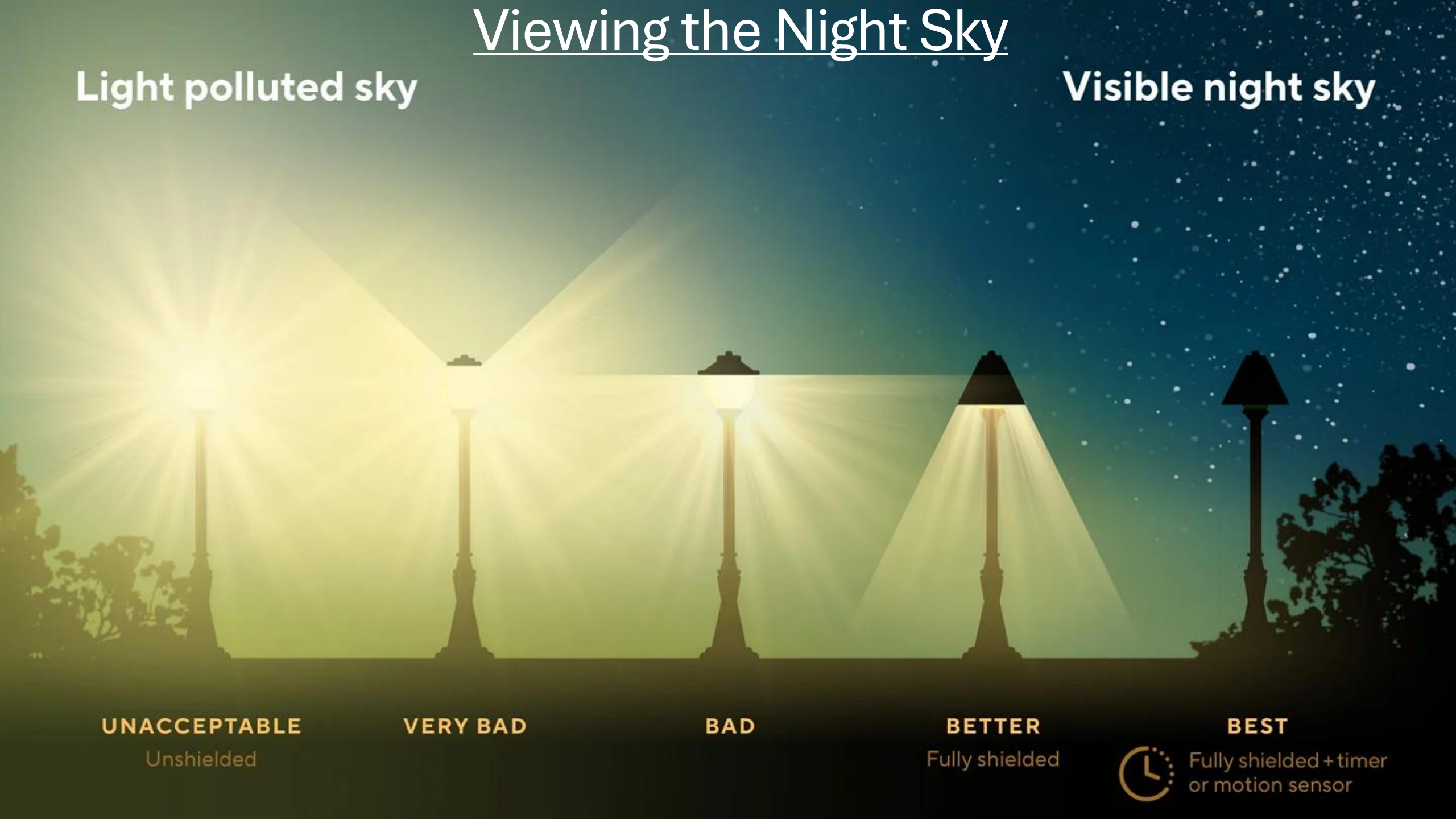
A planisphere is a quick and easy way to find out what stars are viewable.
One disc shows a portion of the disc underneath can be seen, around the edge are hours of the day. On the underneath disc is a star map showing every constellation available for viewing from a general location e.g. Europe

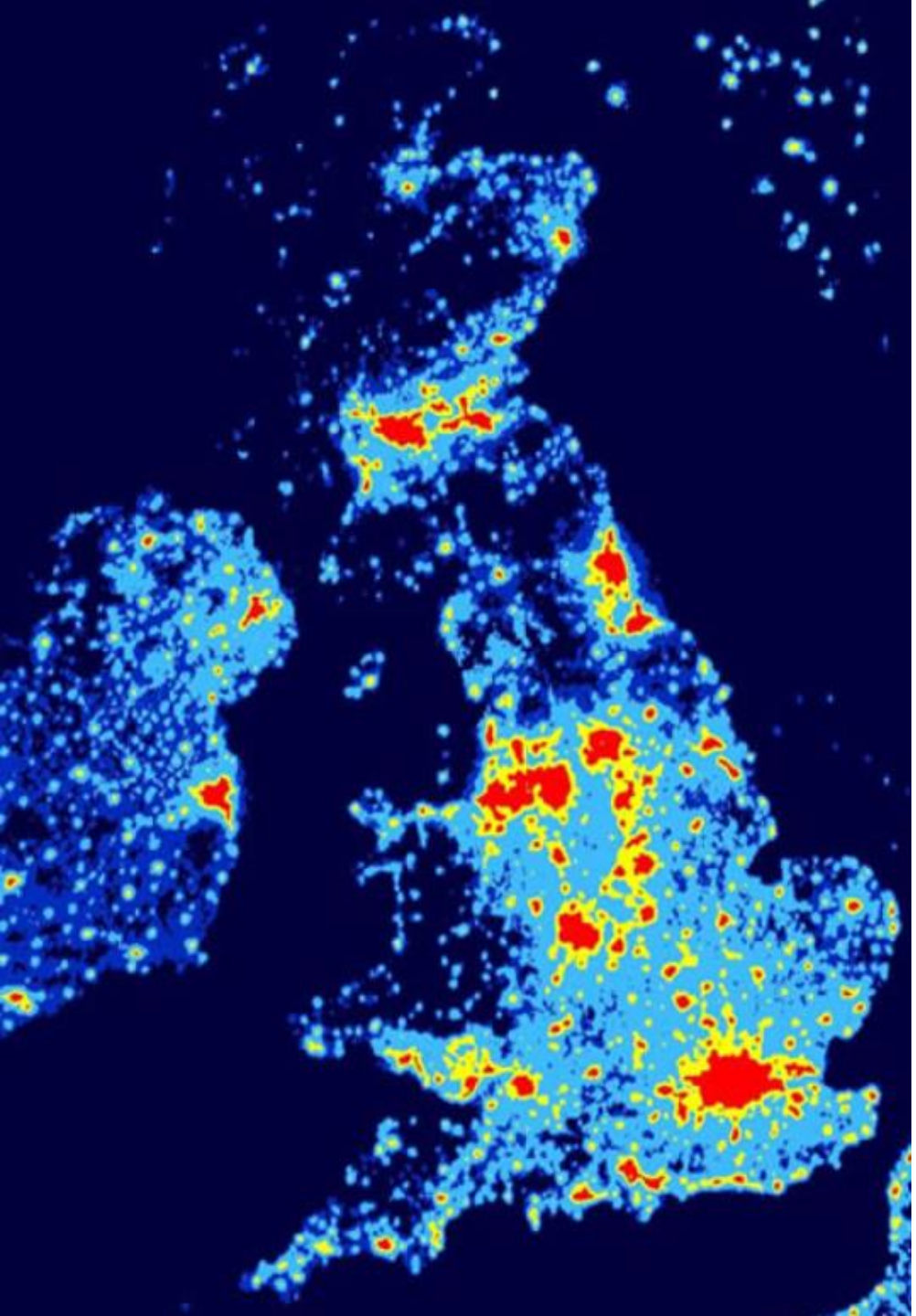


Software can show the sky at any given moment and can offer other features like 3d maps of planets or ability to change location or time etc. Stellarium is free and is updated with new features and objects. Celestia is also a well regarded.

Maps, Charts and Software

Viewing the Night Sky





Light Pollution and Viewing

Light Pollution is caused by:

- **Causes:** Streetlights, buildings, car headlights, and electronic screens.
- **Effects:** Reduces visibility of faint stars and celestial objects.
- **Solution:** Use **dark sky reserves**, light shields, and limit artificial lighting when stargazing.

Visibility can be impacted by:

- **Rising & Setting:** Objects near the horizon suffer atmospheric distortion.
- **Seeing Conditions:** Turbulence in the air affects clarity.
- **Weather & Landscape:** Clouds and buildings can block views.

We can improve our viewing by:

- **Dark Adaptation:** Allow 20-30 minutes for eyes to adjust.
- **Averted Vision:** Look slightly to the side to detect faint objects.

The Milky Way