

Circumpolar Constellations Activities (Ages 12-15)



Today we are going to investigate:

- How the constellations move in the northern hemisphere sky
- How some constellations never set under the horizon
- Why Polaris is a special star

Activities

- 1 Open Night Sky, look at the sky view and use the Space Travel tab (see pic right) to set the time to 23:00 (11pm) this evening.

Pick some constellations and use the Fast Forward  button on the Space Travel tab to speed up time to x1000. Watch the constellations you have picked move across the sky until they set under the horizon.

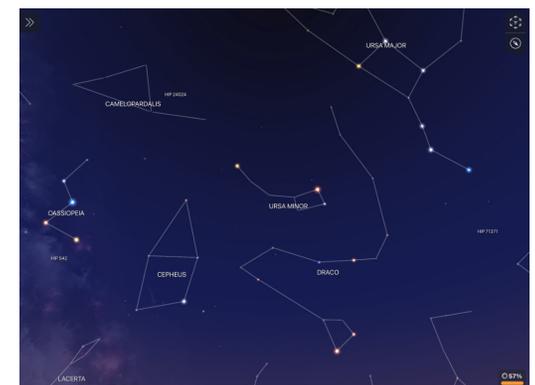
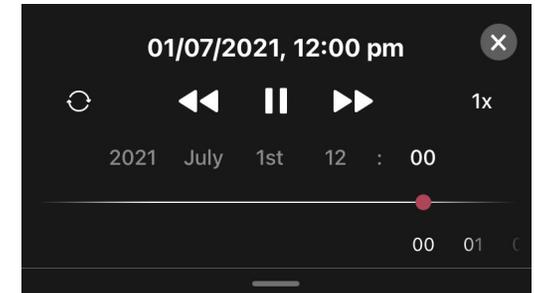
Question:
Why are the constellations moving?

- 2 The constellations are not really moving, instead it is the Earth that is moving. The Earth is continuously rotating on its axis. Pause  the stars and reset  the time to 23:00 (11pm) again. Move the view about until you can see the constellation Ursa Minor. (Tip: You can locate it with the Search function in Night Sky.) Use the Fast Forward  button on the Space Travel tab to speed up time to x1000. Watch Ursa Minor move across the sky until 24 hours has passed on the Space Travel tab.

Question:
Did Ursa Minor ever set under the horizon?

- 3 Try this again with some constellations near Ursa Minor, for example Ursa Major, Cassiopeia or Draco.

Questions:
Do any of these constellations ever set under the horizon?
What makes these constellations different?



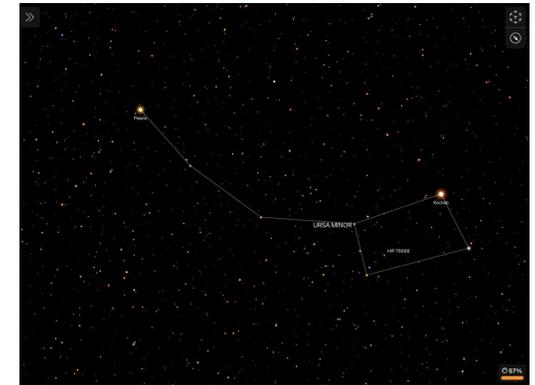
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- 4 Ursa Minor is an example of a circumpolar constellation. This means it never sets under the horizon so we can see it all night. Check out Ursa Minor again and find the star called Polaris. (Tip: Zoom in on the constellation until the star name becomes visible.)

Question:
Do you know any other names for this star?

- 5 Move the screen until Polaris is near the centre and use the Fast Forward  button on the Space Travel tab to speed up time to x1000. Watch Ursa Minor move and you will see that Polaris is at the centre of this rotation. We see this happen because Polaris is almost exactly in line with the Earth's axis.



What we have discovered:

- Many of the constellations move across the sky, rising over the horizon and setting under the horizon
- Some constellations are visible throughout the night and do not rise and set
- The star Polaris appears almost stationary in the sky