

FIELD GUIDE: A BEGINNER'S MAP TO THE NIGHT SKY

Welcome to the Night Sky!

Have you ever looked up at the night sky? You already recognise the biggest and brightest object—the Moon. But what about the rest of the sky? Has someone pointed out another bright object or a cluster of stars in a familiar pattern?

The night sky can sometimes look like a dark canvas with many mysterious, shiny objects. Some of these look big and bright, others tiny and faint. Some twinkle; others shine steadily. With so many dots of light, one part of the sky can easily look like another. This is why we look for patterns. Learning these patterns is like finding landmarks in your neighbourhood—they help you find your way around the vast sky. You don't need a telescope to do this. There is so much you can see with just three tools: your eyes, your patience, and your curiosity.

How to start:

- 1) **Partner with an adult:** Always make sure you have an adult with you when you go out to observe the night sky. It is safer and more fun to have a partner to spot patterns with.
- 2) **Give your eyes time:** It takes about 20 minutes for your eyes to adjust to the dark. Stay away from phone screens and bright lights during this time so you can see the fainter stars.
- 3) **Look closely:** Constellations appear in different parts of the sky in different seasons. But you can track them by their pattern of stars, which does not change. Planets are trickier. You will not always find a planet in the same part of the sky or near the same stars. They drift over even shorter periods (days and weeks). Once you spot a planet, note the general part of the sky where it appears and any star patterns around it. Track how its position changes over time.

Understanding seasons:

The sky changes as the Earth moves. Here is what to expect throughout the year:

- 1) **Winter skies (November to February):** These are the best for beginners! The air is usually crisp and steady, which makes the stars appear sharp and bright. Do remember to carry something warm if you plan to be outside for a long time.
- 2) **Summer skies (May to July):** The air can be a bit hazy during these months, especially if you are near a city. However, the brightest star patterns are still easy to find.
- 3) **Monsoon and Autumn skies (August to October):** The weather can be tricky, but the sky begins to clear up by late September. This is a wonderful time to spot massive patterns and very bright individual stars as the clouds disappear.

Constellations

(a) Orion (The Hunter) or Mriga ~ The Deer):



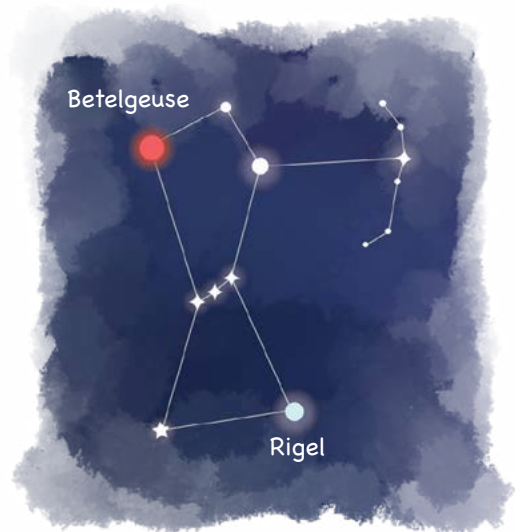
Best months:

December to February.



How to find:

Look in the east to southeast in the early evening for three bright stars (Alnitak, Alnilam, and Mintaka) in a short, straight line (Orion's Belt). They are almost equally bright, evenly spaced, and easy to spot, even in city skies. Once you find the belt, look for the four bright stars that form a large rectangle around it. The reddish star at the top-left is Betelgeuse (the shoulder), and the bright blue-white star at the bottom-right is Rigel (the foot). Together, these stars create the unmistakable shape of a hunter or a giant hourglass.



Look closely:

Betelgeuse, to the north of the belt, is different in colour from Rigel to the south. One glows with a warm orange-red light, while the other shines with a crisp blue-white light.



Think about:

Colours can tell us how hot a star is. Which one do you think is hotter—Betelgeuse or Rigel? Why?

(b) Taurus or Vrishabh (The Bull):



Best months:

December to February.



How to find it:

Look north of Orion's right "shoulder" (Betelgeuse). You will see this V-shaped pattern of stars that forms the face of the Bull. Within this pattern, look for a bright orange star (Aldebaran), which marks the Bull's eye. Following the lines of the "V" further out leads to two bright stars that mark the tips of the Bull's long horns. Just past the "V," look for a tiny, shimmering cluster of stars called the Pleiades (Krittika), which sits on the Bull's shoulder.





Look closely:

At first, the Pleiades may look like a faint, blurry patch. When you look carefully, you may begin to see individual stars.



Think about:

Are the stars in Pleiades really that close to each other, or do they only appear that way from Earth?

(c) Canis Major (The Big Dog) or Vyadh (The Hunter):



Best months:

December to February



How to find:

Start at Orion's Belt and draw an imaginary line downward toward the southeast until you reach the brightest star in the night sky. This is Sirius. It marks the chest of the Big Dog. From Sirius, look for a small triangle of stars above it that forms the head and a larger group of stars extending further southeast to form the Dog's body, legs, and tail.



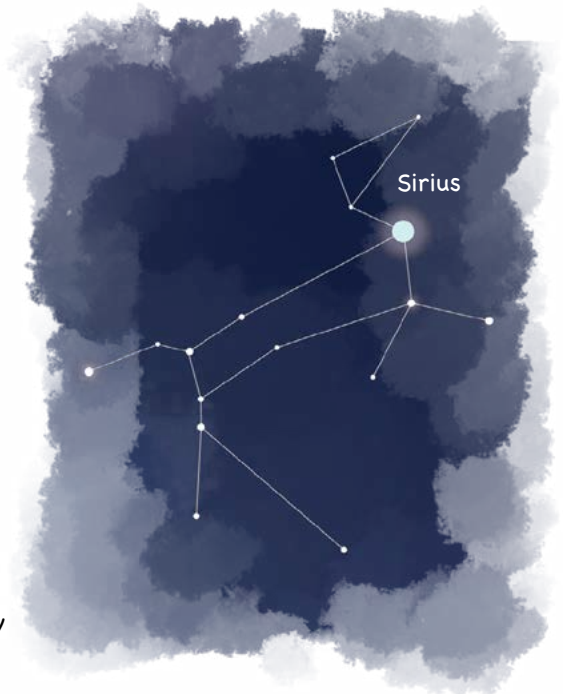
Look closely:

Sirius shines very brightly and may twinkle strongly. It stands out clearly from all other stars nearby.



Think about:

Does Sirius appear so bright because it is closer to Earth, or because it is bigger and hotter than other stars?



(d) Scorpius or Vrushchik (The Scorpion):



Best months:

May to July.



How to find:

Look toward the southeast after 9 PM. Search for a long, curved chain of stars that looks like a giant fishhook or a backwards question mark.



Look closely:

The curve of stars at the bottom bends downward and then hooks back up to form a "stinger." Near the top of the hook, look for the bright reddish star Antares. This star marks the "heart" of the scorpion.





Think about:

Can you imagine other shapes with the same stars? For example, if you ignore the “stinger” at the end, can you imagine these stars forming a kite with a long tail?

(e) Sagittarius (The Archer) or Dhanu (The Bow):



Best months:

June to August.



How to find:

Look just east of Scorpius for a pattern of eight stars that looks exactly like a teapot.



Look closely:

On very dark, clear nights, you will notice a faint, glowing band of light rising like “steam” from the teapot’s spout. This cloudy band is the Milky Way, the galaxy we live in.



Think about:

When you look into the “steam” coming from the spout, you are actually looking directly toward the densely packed center of our galaxy! How does it feel to know that we are inside a much larger system of stars?



(f) The Summer Triangle (Trayambak):



Best months:

June to September



How to find:

Look high in the eastern sky during summer evenings for three very bright stars forming a massive triangle. These stars are Vega, Deneb, and Altair.



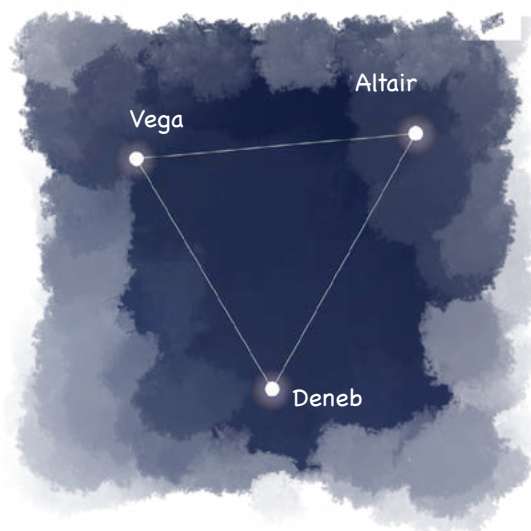
Look closely:

These stars are very far apart. So you will need to use your whole field of view to spot this pattern. Vega is usually the brightest and highest of the three.



Think about:

The Summer Triangle is not an “official” constellation. It is an asterism—a recognisable pattern made by connecting bright stars from different constellations. Each of the three stars in this asterism belongs to a different constellation: Vega is in Lyra (The Harp), Deneb is in Cygnus (The Swan), and Altair is in Aquila (The Eagle). Can you spot the harp, swan, or eagle hiding in the sky around them? What new asterisms would you invent by connecting bright stars from other constellations?



(g) Pegasus (The Winged Horse) or Bhadrapada (The Lucky Feet):



Best months: September to November.



How to find it: Look high in the eastern sky during autumn evenings for four bright stars that form a massive box. This is known as the Great Square of Pegasus.



Look closely: The large space inside the square looks like a dark, open "window" in the sky. It appears almost empty of other bright stars.



Think about: Large, simple patterns like this are very useful signposts. If you were to use the straight lines of the Great Square as pointers, which other stars or constellations could you find? For example, can you follow a diagonal line to spot a "W" or "M" shape (Cassiopeia or Sharmishtha), or look just below the square to find a long, faint trail of stars that looks like two fish (Pisces or Meena)?



Galaxies

(a) Milky Way or Akashganga:



Best months: March to October. The brighter central region is most visible during the summer and monsoon months. The fainter outer regions are visible in winter.



How to find it: You must be far away from city lights on a moonless night. Look for a hazy, faintly glowing band of light that arches across the night sky, passing through constellations like Sagittarius and Cassiopeia.



Look closely: It looks like a glowing trail of spilled milk or a faint, cloudy river. This "cloud" is actually the combined light of billions of distant stars that are too far away to see individually.



Think about: We are living inside a giant, flat disk of stars. Because we are inside it, we cannot see its spiral shape directly. Can you imagine what our galaxy would look like if you could fly a spaceship outside of it?



(b) Andromeda Galaxy or Devayani:



Best months: September to December



How to find: Start at the northeastern star of the Great Square of Pegasus. From there, follow the curved chain of stars extending away from the square for about the same distance as one side of the square. The Andromeda Galaxy appears nearby as a faint glowing patch.



Look closely: You will need a dark location on a night without the Moon. It will appear as a very faint, glowing, misty patch. You will not see sharp details, but just spotting this fuzzy smudge is an incredible achievement.



Think about: Almost every other star you see in the sky is inside our own Milky Way. But this faint patch is an entirely different galaxy containing about a trillion stars. How does it feel to look at an object so far away that its light took 2.5 million years to reach your eyes?

Planets

(a) Venus or Shukra:



How to find: Look in the west just after sunset (the "Evening Star") or in the east just before sunrise (the "Morning Star"). It is very bright and is often one of the first bright objects visible as the sky darkens.



Look closely: It shines with a steady, piercing white light and does not twinkle much. You will also never see Venus high in the middle of the night sky or on the opposite side of the sky from the Sun.



Think about: Venus never strays far from the Sun in our sky. What does this tell you about its path in space?



(b) Jupiter or Brihaspati/Guru:



How to find it: Look for a bright and steady point of light. It is often the second-brightest planet after Venus and is often brighter than Sirius.



Look closely: Unlike stars, Jupiter does not twinkle. If you watch it carefully over a few weeks, you will notice it slowly shifting its position against the background of stars.



Think about: The word "planet" comes from an ancient Greek word meaning "wanderer." While stars stay locked in their constellation patterns, planets wander freely through them. How would you explain this difference?

(c) Saturn or Shani:



How to find it: Look for a steady, yellowish-white point of light. It is noticeably dimmer than Jupiter and Venus.



Look closely: Just like Jupiter, it does not twinkle much. Because it is so far away, it moves very slowly. You will need to track it over many months to clearly see it shift in position.



Think about: Saturn takes nearly 30 years to make one full trip around the Sun. How old will you be when Saturn returns to this exact spot in the sky?

(d) Mars or Mangal:



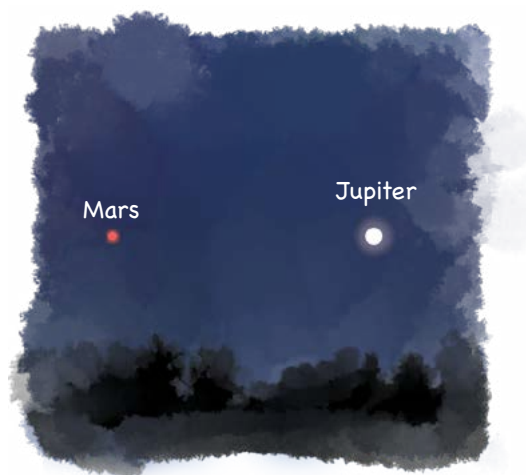
How to find it: Look for a bright, star-like object that has a distinct reddish-orange colour.



Look closely: Compare its colour with nearby stars. It often looks very similar to the red star Antares in Scorpius! (In fact, the name "Antares" literally means "Rival of Mars" because they look so much alike).



Think about: Antares appears red because its outer layers are relatively cool for a star. But Mars is a cold, solid planet. Do you know what makes its rocky surface look red? (Hint: Think about what happens to iron when it gets rusty!)



(e) Mercury or Budh:



How to find it: This is the hardest planet to spot with the naked eye! Look very low near the horizon, either just after sunset or just before sunrise.



Look closely: It is only visible for a short time before it dips below the horizon or disappears into the bright glare of the Sun. It might twinkle slightly.



Think about: Because Mercury is the closest planet to the Sun, it never gets far enough away for us to see it in the dark, middle part of the night. If you were standing on Mercury, how massive do you think the Sun would look in your sky?



Keep looking up!

The night sky is always changing, but it does so slowly. The more you observe, the more you will begin to recognize patterns, movements, and differences. What looks like a random scattering of stars at first will become a familiar map over time. A star pattern you miss in the summer will return like an old friend next year. A planet you watch tonight will have wandered to a new neighbourhood by next month.

Remember: you are doing exactly what the world's first astronomers did thousands of years ago. So take your time, trust your eyes, and keep asking questions. Every time you step outside and look up, the sky will reveal a little bit more to you.

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