

Astronomer Activity Badge

Head Into Space!

This activity contributes to the following badges:



Astronomer Activity Badge

The Wonder of the Sky!

The Badge

The Astronomer badge explores the night sky, and introduces Scouts to some astronomical information.

Check List

The Sky.....	<input type="checkbox"/>
Learn astronomy terms.....	<input type="checkbox"/>
Build a model.....	<input type="checkbox"/>
The Moon and tides.....	<input type="checkbox"/>
Telescope.....	<input type="checkbox"/>
Constellations.....	<input type="checkbox"/>
Star maps.....	<input type="checkbox"/>
Satellite.....	<input type="checkbox"/>

1 The Sky

What do you know about the night sky? Why does the pattern of stars change, night by night, throughout the year? You can find out about this by researching the movement of our planet – its rotation around its axis, and its movement around the Sun.

Why would this affect the stars that we see?

Activity: Look above you, and find a cloud or something else that's relatively fixed to look at. Now turn around on the spot, and see how your view alters. Now (safely!) walk in a circle, while spinning. Try and keep looking up without moving your head to change your view. How does your view change?

2 Terms

Learn the meaning of the words: celestial, equator, poles, circumpolar, and zodiac.

3 Model

Use objects you find in your house or garden to build a model of the solar system. Try and explore the scale of the planets to each other in the objects you choose.

Explore the distances between each planet.

Activity: Place an object (e.g., a tent peg) to represent the Sun.

Put your foot against this object, and put another object on the other side of your foot to represent Mercury. Your foot now represents about 58 million miles.

Now work out how many of your feet (or parts of your foot) you need to measure to place the rest of the planets (in approx. millions of miles):

- Venus 108
- Earth: 150
- Mars: 228
- Jupiter: 779
- Saturn: 1,400
- Uranus: 2,900
- Neptune: 4,500

A BBC Earth Lab video on the subject:

[youtube.com/watch?v=uXWtf6O1A9M](https://www.youtube.com/watch?v=uXWtf6O1A9M)

4 Tides

How does the Moon affect tides on Earth? What might be causing that effect? Given what you research on this, think about what else could be affecting our tides. (Hint: it begins with "g", and there's a lot of it around in the solar system!)

5 Telescope

The badge requirement asks you to make a telescope, using card and lenses. Not everyone has lenses at home – but if you do, go for it, and see what you can create!

The activity is more about understanding telescopes, and how they work. Think about what is going on inside a telescope – do we need a telescope to see things in the sky because:

1. They are small?
2. They don't give off much light for our eyes to see?
3. Both 1 and 2?

What does a reflector telescope have, as well as lenses?

6 Constellations 8 Satellites

On a clear night, see if you can find the following constellations:

- Ursa Major
- Bootes
- Leo

Observe the constellations for three hours, recording what you see every half hour (set a timer or alarm). Do they move their position in the sky? If so, how far?

7 Star Maps

Read a star map using a red light and a compass.

What are the differences between using a normal map, and a star map? Compare how you use north and south on each type of map.

A red light is used when looking at the night sky, as it affects your night vision to a lesser degree than a normal torch. If you have a red light, great! If not, think of ways you might improvise one. For example, do you know any sweets that have red wrappers?

The star maps used at night are usually white, with features marked out in black and/or blue. Consider why this is the case?

If you have a smart phone, consider downloading an app (if you have room – there are free apps of this kind).

Compare how using an app differs from using a paper map. Why are star maps only relevant to particular locations on Earth, at particular times? Think about the research you have done elsewhere on this activity sheet...

How can you tell a satellite from all of the rest of the objects in the sky (stars, planets, aeroplanes, meteors...)?

Find a satellite in the sky.

One of the easiest satellites to find is the International Space Station. This weekend, you might be able to find it in the sky – see the “Spot the Station” chart attached.

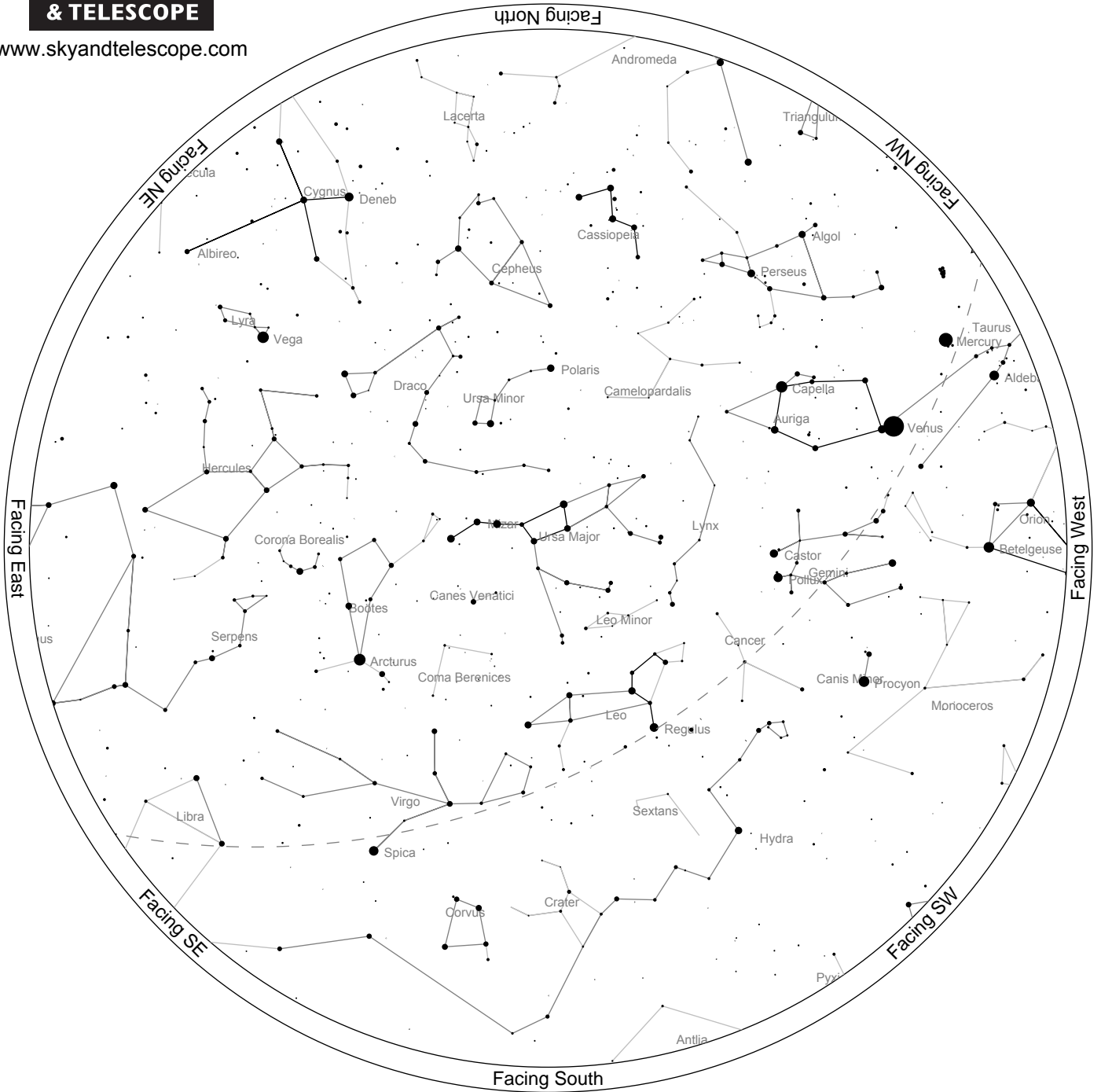
Use a clock and a compass to try and locate the ISS – or another satellite, if you choose to!

Resources

The world of astronomy is full of resources to learn more. YouTube, NASA’s website, BBC Earth Lab, and more have lots of information.

Avoid mistaking Astronomy and Astrology, though! Two completely different things.

Sky Chart

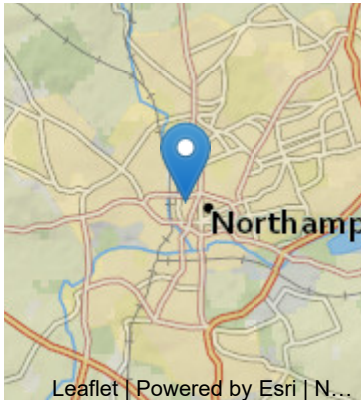


Location: Set from geolocation service
 Latitude: 52° 16' N, longitude: 0° 51' W
 Time: 2020 May 15, 21:00 (UTC +01:00)

Powered by: Heavens-Above.com



📍 Sighting Location



Location: Northampton, England, United Kingdom

[Change location](#)

The following ISS sightings are possible from Wednesday May 13, 2020 through Thursday May 28, 2020

Date	Visible	Max Height*	Appears	Disappears
Thu May 14, 00:30 AM	1 min	23°	23° above E	11° above E
Thu May 14, 2:03 AM	5 min	82°	22° above W	10° above E
Thu May 14, 3:39 AM	6 min	49°	10° above W	11° above SE
Thu May 14, 11:43 PM	< 1 min	14°	14° above E	10° above E
Fri May 15, 1:16 AM	5 min	80°	33° above WSW	10° above E
Fri May 15, 2:51 AM	6 min	61°	10° above W	12° above ESE
Fri May 15, 4:28 AM	5 min	20°	10° above W	10° above SSE
Fri May 15, 10:51 PM	5 min	29°	11° above SSW	11° above E
Sat May 16, 00:26 AM	6 min	73°	10° above WSW	10° above E
Sat May 16, 2:03 AM	6 min	72°	10° above W	10° above ESE
Sat May 16, 3:40 AM	5 min	28°	11° above W	11° above SSE
Sat May 16, 10:03 PM	5 min	21°	11° above SSW	11° above E
Sat May 16, 11:39 PM	6 min	62°	10° above WSW	12° above E
Sun May 17, 1:15 AM	6 min	80°	10° above W	10° above E
Sun May 17, 2:52 AM	6 min	38°	12° above W	10° above SE
Sun May 17, 4:31 AM	< 1 min	10°	10° above SW	10° above SW
Sun May 17, 10:51 PM	6 min	50°	10° above SW	11° above E
Mon May 18, 00:28 AM	6 min	82°	10° above W	10° above E

Mon May 18, 2:04 AM	6 min	49°	10° above W	11° above SE
Mon May 18, 3:42 AM	4 min	15°	10° above WSW	10° above S
Mon May 18, 10:03 PM	6 min	38°	10° above SW	12° above E
Mon May 18, 11:40 PM	6 min	80°	10° above W	10° above E
Tue May 19, 1:16 AM	4 min	62°	10° above W	47° above SE
Tue May 19, 10:52 PM	6 min	73°	10° above WSW	10° above E
Wed May 20, 00:29 AM	5 min	73°	10° above W	33° above ESE
Wed May 20, 2:06 AM	< 1 min	13°	11° above W	13° above W
Wed May 20, 10:04 PM	6 min	62°	10° above WSW	12° above E
Wed May 20, 11:41 PM	6 min	80°	10° above W	15° above E
Thu May 21, 1:18 AM	2 min	27°	12° above W	27° above WSW
Thu May 21, 10:53 PM	6 min	82°	10° above W	10° above E
Fri May 22, 00:30 AM	3 min	50°	10° above W	50° above SSW
Fri May 22, 10:05 PM	6 min	80°	10° above W	10° above E
Fri May 22, 11:42 PM	5 min	62°	10° above W	31° above SE
Sat May 23, 1:19 AM	< 1 min	12°	10° above W	12° above W
Sat May 23, 10:54 PM	6 min	73°	10° above W	12° above ESE
Sun May 24, 00:31 AM	2 min	26°	11° above W	26° above SW
Sun May 24, 10:06 PM	6 min	80°	10° above W	10° above E
Sun May 24, 11:44 PM	3 min	39°	12° above W	36° above S
Mon May 25, 10:55 PM	5 min	50°	10° above W	20° above SE
Tue May 26, 00:33 AM	< 1 min	13°	11° above WSW	13° above WSW
Tue May 26, 10:08 PM	6 min	63°	10° above W	12° above ESE
Tue May 26, 11:45 PM	3 min	21°	10° above W	21° above SSW
Wed May 27, 10:57 PM	4 min	29°	11° above W	19° above SSE

**If you are signed up for alerts please note that you will only receive alerts for flyovers that will reach a Max Height of at least 40°. These flyovers provide the best chance for a sighting opportunity because they are visible above most landscapes and buildings.*

The following CYGNUS sightings are possible from Wednesday May 13, 2020 through Thursday May 28, 2020

Date	Visible	Max Height*	Appears	Disappears
Thu May 14, 00:38 AM	4 min	58°	58° above SSE	10° above E
Thu May 14, 2:12 AM	7 min	83°	10° above W	11° above E

Thu May 14, 3:50 AM	6 min	47°	11° above W	11° above SE
Thu May 14, 10:33 PM	1 min	15°	15° above ESE	11° above E
Fri May 15, 00:06 AM	7 min	55°	10° above WSW	12° above E
Fri May 15, 1:44 AM	7 min	83°	10° above W	11° above E
Fri May 15, 3:22 AM	6 min	50°	12° above W	11° above SE
Fri May 15, 10:01 PM	5 min	17°	11° above S	10° above E
Fri May 15, 11:37 PM	7 min	53°	10° above WSW	11° above E
Sat May 16, 1:15 AM	7 min	83°	10° above W	11° above E
Sat May 16, 2:54 AM	6 min	52°	12° above W	12° above SE
Sat May 16, 4:32 AM	2 min	16°	10° above WSW	16° above SW
Sat May 16, 9:33 PM	4 min	15°	10° above S	10° above ESE
Sat May 16, 11:09 PM	7 min	50°	10° above SW	11° above E
Sun May 17, 00:47 AM	7 min	83°	10° above W	11° above E
Sun May 17, 2:25 AM	7 min	55°	12° above W	10° above ESE
Sun May 17, 4:04 AM	5 min	18°	11° above W	10° above S
Sun May 17, 10:41 PM	6 min	47°	12° above SW	11° above E
Mon May 18, 00:18 AM	7 min	83°	10° above W	11° above E
Mon May 18, 1:56 AM	7 min	58°	10° above W	10° above ESE
Mon May 18, 3:35 AM	5 min	19°	10° above W	11° above S
Mon May 18, 10:12 PM	7 min	44°	10° above SW	10° above E
Mon May 18, 11:49 PM	7 min	82°	10° above W	11° above E
Tue May 19, 1:27 AM	7 min	61°	10° above W	10° above ESE
Tue May 19, 3:06 AM	6 min	21°	10° above W	10° above SSE
Tue May 19, 9:43 PM	7 min	41°	10° above SW	10° above E
Tue May 19, 11:21 PM	7 min	81°	10° above W	10° above E
Wed May 20, 00:59 AM	6 min	64°	10° above W	25° above ESE
Wed May 20, 2:37 AM	1 min	17°	10° above W	17° above WSW
Wed May 20, 10:52 PM	7 min	80°	10° above W	10° above E
Thu May 21, 00:30 AM	6 min	66°	10° above W	25° above ESE
Thu May 21, 2:09 AM	1 min	18°	10° above W	18° above WSW
Thu May 21, 10:23 PM	7 min	79°	10° above W	10° above E
Fri May 22, 00:01 AM	6 min	69°	10° above W	21° above ESE
Fri May 22, 1:40 AM	2 min	21°	10° above W	21° above WSW

Fri May 22, 9:55 PM	7 min	77°	10° above WSW	10° above E
Fri May 22, 11:33 PM	6 min	71°	10° above W	18° above ESE
Sat May 23, 1:11 AM	2 min	24°	11° above W	24° above WSW

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National Aeronautics and Space Administration

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