



The

# WONDER WEEKLY

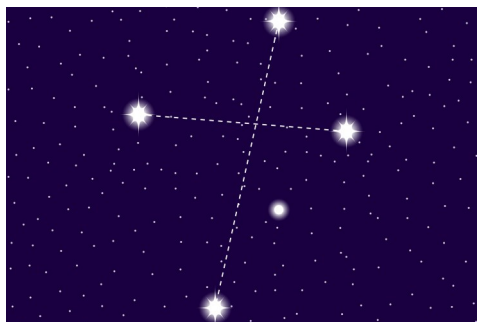


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Options for finding your direction:

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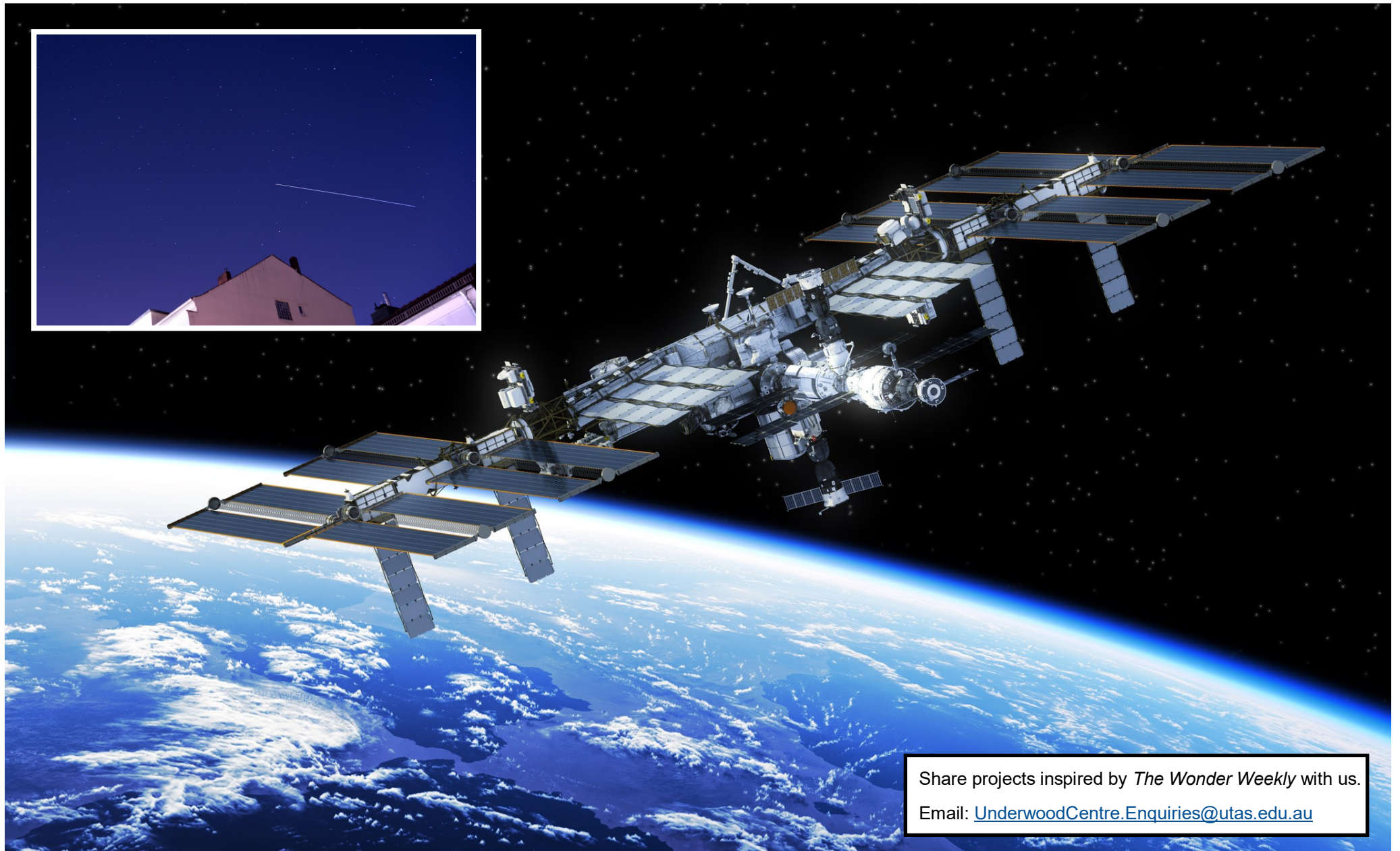
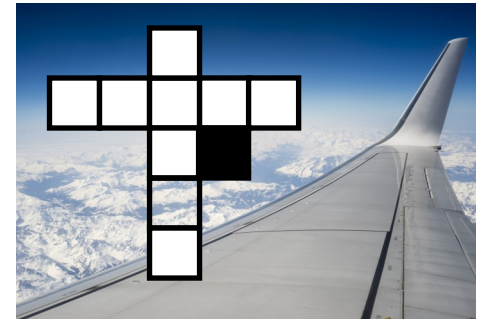
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IN ORBIT: An illustration of the International Space Station (ISS) orbiting Earth, main picture, and the ISS crossing above city houses, inset. Images: iStock.com/#DSculptor/Peter Vernon Morris

# SKYGAZING

## Spot the International Space Station from your home

HAVE you noticed any unusual looking lights moving swiftly across the sky in the last two weeks?

If so, you may have spotted the International Space Station (ISS).

If you haven't yet, there is still time.

NASA provides a schedule of the best times to see the ISS from locations around the world,

including Tasmania: [spotthestation.nasa.gov/sightings](http://spotthestation.nasa.gov/sightings)

In Tasmania, the locations are Hobart, Launceston and Burnie, but the space station is visible for a radius of about 80km around the selected locations.

The space station looks like a bright star or a very fast moving aeroplane.

Aeroplanes generally travel at

about 950km per hour, while the ISS flies at about 28,000km/h.

The ISS circles the Earth roughly every 92 minutes and completes 15.5 orbits per day.

But it is only bright enough to be seen at dusk or dawn, when the station remains sunlit but the earth and sky are dark.

You can only spot the ISS when it is going over head at those particular times of the day at

your location, but you won't need a telescope.

You can even sign up for alerts via email or text, and NASA will notify you of good sighting opportunities.

The ISS is a research laboratory in low earth orbit - an altitude of about 400km from Earth.

The station is divided into two sections: the Russian Orbital Segment (ROS) which is

operated by Russia; and the United States Orbital Segment (USOS), which is shared by several countries.

The first part of the ISS was launched in 1998, and the first long-term residents arrived on November 2, 2000.

The ISS has been occupied since then by astronauts, cosmonauts and "space tourists".

**Continued Page 2**

"Education perhaps more than anything else is a passport to a better life." - Peter Underwood AC



# Skygazing preparations

**From Page 1**

There are currently three people aboard the ISS - NASA astronaut Chris Cassidy, serving as station commander, and Roscosmos' Anatoly Ivanishin and Ivan Vagner, serving as flight engineers.

The station is visited and serviced by a variety of spacecraft, including the Russian Soyuz and Progress, the US Dragon and Cygnus, and the Japanese H-II Transfer Vehicle.

The sighting opportunities for Tasmania for the next five days are provided in the table, right.

But to know where to look, you will need to be prepared and use the height and direction information in the table.

Height or elevation is measured in degrees. The horizon is at zero degrees and directly overhead is 90 degrees.

If you hold your fist at arm's length and rest it on the horizon, the top will be about 10 degrees, and if you put your other fist on top, that will be 20 degrees.

The letters in the table represent compass directions - N is north, WNW is west by northwest and so on.

If you don't have a compass, or a phone with a compass app, the article on the right side of this page will help with working out directions.

If you have access to online you can livestream what the station is seeing, including 16 sunsets and sunrises a day, via the Google ISS livestream.

**Your challenge** is to spot the ISS as often as you can over the next five days and keep a record of your sightings.

Children's University Tasmania members can earn stamps in their passports for this space challenge, at the discretion of their school coordinators.



Image: iStock.com/scanrail

## WORD SCRAMBLER

- LESBEET \_\_\_\_\_ Image: iStock.com/Henrik\_L
- PAWS \_\_\_\_\_
- EAWRIG \_\_\_\_\_ HASSGROPPER \_\_\_\_\_
- COACHROCK \_\_\_\_\_ FEAL \_\_\_\_\_
- TAN \_\_\_\_\_ BLUTTERFY \_\_\_\_\_



## Crossword No.5 solution (check your answers)

- |               |              |               |
|---------------|--------------|---------------|
| <b>Across</b> | 7. Ferdinand | <b>Down</b>   |
| 1. Arendelle  | 9. Pixar     | 2. Lightsaber |
| 3. Hanks      | 10. Potter   | 6. Infinity   |
| 4. Worries    | 12. Oz       | 8. Krypton    |
| 5. Marlin     | 13. ET       | 11. Eve       |

Location	Date & Time	Visible	Max Height	Appears	Disappears
<b>Burnie</b>	Mon Apr 27 6:51pm	3min	16°	11° above SW	14° above SSE
	Tues Apr 28 6:03pm	4min	20°	13° above WSW	10° above SSE
	Tues Apr 28 7:41pm	<1min	11°	10° above SSW	11° above SSW
	Wed Apr 29 6:53pm	3min	14°	10° above SW	13° above SSE
	Thurs Apr 30 6:04pm	4min	14°	10° above SW	10° above SSE
	Thurs Apr 30 7:42pm	<1min	11°	10° above SSW	11° above SSW
Fri May 1 6:54pm	2min	15°	10° above SSW	15° above S	
<b>Launceston</b>	Mon Apr 27 6:51pm	3min	17°	11° above SW	15° above S
	Tues Apr 28 6:03pm	4min	20°	13° above WSW	11° above SSE
	Tues Apr 28 7:41pm	<1min	11°	10° above SSW	11° above SSW
	Wed Apr 29 6:53pm	2min	14°	10° above SW	14° above S
	Thurs Apr 30 6:05pm	4min	15°	10° above SW	10° above SSE
	Thurs Apr 30 7:42pm	<1min	10°	10° above SSW	10° above SSW
Fri May 1 6:54pm	2min	16°	11° above SSW	16° above S	
<b>Hobart</b>	Mon Apr 27 6:51pm	3min	21°	12° above WSW	18° above SSE
	Tues Apr 28 6:03pm	4min	25°	17° above WSW	11° above SE
	Tues Apr 28 7:40pm	<1min	13°	10° above SW	13° above SSW
	Wed Apr 29 6:52pm	3min	18°	10° above SW	18° above S
	Thurs Apr 30 6:04pm	5min	19°	10° above SW	10° above SE
	Thurs Apr 30 7:42pm	<1min	12°	11° above SW	12° above SW
Fri May 1 6:54pm	2min	20°	10° above SW	20° above S	

## Pointing you in the right direction

IF you don't own a compass there are a number of ways to work out directions.

QVMAG Planetarium Coordinator Dr Martin George has three suggestions:

1. Follow the stars - If you imagine a line joining the 'top' and 'bottom' stars in the Southern Cross (see image top left) and extend the line about 4.5 times, you will reach a point which sits directly above the southern horizon.\*
2. Use street a map - line up your street with the map, and the top of the map will be pointing north.
3. Use the Sun - At about 12:13pm (the exact time varies according to the date and longitude) in Tasmania the Sun will be in the north. Don't look at the Sun though. Instead place a stick onto level ground. Make sure it is vertical and note the direction of the shadow - it will point south.

*\*You may need to use this method the night before spotting the ISS, as it might not be dark enough to spot the Southern Cross in the early evening.*

*Dr George also reminded those using a compass that "true north" is about 14 degrees to the left of where a magnetic compass needle will point.*

## Crossword No.6 - Aviation

**Across**

4. Another name for a pilot
5. Very large jet aircraft
7. Unmanned aircraft controlled by computers
10. Aircraft which takes off and lands on water
11. Heathrow Airport is in this city
12. Fixed-wing aircraft which doesn't need an engine to fly

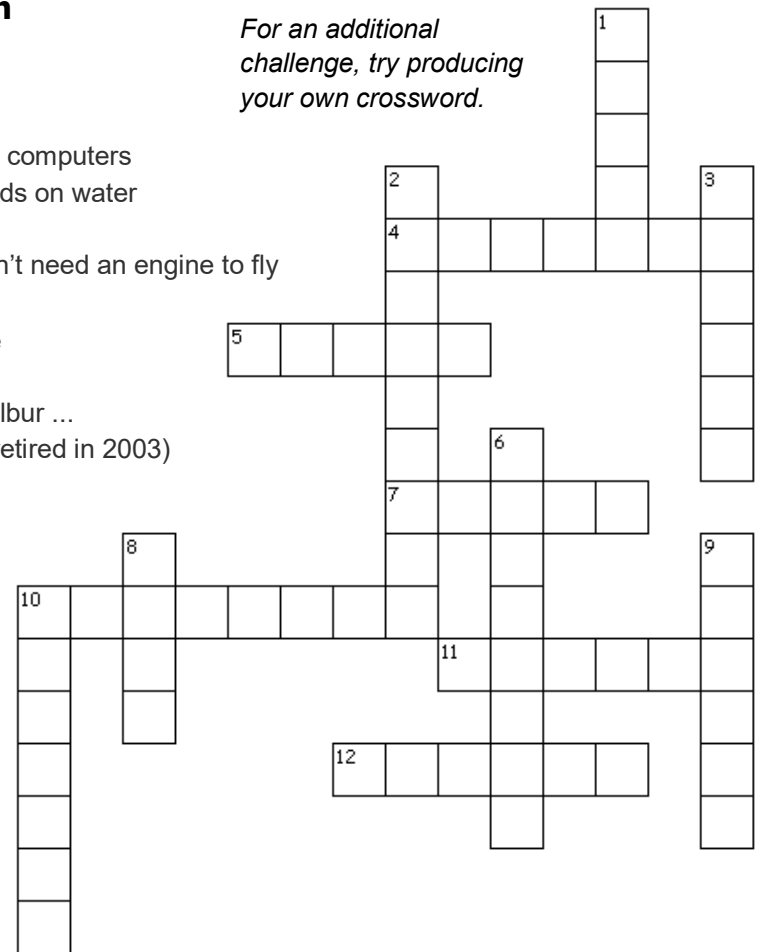
**Down**

1. Operates the controls of a plane
2. Hobart airport is located here
3. Aviation pioneers Orville and Wilbur ...
6. Supersonic passenger airliner (retired in 2003)
8. Royal Australian Air Force
9. Australian airline
10. Par Avion provides flights to this West Coast town

**Guess the country?**



For an additional challenge, try producing your own crossword.



G \_ \_ \_ \_

B \_ t \_ \_

Image: iStock.com/Irina Kuznetsova

Solution next week.