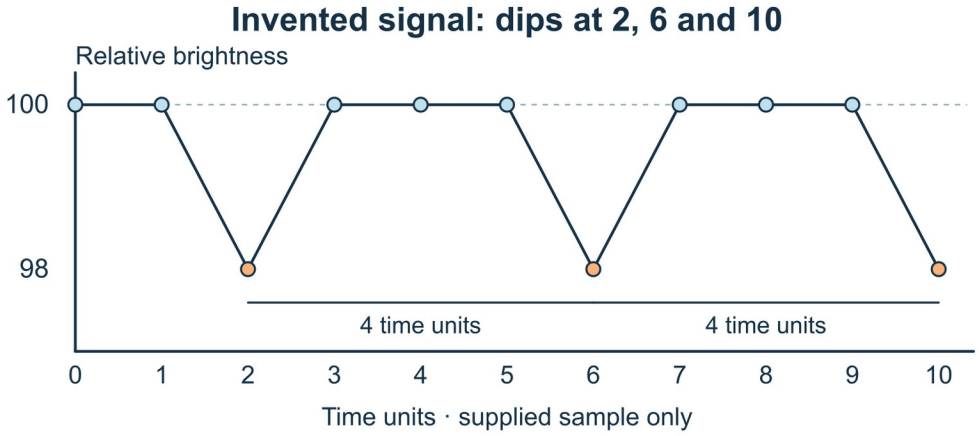
Find a pattern in an invented star signal

What might a repeated dip suggest, and what would still need checking?

Read a complete invented brightness series, identify a recurring gap and distinguish a pattern from a confirmed planet.

Investigate | 15–25 minutes, or three data points | The supplied example, read or heard, Optional scrap paper and a pen or pencil

Start here Use times 0 to 10. Brightness is 100 units at every time except 2, 6 and 10, where it is 98 units. These numbers form an invented signal.



Two equal gaps in an invented signal

1 Put the numbers on a graph

Draw time on the horizontal axis and relative brightness on the vertical axis, or read the supplied graph. Include every time 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

2 Find what repeats

Mark the three low readings. The gaps are 6 − 2 = 4 and 10 − 6 = 4 time units. Say ‘two equal gaps in this sample’, rather than claiming an endless pattern.

3 Make a conditional prediction

If the same spacing continues, the next dip would be at 14. Mark this as a prediction outside the supplied data, not another measured point.

4 Keep cause open

A transit can cause a dip in a real star’s measured light, but this invented pattern cannot confirm a planet. Name a next check, such as more readings and independent checks of the signal.

Invented data three dips

The complete series for times 0 through 10 is 100, 100, 98, 100, 100, 100, 98, 100, 100, 100, 98. Units are arbitrary.

• Low readings occur at 2, 6 and 10.

• The observed sample gaps are 4 and 4 time units.

• 14 is the next predicted dip only if that pattern continues; no value at 14 is supplied.

What this example can show The dataset is made up, so it is not a discovery. Repeating dips in actual observations would still need investigation and confirmation.

A different way

Compare only the labelled low readings or explain the pattern aloud. No calculations beyond the two gaps are required.

If you want to go further

Replace the final low-reading time 10 with 11 in a newly labelled dataset. Explain which equal-gap conclusion changes and why.

Something to notice

Where did my description of supplied data become a prediction?

Read or explore more

Horizon topic Exoplanet Detection

https://launchhorizonhq.com/learn/exoplanet-detection/

Horizon topic Stars Starlight

https://launchhorizonhq.com/learn/stars-starlight/

Horizon topic Statistics Data

https://launchhorizonhq.com/learn/statistics-data/

NASA Science What's a transit?

https://science.nasa.gov/exoplanets/whats-a-transit/

NASA Science Exoplanets: In Depth

https://science.nasa.gov/exoplanets/facts/