Jersey Tide Times

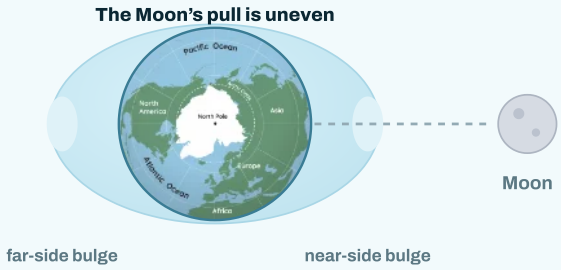
CLASSROOM RESOURCE · AGES 9 TO 13

How the tides work

Why tides happen, why their size changes, and why the sea can return faster than you expect.

2	2 weeks	12 m	6¼ hrs
high tides most days	between spring tides	local tidal range	from low to high water

1 The Moon is the main cause of the tides



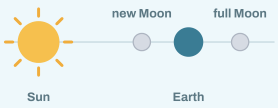
A simplified model, not to scale. *The bulges are drawn far bigger than real life. Real tides are also shaped by continents, ocean basins and coastlines.*

The Moon's gravity pulls on the **whole Earth**, but not evenly. On the side nearest the Moon the pull is strongest, drawing the ocean towards the Moon into **one area of higher water**. On the far side the Moon pulls the solid Earth more strongly than the distant ocean, so the Earth is drawn away from that water, leaving a **second area of higher water**.

This **difference in pull** across the Earth is what matters. As the Earth and Moon move, most coasts have **two high tides and two low tides** during each lunar day. Successive high tides are usually about **twelve hours and twenty-five minutes** apart.

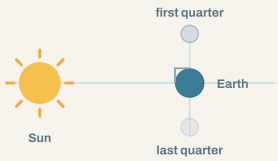
2 Why some tides are bigger than others

The Sun pulls on the sea too. What matters is whether the Sun and Moon line up.



Spring tide

The Sun, Moon and Earth line up, so their effects **combine**. This gives the **biggest** range. Springs happen around new and full Moon.



Neap tide

The Sun and Moon are at a **right angle**, so their effects partly **oppose**. This gives the **smallest** range. Neaps happen around first and last quarter.

Simplified diagrams, not to scale.

Spring tides have nothing to do with the season. The name means the sea "springs" up to a greater height and falls to a lower one. Springs and neaps each come round about every two weeks.

3 Why tidal range varies from place to place

The Moon and Sun provide the pull, but coastlines, water depth and the shape of the ocean basin affect how big the range grows. In some places the water's natural movement is amplified into exceptionally large tides. The gap between high and low water is the **tidal range**.

Examples of very large tidal ranges (approximate maximums):

> Around Jersey, a big range uncovers wide beaches, reefs and causeways at low water, then covers them again as the tide returns.

4 A rough guide to the changing tide: the rule of twelfths

The water level does not usually rise or fall at a steady rate. The rule of twelfths is a rough way to estimate the change. Split the time from low water to high water into **six equal parts**. In each part the level rises by this fraction of the total range:

> The six parts add up to the whole range (1+2+3+3+2+1 = 12). In a 12 m range, one twelfth is 1 m, so the level rises about 3 m during the **third part** alone. This estimates the change in **water level**, not the speed of the tidal stream. The same pattern works in reverse for a falling tide.

The level changes **least** near high and low water, and **most** around the middle of the tide. A beach that seems safe soon after low water can begin covering much more quickly later on.

> ⚠ **Do not use this rule to make safety decisions.** It is only an estimate of water level. It says nothing about tidal streams, waves, wind, weather or local hazards. Always check published tide times and follow local signs. In an emergency call **999** or **112** and ask for the Coastguard.

WORDS Useful tide words

High and low water
The highest and lowest water levels reached during a tide.

Tidal range
The difference in height between a high water and the next low water.

Spring tide
The biggest range, around new and full Moon.

Neap tide
The smallest range, around first and last quarter.

Rising tide
When the sea level is going up.

Falling tide
When the sea level is going down.

Tidal stream
The sideways flow of water as the tide comes in and out.

Lunar day
About 24 hours 50 minutes: the time to face the Moon again.

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