The free space dataset: every world's numbers and every night's sky, as JSON

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Three files from Peabody's Space section: eleven worlds' NASA numbers as JSON and CSV, and a sky file with the Moon every night and every meteor shower peak.

Peabody publishes the numbers behind its Space section as three plain files anyone can download: worlds.json and worlds.csv, with eleven worlds' sizes, gravity, days, years, distances, temperatures and moons from NASA's fact sheets; and sky.json, with the Moon on every night from 25 October 2026 to 31 December 2027, the quarter dates, the solstices and equinoxes, and every meteor shower's peak nights and rate. Each file says it may be reused with a link to peabody.kids/space. Peabody itself is free through the end of 2026; the files are for teachers, homeschool families and older children who want to make their own charts.

worlds.json and worlds.csv

The same eleven rows, two formats: the Sun, the eight planets, the Moon and Pluto. Each row has:

- name and kind (star, planet, moon or dwarf planet), and in the JSON a slug and an order from 1 to 8 for the planets.
- diameter in kilometers.
- gravity as a multiple of Earth's: 0.377 for Mars, 2.36 for Jupiter. Multiply by what a scale reads on Earth and you have what it would read there.
- day in hours, sunrise to sunrise; year in Earth days (none for the Sun).
- distance in millions of kilometers from the Sun, except the Moon's, which is from Earth.
- mean temperature in °C, and moons by NASA's count.
- source, the NASA fact sheet the row came from, and checked, 29 October 2026, the day we opened it.

The CSV has a comment line first with the license, then a header row. Spreadsheet programs open it directly; delete the first line if yours complains.

sky.json

This is the bigger file, and the one behind Sky Tonight, the Moon calendar and the shower pages.

- moon: one row per night, 433 nights from 25 October 2026 to 31 December 2027. Each row is three numbers: how much is lit (a percentage), the phase angle in degrees, and a phase code from 0 (new) through 4 (full) to 7 (waning crescent). All for 10 pm Mountain Time.

• quarters: every new Moon, first quarter, full Moon and last quarter, with the exact UTC time, the Mountain Time date and the Moon's distance in kilometers.
• seasons: the equinox and solstice dates for 2026 and 2027.
• showers: twelve meteor showers, each with its active dates, peak nights, the American Meteor Society's rate at best, its parent comet or asteroid, where it seems to come from and its speed.
• cells: a list of 63 squares covering the United States, each 5° of latitude by 5° of longitude in one time zone, with the address of each square's own nightly file: sunset, dark-enough time, moonrise and moonset, and where the Moon and the bright planets are, for every night. Times are minutes after local midnight.

Things to do with it

1. Graph the Moon. Plot the lit percentage for one month. A child sees the wave of the phases rise and fall; two months show it repeating.
2. Check the sums. From worlds.csv, divide 365.25 by each planet's year to see how many trips around the Sun Mercury makes in one of ours.
3. Rank the showers. Sort by rate, then look up the Moon on each peak night in the moon rows. That's how Peabody's own verdicts work, as our 2027 meteor calendar explains.
4. Bar chart the moons. Saturn's 274 against Earth's one makes a memorable chart.

Where the numbers come from

The worlds are from NASA's planetary fact sheets, checked by hand. The sky is computed, not copied: before launch, Peabody ran astronomy-engine, an MIT-licensed astronomy library, for every night and every square. The shower dates and rates are the American Meteor Society's calendar. The squares come from the US Census Bureau's ZIP code tables. Each file lists its own sources at the top.

Nothing in the files is about any person. There are no visitors' ZIPs, no names and no birthdays: Sky Tonight looks up a ZIP on the phone, and My Space Card keeps everything on the device.

Three questions grown-ups ask

Can I use it in class or in a worksheet? Yes. The files say they may be reused with a link to peabody.kids/space.

How do I know how fresh it is? Every world row carries the day it was checked against NASA, and sky.json carries the day it was built, 30 October 2026. The sky table runs to the end of 2027.

Why 10 pm Mountain Time? It's one fixed time for the whole country. The Moon's shape is the same everywhere in the US on a given night; only the clock times differ.

Peabody (peabody.kids) has no ads and no sign-up, and the library has stories at your child's reading level. The planets in order page uses the same numbers.

Sources

- NASA, planetary fact sheets: every world's numbers, checked 29 October 2026.
- astronomy-engine 2.1.19 (MIT license): the Moon, the quarters, the seasons and the nightly files.
- American Meteor Society, meteor shower calendar 2026–2027: peak nights and rates.
- US Census Bureau, 2023 ZIP Code Tabulation Area gazetteer (public domain): the squares.

Free at peabody.kids/blog/free-space-dataset