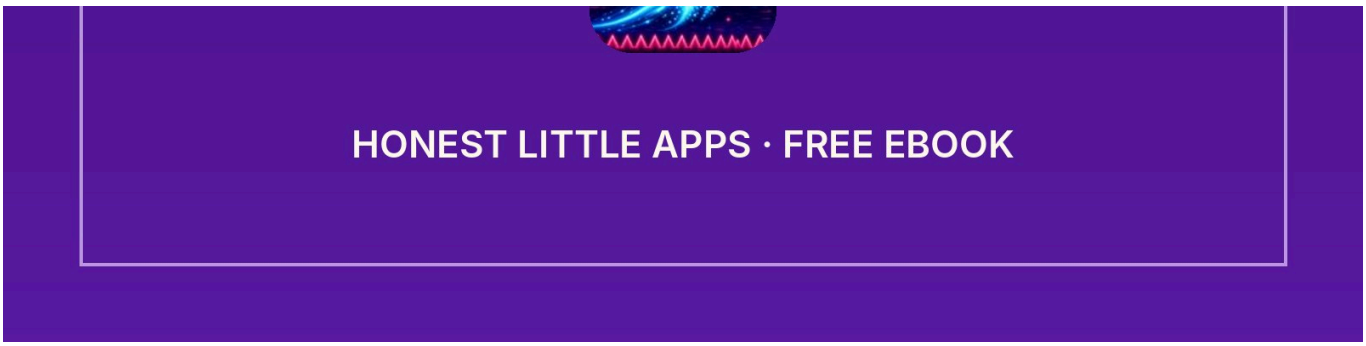
31 Gravity Facts

Moons, planets, orbits and falling things





31 Gravity Facts

Moons, planets, orbits and falling things

Short, accurate facts about gravity, one a day.

Day 1

The Moon's surface gravity is about 1.62 m/s², roughly one-sixth of Earth's 9.81 m/s².

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 2

Mars pulls at about 3.71 m/s², around 38% of Earth's gravity.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 3

Jupiter's gravity at its cloud tops is about 24.8 m/s², roughly 2.5 times Earth's.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 4

In 1971, Apollo 15's David Scott dropped a hammer and a feather on the Moon. With no air, they hit the ground together.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 5

Newton published his law of universal gravitation in the Principia in 1687.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 6

To escape Earth's gravity without further thrust, you'd need about 11.2 km per second.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 7

Astronauts on the ISS float because they're in constant free fall. Gravity up there is still about 90% of what it is on the ground.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 8

Einstein's general relativity (1915) describes gravity as the curving of space and time by mass.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 9

LIGO first detected gravitational waves on September 14, 2015, from two black holes merging over a billion light-years away.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 10

Ocean tides come mostly from the Moon's gravity. The Sun's tidal effect is a little under half as strong.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 11

A neutron star's surface gravity is on the order of a hundred billion times Earth's.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 12

Pluto's surface gravity is about 0.62 m/s², around 6% of Earth's.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 13

A belly-down skydiver reaches a terminal speed of roughly 200 km/h (about 120 mph).

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 14

GPS satellite clocks gain about 38 microseconds a day relative to the ground, mainly because gravity is weaker up there. The system corrects for it.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 15

Gravity is a little weaker at the equator (about 9.78 m/s²) than at the poles (about 9.83 m/s²).

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 16

The Sun holds about 99.8% of all the mass in the solar system.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 17

Changes in gravity travel at the speed of light. If the Sun vanished, Earth would keep orbiting for about 8 minutes.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 18

The Moon drifts about 3.8 cm farther from Earth every year. Laser reflectors left by Apollo measure it.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 19

Tidal friction is slowly lengthening Earth's day, by roughly 2 milliseconds per century.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 20

In April 2019 the Event Horizon Telescope released the first image of a black hole's shadow, in galaxy M87.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 21

Gravity is by far the weakest of the four fundamental forces. Between two protons it's about 10^{36} times weaker than electromagnetism.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 22

NASA reports that astronauts can lose around 1–1.5% of bone mass per month in microgravity without countermeasures.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 23

Venus's surface gravity is about 8.87 m/s², around 90% of Earth's.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 24

Saturn is huge but not dense, so gravity at its cloud tops (about 10.4 m/s²) is close to Earth's.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 25

The James Webb Space Telescope orbits near L2, a gravitational balance point about 1.5 million km from Earth.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 26

Voyager 2 used gravity assists from Jupiter, Saturn, Uranus and Neptune. It's still the only spacecraft to visit the last two.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 27

In 1798 Henry Cavendish measured the tiny gravitational pull between lead spheres, which effectively 'weighed' the Earth.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 28

A scale that reads 70 kg on Earth would read about 11.6 kg on the Moon.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 29

Fighter pilots with g-suits can tolerate around 9 g, nine times their body weight, for short periods.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 30

The falling-apple story comes from Newton himself, recounted by his friend William Stukeley. No, it didn't hit his head.

Now flip it: one quick run in a gravity game makes a good 60-second break.

Day 31

Black holes don't 'suck'.

Now flip it: one quick run in a gravity game makes a good 60-second break.

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