

# ORBIT DETERMINATION OF LRO AT THE MOON NASA

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**Is the LRO still orbiting the Moon?** NASA's Lunar Reconnaissance Orbiter (LRO) was the first U.S. mission to the Moon in over 10 years. LRO's primary goal was to make a 3D map of the Moon's surface from lunar polar orbit. LRO continues to orbit the Moon.

**What were some of the key findings from the lunar reconnaissance orbiter (LRO) spacecraft mission?** High-resolution images ( 50 cm/pixel) from the NASA Lunar Reconnaissance Orbiter Narrow-Angle Camera (LROC NAC) (Robinson et al., 2010) have revealed populations of small impact craters (less than a few meters across) as well as putative volcanic features that have anomalously few impact craters (e.g., Ina: Garry et ...

**What is the orbital period of the LRO?** The LRO orbit is nominally 50 km circular and polar, with a period of ~ 113 minutes. The orbital velocity is 1.6 km/s. LRO stays on near side of moon ~ 1 hour out of every two.

**What is the inclination of the LRO orbit?** Throughout the mission, it was observed that the orbit inclination wandered from its original Moon-Fixed average near 90°. In addition to a monthly oscillation as LRO flies over the entire lunar surface, a secular decrease in the inclination of approximately 0.4° per year was observed (Error!

**What altitude does the LRO orbit at?** In June of 2009, NASA launched the Lunar Reconnaissance Orbiter, a robotic spacecraft, now orbiting the Moon at an altitude of 50-200 km. LRO's primary objective is to make fundamental scientific discoveries about the Moon.

**What frequency bands does LRO use?** LRO has an S-band link (2.2 GHz) used primarily for low-rate engineering data and a K-band link (25.65 GHz) used for high-rate science data.

**Is there anything orbiting the Moon right now?** We do have satellites orbiting the moon. The “Lunar Reconnaissance Orbiter” - for example. As NASA's “Artemis” program gets closer to human landings on the Moon - there will be more satellites to help out with that.

**What resulted from the launching of the LRO spacecraft in 2009?** LRO and LCROSS were launched as part of the United States's Vision for Space Exploration program. The probe has made a 3-D map of the Moon's surface at 100-meter resolution and 98.2% coverage (excluding polar areas in deep shadow), including 0.5-meter resolution images of Apollo landing sites.

**What were the results of the LCROSS Mission?** LCROSS and LRO found evidence that the lunar soil in shadowy craters is rich in useful materials, and that the Moon is chemically active and has a water cycle.

**What does LRO stand for?** Lunar Reconnaissance Orbiter (LRO) | Definition & Facts | Britannica. Lunar Reconnaissance Orbiter.

**What evidence was found that there is water on the Moon?** They found hydrogen inside tiny beads of volcanic glass. Since no volcanoes are erupting on the Moon today, the discovery presented evidence that water had existed in the Moon when the volcanoes erupted in the Moon's ancient past.

**Is the Roche limit real?** The Roche limit is the point at which the tidal effects of a large body on a smaller one become powerful enough to overcome that second body's own internal gravity, causing it to disintegrate. It's named after Édouard Roche, the French astronomer who revealed his calculations of this theoretical limit in 1848.

**What is the incline of the Moon's orbit?** The plane of the Moon's orbit is inclined at a mean angle of 5.145° to the plane of Earth's orbit around the Sun. The intersection of these planes defines two points or nodes on the celestial sphere.

**Which planet has the steepest angle of orbit?** The planets of the solar system all orbit the Sun more-or-less in a plane. Compared to the Earth's orbit, which defines the plane at zero degrees, the orbit with the largest angle is Mercury's whose inclination is 7 degrees (the angle of the orbit of the dwarf planet Pluto is 17. 2 degrees).

**How to find the inclination of an orbit?** The inclination can be determined by observing the satellite's ground track. The latitude of the point furthest from the equator determines the satellite's inclination. Orbit velocity is in the same direction as Earth's rotation.

**What is the closest satellite to the Moon?** On May 4, NASA's Lunar Reconnaissance Orbiter (LRO) performed two engine burns, changing its orbit to one that gets within 12 miles (20 kilometers) of the moon's south pole and 103 miles (165 km) of the north pole. (LRO had been on a path that brought it within about 19 miles, or 30 km, of the south pole.)

**What is the resolution of the LRO image?** The two narrow angle cameras provide extreme closeup images of the lunar surface with a spatial resolution of 0.5 meters (1.6 ft) per pixel over a swath that is 5 kilometers (3.1 mi) wide. The wide angle camera provides 100 meters (328 ft) per pixel images over a swath 100 kilometers (62 mi) wide.

**When was LRO launched?** LRO launched along with its companion spacecraft, the Lunar Crater Observation and Sensing Satellite (LCROSS), from Kennedy Space Center on 18 June 2009 on an Atlas 5 401 launch vehicle at 21:32 UT (5:32 p.m. EDT).

**What frequency is UHF in space?** UHF band: from 300 MHz to 3 GHz, UHF bands facilitate data transmission between spacecraft and ground stations, ensuring reliable and efficient communication due to their ability to penetrate the ionosphere and effectively transmit information over longer distances.

**What is the difference between UHF and SHF?** VHF is very high frequency about 30Mhz to 400Mhz. UHF is Ultra High Frequency about 400 to 1000Mhz. SHF is Super High Frequency about 1000Mhz and above.

**What is the diameter of the antenna for the lunar reconnaissance orbiter?** The first facet was an increase in the size of the already planned two SDO antennas from 9-meter to 18-meter diameter and the second facet was the addition of a third 18-meter antenna for GN support of LRO.

**Is the Eagle lander still orbiting the Moon?** After the crew re-boarded Columbia, the Eagle was abandoned in lunar orbit. The location of its impact on the Moon's surface during an orbit decay is unknown, and there is evidence that Eagle may still be in orbit.

**Is anything currently orbiting the Moon?**

**Is the lunar module Aquarius still in orbit?** One ascent stage (Apollo 10's Snoopy) was discarded in a heliocentric orbit after its descent stage was discarded in lunar orbit. The other three LMs were burned up in the Earth's atmosphere: the four stages of Apollo 5 and Apollo 9 each re-entered separately, while Apollo 13's Aquarius re-entered as a unit.

**Can you still see the lander on the Moon?** We can see the landers and the boot prints in images taken by NASA's Lunar Reconnaissance Orbiter, though. While the camera on this mission has a mirror that is only about 20 centimeters wide, the spacecraft is in lunar orbit and has passed over the Apollo landing sites at an altitude of only 50 km.

## **Simple Journal Entry Questions and Answers**

### **1. What is a journal entry?**

A journal entry is a record that documents a business transaction. It contains information about the date, the accounts affected, and the amount of the transaction.

### **2. What is the purpose of a journal entry?**

Journal entries are used to keep track of the financial transactions of a business. They are the first step in the accounting process and are used to create financial statements.

### **3. What are the types of journal entries?**

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There are two types of journal entries: debit entries and credit entries. Debit entries increase the balance of an account, while credit entries decrease the balance of an account.

#### **4. How do I record a journal entry?**

To record a journal entry, you must first determine the accounts that are affected by the transaction. Then, you must determine the amount of the transaction. Finally, you must enter the journal entry into your accounting system.

#### **5. What are the common errors that are made when recording journal entries?**

Some of the most common errors that are made when recording journal entries include:

- Entering the incorrect date
- Entering the incorrect account
- Entering the incorrect amount
- Failing to enter a description of the transaction
- Making a math error

### **Sketchbook Pro Digital Painting Essentials**

Sketchbook Pro is a powerful and versatile digital painting application that offers a wide range of tools and features. If you're new to digital painting or looking to expand your skills, here are some essential tips to get you started with Sketchbook Pro:

#### **What are the key features of Sketchbook Pro for digital painting?**

Sketchbook Pro offers a comprehensive suite of digital painting tools, including brushes, pencils, markers, and blending tools. It also provides a variety of blending modes, layer management, and adjustment tools.

#### **How do I choose the right brushes for my digital painting?**

Sketchbook Pro offers a wide variety of brushes, each with its own unique properties. Experiment with different brushes to find the ones that best suit your

painting style. Consider the brush size, shape, opacity, and blending properties.

### **What are the essential techniques for digital blending and shading?**

Blending and shading are essential techniques for creating depth and realism in your digital paintings. Use blending tools to smooth transitions between colors. Experiment with different blending modes to create various effects, such as adding depth or creating highlights.

### **How can I effectively use layers in my digital painting workflow?**

Layers allow you to organize and edit your painting elements separately. Create separate layers for different elements, such as the background, characters, and objects. This makes it easier to make changes and experiment with different compositions.

### **What are some tips for troubleshooting common digital painting issues?**

If you encounter issues with your digital paintings, such as brush lag or color inconsistencies, try adjusting the brush settings, canvas size, or layer properties. Consider using a different brush or experimenting with the settings to find the optimal combination for your needs.

### **Unlocking the Hidden Meanings: Scientific Root Words, Prefixes, and Suffixes**

In the complex and evolving world of scientific terminology, understanding the underlying root words, prefixes, and suffixes is crucial for deciphering the intricacies of scientific concepts. These building blocks provide a foundation for a comprehensive vocabulary that enables clear and precise communication within the scientific community.

**Q: What are root words?** A: A root word is the core of a word, carrying its essential meaning. For example, the root word "bio" means "life," and it is found in words like "biology" and "biosphere."

**Q: How do prefixes and suffixes modify root words?** A: Prefixes are added before a root word to change its meaning. For instance, the prefix "ante-" means "before," so the word "antediluvian" refers to something that existed before a great

flood. Similarly, suffixes are added after a root word to indicate grammatical function or to change its part of speech. The suffix "-logy" means "study of," so the word "biology" refers to the study of life.

**Q: What are some common prefixes in scientific terminology?** A: Some common prefixes include "anti-" (against), "hyper-" (above), "hypo-" (below), "macro-" (large), and "micro-" (small). These prefixes allow scientists to describe the relative sizes, characteristics, or behaviors of things.

**Q: What are some common suffixes in scientific terminology?** A: Some common suffixes include "-cide" (killer), "-ectomy" (surgical removal), "-ion" (action or result), and "-itis" (inflammation). These suffixes provide insight into the effects or processes associated with certain concepts.

**Q: How can understanding root words, prefixes, and suffixes enhance scientific literacy?** A: By mastering the building blocks of scientific vocabulary, individuals can expand their understanding of complex scientific ideas, access specialized literature, and effectively communicate their knowledge with others. It empowers them to navigate the ever-changing landscape of scientific information and contribute to the advancement of human knowledge.

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