

标准英语分级读物·学生卷·第1级

月球上的数学 MATH ON THE MOON

原版美国阅读教程
内附全套教学指导及练习
用英文阅读，学百科知识

完美实现国家新课程标准要求

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月球上的数学

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最佳学习安排

训练正确阅读习惯，提高理解分析能力

- 第一步， 正式的学习开始之前，请先认真阅读封面封底，以了解本书的特点。
- 第二步， 在开始阅读某一本书时，首先阅读目录页，然后粗略翻阅全书各页，看一看照片和图表。根据以上粗读所获信息判断出本书的基本内容和主题。
- 第三步， 想一想你已经掌握了多少关于本书主题的知识。
- 第四步， 开始阅读。阅读的重点放在与主题相关的新知识上。哪些是你通过阅读本书获得的新知识，用简洁的方式做上标记。
- 第五步， 边读边标出你有切身体会的地方，你喜欢或支持的观点或做法。
- 第六步， 遇到当页注释中没有的生词，要尽量根据上下文猜出它的意思，而不要马上查词典，以免打断阅读。将这些生词标出来，读后查词典印证你的猜测。
- 第七步， 读完后，总结文章主要讲的是什么，并在文中找出具体内容支持你的判断。

写作

- 第八步， 完成阅读后，写出本书提要。
- 第九步， 分析本书文章的写作方法，按要求完成“教学指导与练习”中的写作练习。

口语讨论

- 第十步， 与同学们就本书主题展开讨论，并提出自己的观点和结论。

付诸行动

- 第十一步，行动起来，完成“教学指导与练习”中设计的全部活动，包括科学实验和社会活动！

重要提示

利用词汇注释巩固和扩充词汇量

为扩充学生词汇量，超出高中课本范围的词汇在读本各页中做了注释，并汇总在书后词汇表和索引中，以方便学习和记忆。

利用音标学习单词发音

为规范本读物的音标标注方法，并更充分地体现美式发音的特点，本读物采用标准的Jones 国际音标和K.K音标，Jones 在前，K.K在后，同时标注同一个单词。此两种音标为目前使用最多的音标系统，而K.K音标又能充分体现美式发音的特点。音标查证以商务印书馆的《牛津高阶英汉双解词典》（第四版）为准。

月球上的数学

Math On The Moon

BY ERIN SULLIVAN

王金玉 注

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The Moon In History

People have always wondered about the Moon. Thousands of years ago, people gazed at the Moon and used it to keep track of time. Later, people invented instruments such as telescopes so that they could see the Moon more clearly and learn about it.

With advances in technology, people were able to learn more about the Moon. In the mid-1900s, scientists launched rockets that could explore the Moon's surface. Later, astronauts actually went to



gaze [geɪz, gez] v. 盯, 凝视

telescope ['telɪskəʊp, 'teləskop]

n. 望远镜

launch [lɔːntʃ, lɒntʃ] v. 发射

astronaut ['æstrɒnɔːt, 'æstrənɒt] n. 宇航员

the Moon. They sent lots of information about the Moon back to Earth. As a result of all this Moon exploration, the Moon is no longer as great a mystery as it once was.



If you had lived thousands of years ago, what might you have thought about the Moon?



Galileo demonstrates the use of the telescope. The first telescope was invented in 1608. The following year, Galileo built his own telescope.



Buzz Aldrin descended from his spacecraft to become one of the first two astronauts to land on the Moon.

mystery ['mɪstəri] n. 神秘的事物

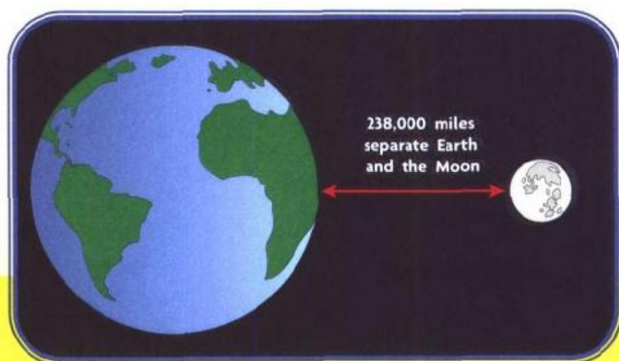
demonstrate ['dɛmənstreɪt, 'dɛmən,streɪt] v. 证明, 表演, 论证, 示范

descend [dɪ'send, dɪ'send] v. 下, 降, 下来

spacecraft ['speɪskrɑ:ft, 'speɪskræft] n. 宇宙飞船

Moon Facts

The Moon is a **satellite** of Earth. A satellite is an object that revolves around, or **orbits**, another larger object in space. The Moon is the closest object to us in the solar system. Even so, it is still more than 238,000 miles away from Earth!



+ - × ÷
Solve This!

Rounding off the Moon's distance from Earth at 238,000 miles, how many hours would it take you to get to the Moon in these different ways:

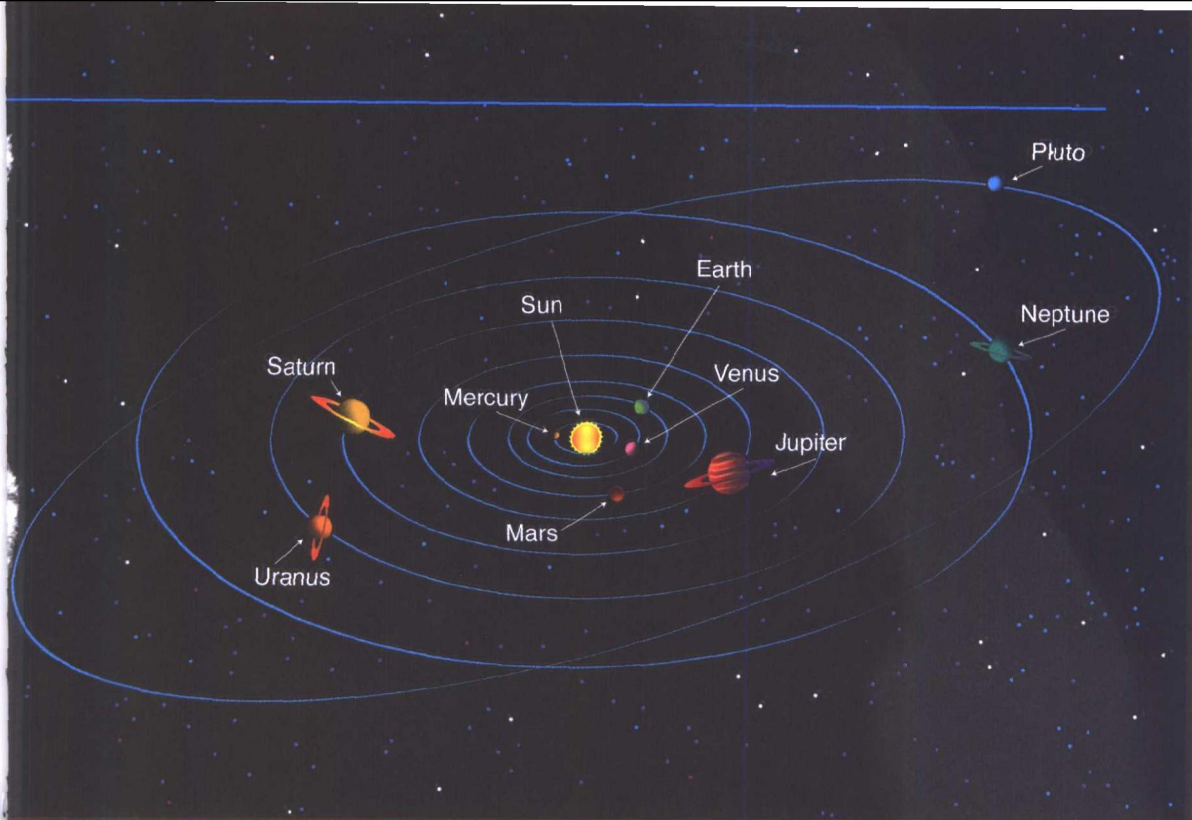
- 1 walking at 4 miles per hour?
- driving at 60 miles per hour?
- flying in an airplane at 400 miles per hour?

satellite ['sætəlaɪt, 'sætɪlaɪt] n. 卫星

orbit ['ɔ:bit, 'ɔrbit] v. 绕...轨道而行

revolve [rɪ'vɒlv, rɪ'vʌlv] v. 旋转

solar ['səʊlə, 'solə] a. 太阳的, 日光的



The next-closest object to us in the solar system is Venus. Venus is about 26 million miles away from Earth. Then there's Mars, which is about 49 million miles away from Earth. The Sun is about 93 million miles away!

Venus ['vi:nəs, 'vinəs] n. 金星

Mars [mɑ:z, mɑ:ɪz] n. 火星



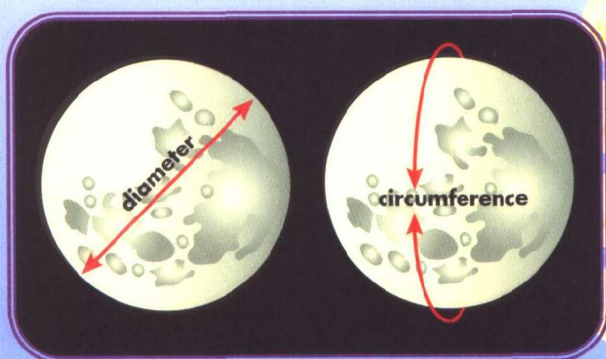
Solve This!

- 2** You know that Venus is 26 million miles from Earth and the Moon is only 238,000 miles away. About how many one-way trips could you take to the Moon in the time it would take you to get to Venus?

238,000 Miles

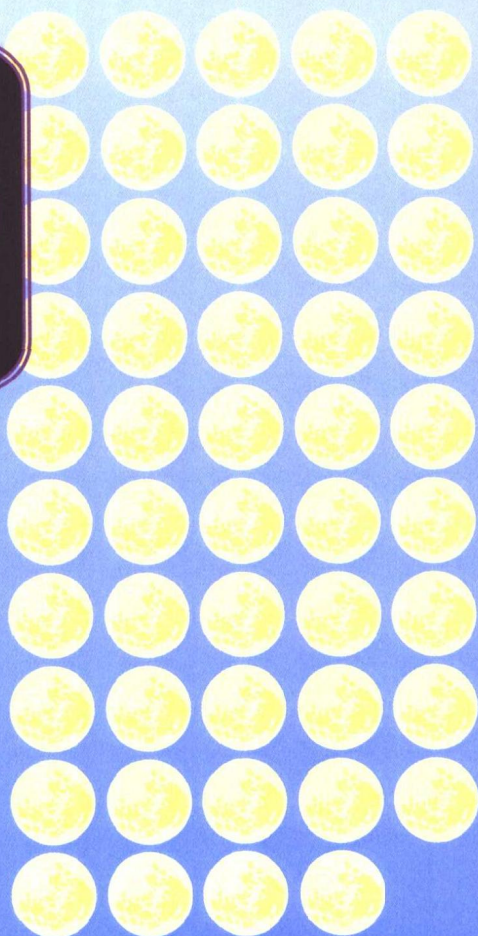


The Moon is much smaller than Earth. Its **diameter** is 2,160 miles. The diameter is the distance across the center of a circle. The Moon's **circumference** is about 6,800 miles. The circumference is the distance around the edge of a circle. About forty-nine Moons could fit inside Earth.



Solve This!

- 3 If Earth's circumference is about four times greater than the Moon's, what is the approximate circumference of Earth?



diameter [daɪˈæmɪtə, daɪˈæmətə] n. 直径

circumference [səˈkʌmfərəns, səˈkʌmfərəns] n. 圆周

approximate [əˈprɒksɪˈmɪt, əˈpræksəˈmɪt] a. 大约的, 近似的

Circle Math

You can find the circumference of a circle.

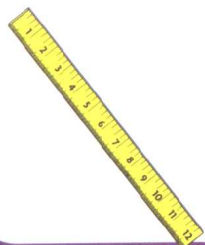
The shapes of Earth, the Moon, and the other planets are circles. The distance around the edge of a circle is the circumference. It is related to the diameter of the circle by a number mathematicians call "pi." Pi is the Greek letter π . Its symbol is π . Its number value is a little more than 3. You can use the value 3 for this experiment.

THINGS YOU WILL NEED:

- string
- chalk
- pushpin
- sheet of stiff paper
- ruler

WHAT TO DO:

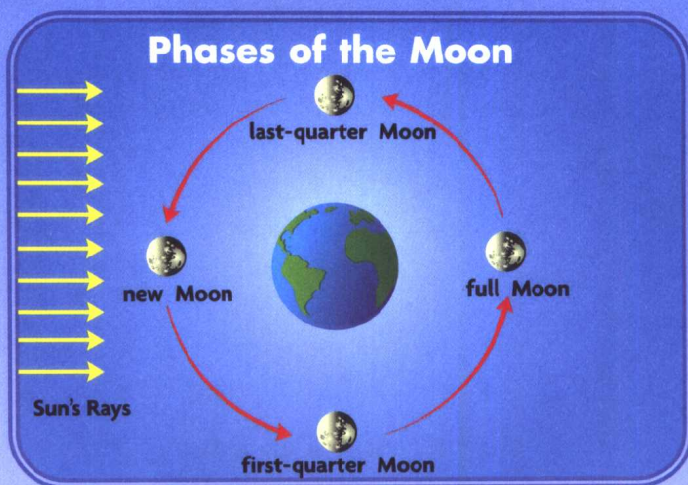
1. Cut a piece of string about 12 inches long. Tie the piece of chalk to one end.
2. Wind the other end of the string around the pushpin.
3. Stick the pushpin into the paper.
4. Use the chalk to draw a circle around the pushpin. Stretch the string out taut. Then, using the pushpin as a pivot, use the chalk to draw a circle.
5. Find the diameter of the circle by multiplying the length of the taut string by 2.
6. Multiply the diameter by 3 to find the circumference.



taut [tɔ:t, tɒt] a. 拉紧的, 绷紧的

pivot ['pɪvət] n. 枢轴, 支点

multiply ['mʌltɪplaɪ, 'mʌltəplaɪ] v. 使相乘



The Moon orbits Earth about once every twenty-seven and one-third days. It also spins on its own axis in the same period. This means that the Moon always shows the same side to Earth. There's a side of the Moon that we never see!



Solve This!





- | | |
|---|--|
| <p>4 How many times a year does the Moon completely circle Earth?</p> | <p>May 1, on what date will you see:</p> |
| <p>5 If each phase of the Moon lasts for about a week and there is a new Moon on</p> | <p>a first-quarter Moon?
 a full Moon?
 a last-quarter Moon?
 the next new Moon?</p> |

spin [spin] v. 旋转

axis ['æksɪs] n. 轴

phase [feɪz, fes] n. 相 (月相)




Name	Description	
New Moon	The Moon is not visible.	
First-Quarter Moon	The right half of the Moon's lit side is visible.	
Full Moon	The whole lit side of the Moon is visible.	
Last-Quarter Moon	The left half of the Moon's lit side is visible.	

As the Moon orbits Earth, our view of it changes. Sometimes we see only a small part of it. At other times, it's a big, bright circle. These different shapes of the Moon are called phases. The Moon goes through a series of phases. During these phases, the amount of the Moon that we see from Earth changes.



Moon Mission

 **F**or thousands of years, people have wondered what it would be like to visit the Moon. In the twentieth century, people finally were able to find out.

In the 1950s, the former Soviet Union launched a series of unmanned **probes** that were intended to land on the Moon and send information about it back to Earth. The first probe, *Luna 1*, missed the Moon by more than 3,000 miles and went into orbit around the Sun.

Luna 2, launched in September 1959, made it to the Moon. It was the first probe to touch the Moon.



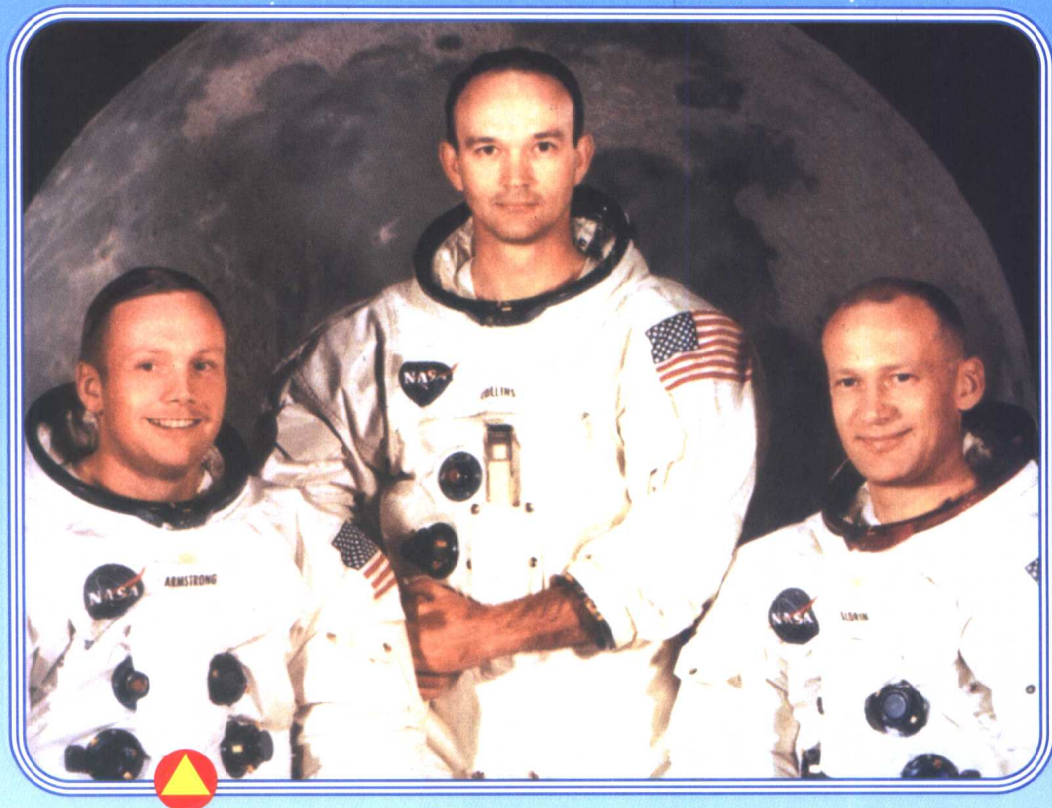
Solve This!

- 6** Although launched only two months apart, *Luna 11* had a lifespan of 33 days, whereas *Luna 12* had a lifespan of 108 days. How many days longer was *Luna 12*'s lifespan than *Luna 11*'s?

a series of 一系列

probe [prəʊb, prob] n. 探测器

unmanned [ˌʌn'mænd] a. 无人操纵的, 自动的

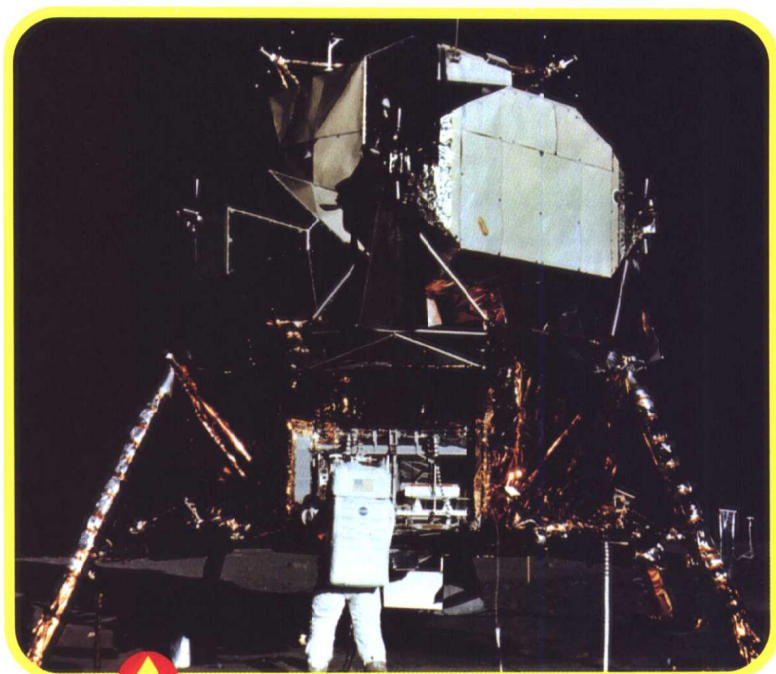


Neil Armstrong, Michael Collins, and Buzz Aldrin

The Luna program continued to develop. Later Luna missions were advanced enough to send back photos of the Moon and samples of the Moon's soil.

But it was not until July 16, 1969, that an American spacecraft named *Apollo 11* carried three men into space. They were Buzz Aldrin, Michael Collins, and Neil Armstrong. Their goal was to walk on the Moon.

mission ['mɪʃən] n. 飞行任务



The *Eagle* lands on the Moon.

After three days of traveling through space, the astronauts neared the Moon. Collins was in the command module, *Columbia*. *Columbia* orbited the Moon while Aldrin and Armstrong piloted a smaller spacecraft that could land on the Moon. It was called the *Eagle*.

On July 20, 1969, Aldrin and Armstrong landed the *Eagle* on the surface of the Moon. Armstrong stepped onto the Moon's surface. He said, "That's one small step for a man...one giant leap for mankind."

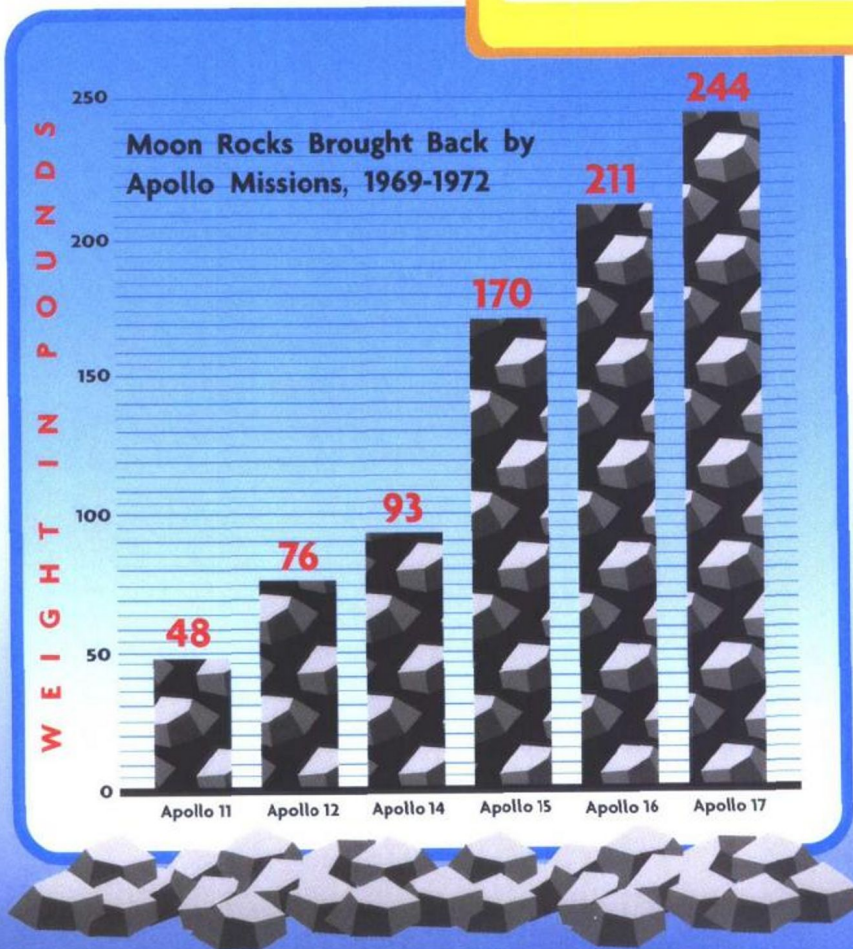
command module n. 指令舱, 驾驶舱

leap [li:p, lip] n. 飞跃

Aldrin and Armstrong spent a total of two and a half hours on their Moon walks. They collected Moon rocks and soil, set up scientific experiments, and put up an American flag.

Solve This!

- 7 According to this graph, how many pounds of rocks did each Apollo mission bring back to Earth? What was the total number of pounds of rocks brought back?



There were seventeen Apollo missions in all. Twelve missions carried astronauts. Some missions orbited Earth, some orbited the Moon. Some landed on the Moon, and some explored the Moon in great depth.

MISSION HIGHLIGHTS

APOLLO MISSIONS FROM OCTOBER 1968 TO DECEMBER 1972

DATE	MISSION	HIGHLIGHTS
Oct. 11-12, 1968	APOLLO 7	orbited Earth 163 times while providing the first live television images from a manned spacecraft
Dec. 21-27, 1968	APOLLO 8	orbited the Moon 10 times while taking photographs of Earth and the Moon
Mar. 3-13, 1969	APOLLO 9	orbited Earth 152 times while testing human reactions to space and weightlessness
May 18-26, 1969	APOLLO 10	orbited the Moon 31 times while conducting a dress rehearsal for landing on the Moon; transmitted the first live color television images from space
July 16-24, 1969	APOLLO 11	orbited the Moon 30 times and was the first mission to land on the Moon; the spacecraft landed in the Sea of Tranquility, where an American flag was planted on the Moon's surface
Nov. 14-24, 1969	APOLLO 12	orbited the Moon 45 times and also retrieved parts of an unmanned spacecraft that had landed on the Moon
April 11-17, 1970	APOLLO 13	was the third attempted landing on the Moon; the mission had to be ended after an oxygen tank ruptured; the crew was returned safely to Earth
Jan. 31-Feb. 4, 1971	APOLLO 14	orbited the Moon 34 times; the first mission to use a handcart to transport materials
July 26-Aug. 7, 1971	APOLLO 15	orbited the Moon 74 times; used the Lunar Roving Vehicle (LRV), an electric-powered car that traveled over 17 miles of the Moon's surface, for the first time; this mission also was the first to leave a small subsatellite in orbit around the Moon
April 16-27, 1972	APOLLO 16	orbited the Moon 64 times; was the first mission to study the highlands area of the Moon
Dec. 7-19, 1972	APOLLO 17	orbited the Moon for 17 hours; was the last landing mission

reaction [r'ækʃən] n. 反应

weightlessness ['weɪtlɪsnɪs, 'wetlɪsnɪs] n. 失重状态

rehearsal [rɪ'hɜ:səl, rɪ'hɜ:sl] n. 排练, 训练

rupture ['rʌptʃə, 'rʌptʃə] v. 破裂, 断绝

retrieve [rɪ'tri:v, rɪ'triv] v. 找回 transmit [trænz'mɪt] v. 传送