

**ANSWER KEY**

**ONE SMALL STEP FOR A MAN ...**

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| 1- A | 6- A  |
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**Transcript**

I'm Andrew Chaikin author of 'A Man on the Moon: the voyages of the Apollo astronauts'. By July 1969, NASA was racing to meet president Kennedy's audacious 1961 challenge - to land a man on the Moon and return him safely to the Earth by the end of the decade. Apollo 11 might just be the mission that transformed the Moon from a light in the sky into a place where humans had actually walked. For its history making crew, Commander Neil Armstrong, Command Module Pilot Mike Collins, and Lunar Module Pilot 'Buzz' Aldrin, this was the ultimate test flight. But by far, the most complex and difficult part was the lunar landing itself. Armstrong had privately concluded that they had about a 90% chance of getting home safely but only a 50% chance of a successful landing. On the afternoon of July 20th 1969, Armstrong and Aldrin stood side by side at the controls of their Lunar Module 'Eagle'. 50,000 feet above the Moon, they ignited their descent engine and started down toward the surface. Almost immediately there were problems that might abort the mission. First it was trouble with communications with Earth. Then, repeated alarms signalled that the on-board computer was becoming overloaded with too many tasks and might stop working. By the time mission control solved these problems, Eagle was less than 1,000 feet above the Moon. But with all the distractions, Armstrong had missed seeing the landmarks he'd memorised. Now, he looked out his window and saw that the computer was steering them toward a crater the size of a football stadium, surrounded by boulders, some as big as cars. This was not the place he wanted to try to make history's first lunar landing. Armstrong decided to take partial control from the computer, to adjust Eagle's flight path and rate of descent. The Lunar Module was actually easier to fly than he had expected, but he knew he only had enough fuel for one try at a landing. He steered past the big crater and flew onward, searching for a safe landing spot. Finally, he saw a place that looked good. With just a hundred feet to go, Armstrong brought Eagle down for the final descent. His hunt for a new landing spot had eaten into their fuel supply and that fuel was getting lower by the second. And now he had a new problem - the blast from the descent rocket was kicking up lunar dust, sending it rushing out in all directions in a fast moving haze that obscured his view. While Aldrin read out the diminishing altitude, Armstrong guided Eagle lower, struggling to keep from drifting sideways or backwards lest they risked tipping over at touchdown. Now came an ominous warning from Earth - just 60 seconds of fuel left before they would be forced to abort - now only 30 seconds. Finally a blue light on the instrument panel signalled that one of three metal probes attached to Eagle's landing legs had touched the Moon. Eagle settled gently onto the surface, then Armstrong shut down the descent rocket. In Houston it was 3.17 p.m. Armstrong broadcast a message of triumph to Mission Control:

- - "Houston, Tranquility Base here. The Eagle has landed."  
"Roger, Twank...Tranquility, we copy you on the ground. You got a bunch of guys about to turn blue. We're breathing again. Thanks a lot!"

This incredible moment belongs not just to the crew of Apollo 11, but the 400,000 people who had worked tirelessly for nearly a decade to make this momentous achievement possible. The Apollo teams had turned a science-fiction dream into reality - humans were on the Moon. Almost 7 hours after landing with 600 million people around the world watching and listening, Armstrong emerged from Eagle's front hatch. Sealed in his pressurised space suit, he descended the ladder on the front landing leg, stood in the foil-covered footpad, placed his left boot onto the ancient dust of the Moon and spoke for the ages -

- "One small step for (a) man, one giant leap for mankind"

Armstrong spent his first minutes on the surface of another world, getting used to the Moon's 1 / 6 gravity, taking pictures and collecting a first, priceless sample of lunar dust and rocks. Then it was Buzz Aldrin's turn:

- Beautiful, beautiful
- Isn't that something?
- Magnificent sight out here.
- Magnificent desolation"

Aldrin, recently talked about what it was like to stand on the surface of the Moon:

Nothing prepared me for the starkness of the terrain. It was barren and rolling, and the horizon was much closer than I was used to. I even felt a bit disoriented, because of the nearness of the horizon. On Earth we have no awareness of its curvature and it's easy to understand why people used to think that it was flat. But on the Moon, which is only 1/4 the size of the Earth, I had the visual impression that we were standing on the knoll of a huge, gentle hill that extended all the way to the horizon, and was neatly rounded off. I could actually sense that Neil and I were standing on a sphere.

I was particularly struck by the contrast between the starkness of the shadows and the desert-like barrenness of the rest of the surface. It ranged from dusty grey to light tan, and it was unchanging except for one startling sight - our lunar module, with its black, silver and bright orange-yellow thermal coating shining brightly in the otherwise colourless landscape.

The colour of the ground depended on the angle of the Sun. It could be shades of grey, or it could be quite bright if the Sun was at my back. If I looked around my own shadow, the surface gave off a whitish colour. But if I looked toward the Sun, it appeared as dark as charcoal. High overhead, almost straight up, I could see the Earth, a beckoning oasis shining far away in the black sky. But it was hard for me to look up that high because of the stiffness of our spacesuits. I also couldn't look directly at the Sun. It was too brilliant - almost like a floodlight of pure white light. The amount of light that reflected off the lunar surface was so high, it was as if we were standing in brightly lit snow. The sky was utter blackness - I could see no planets or stars.

As planned, I jogged around a bit to test my maneuverability. In the Moon's 1/ 6 gravity it felt almost like floating and I had both feet in the air most of the time as I ran. It looked like fun and it was, but it was also exhausting. My strongest memories of those few hours on the lunar surface was a constant worry that we'd never accomplished all the experiments we were scheduled to do. There wasn't time to savour the moment. I do remember that one realisation wafted through my mind when I was up there - I noted that here were two guys, farther away from anything than two guys had ever been before and yet, at the same time, I was very conscious that everything we did was being closely scrutinized from almost a quarter of a million miles away.

The rest of the two and a half hour Moon walk was a blur of activity: Armstrong and Aldrin planted the United States' flag and took a phone call from president Richard Nixon. Aldrin tested different methods of running on the Moon. Armstrong collected rock samples. The two explorers set up a pair of scientific experiments, including a seismometer to detect moonquakes. Armstrong took an unplanned run back to an 80-foot diameter crater, about 200 feet from the Lunar Module, where he took photographs. Aldrin hammered a metal tube into the ground to extract a core sample of lunar dust. And the men left behind a small packet containing a memorial to the crew of Apollo 1, who died in a flash fire inside their space craft, during a pre-flight test, along with a silicon disk, containing messages from leaders of 73 nations and a small gold pin representing an olive branch - a symbol of the peaceful nature of Apollo 11 - then all too quickly it was time to climb back into Eagle for a meal and a night's rest. Meanwhile in lunar orbit, alone in the Command Module Columbia, Mike Collins was sweating out the real moment of truth of Apollo 11: lift off from the Moon. Armstrong and Aldrin would fire the single engine of Eagle's ascent stage to leave the surface and rendezvous with him in lunar orbit. If that engine didn't work, his crew mates would die on the Moon, and Collins would have to return to Earth alone. The next day, as the world held his breath, Aldrin counted down the final seconds to the critical moment -

- "Nine, eight, seven, six, five, fourth stage. Engine on ascent. Proceed. ...Beautiful. Twenty six, thirty six feet per second up five. Pitch over"

Eagle soared into space heading for lunar orbit. Less than four hours later, Collins saw his crew mates returning and he knew they had really done it. When the astronauts splashed down on July 24th, NASA had accomplished a giant leap for mankind.

*From Google Moon*