

Get set for outer space!

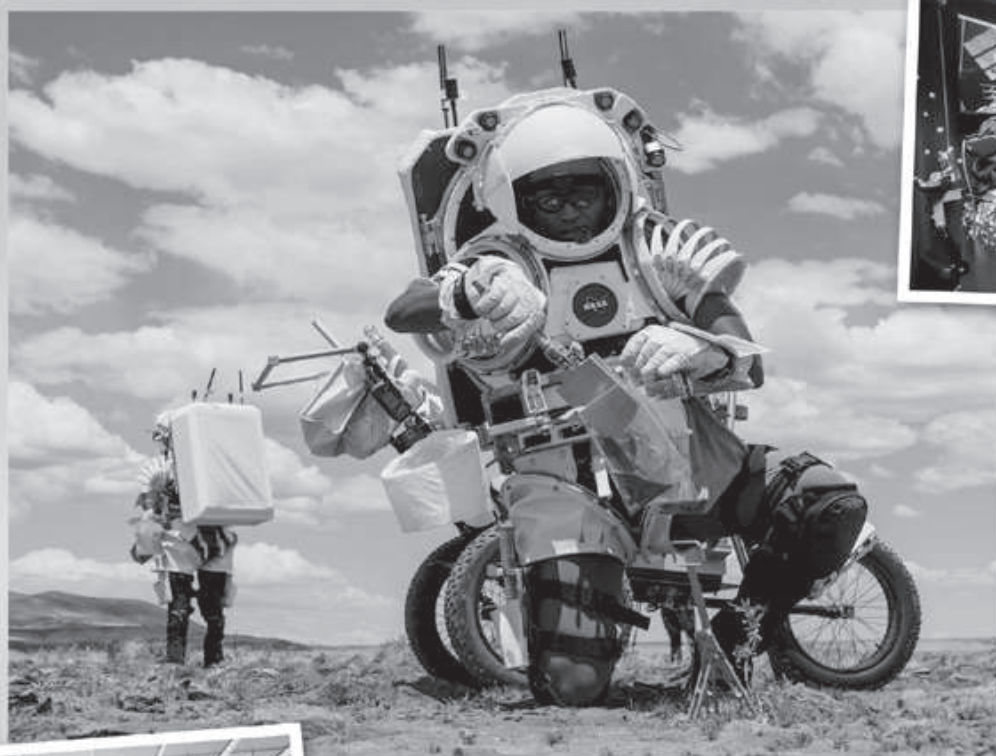
Discover some of the amazing ways that astronauts train for missions to the moon and Mars right here on planet Earth.

Before any astronaut can blast off toward the moon or Mars, they need to practice. This training can happen in some strange and unexpected places, including at the bottom of a swimming pool, inside an aircraft cabin, and within a 3D-printed habitat in Texas. These are known as analog missions — carefully designed experiences that mimic the conditions of space as closely as possible, right here on Earth. Analog missions serve an important purpose. They let scientists test equipment, spot problems and study how people cope with the physical

and psychological demands of space exploration — all without the enormous cost and risk of actually leaving Earth. Read on to discover some of the clever ways NASA astronauts are getting ready for the challenges of outer space.

Mars Dune Alpha

This habitat was made using concrete-like material in an enormous 3D printer from a company called ICON. Sending



Astronauts collect rock and dust samples in the desert.



a 3D printer to Mars is much easier than sending building supplies. On Mars, it could use local materials to build an airtight habitat. A crew of four lived inside Mars Dune Alpha for 378 days. They communicated with friends, family and co-workers with a delay that simulated what astronauts on Mars would experience. They were also given a series of assignments, such as “space walks” in a red sandbox, and they even grew their own crops!

Finding NEEMO

NEEMO (NASA Extreme Environment Mission Operations) sends astronauts and other scientists to live in an undersea research station. Living in this station, 60 feet underwater, is similar to staying on the International Space Station, as it is quiet and secluded.

VR adventures

Astronauts can use virtual reality simulators to help them train for the experience of being in outer space while staying safely on Earth.

Desert RATS

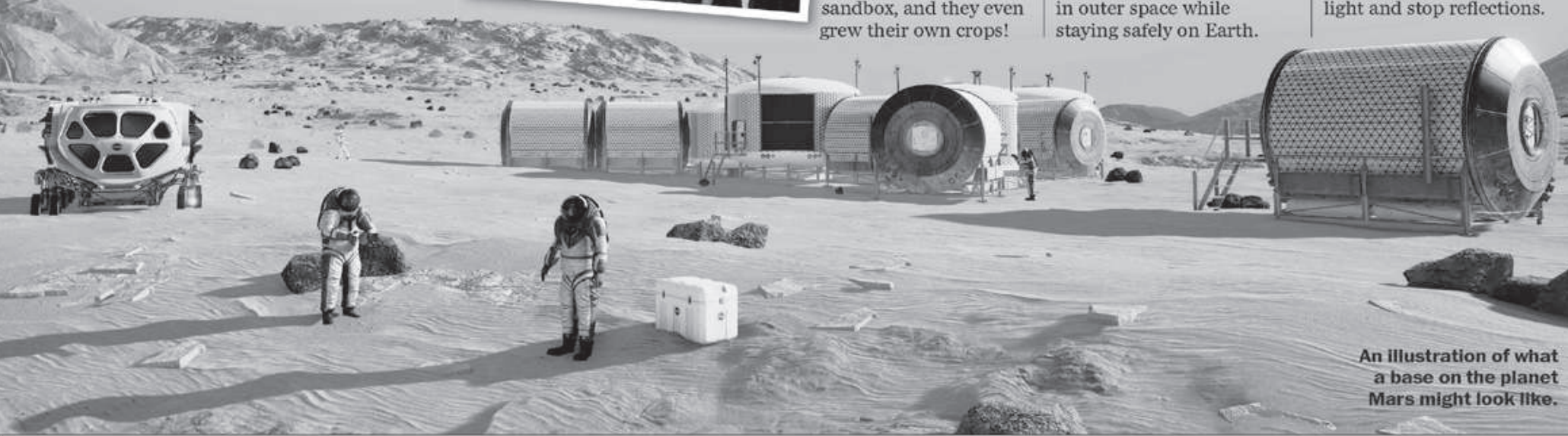
The team behind Desert RATS (Research and Technology Studies) tests robots and space vehicles. They drive them in the desert to see how they would cope on the harsh terrain of other planets.

Taking the “vomit comet”

Astronauts prepare for zero gravity by flying in an airplane that lets them experience brief periods of weightlessness. The flight can make people sick, which has earned this plane a gross nickname: the “vomit comet”!

Dark side of the pool

The surface of the moon can be very dark when the sun isn't shining on it. So to practice navigating in the dark, these astronauts are using flashlights to explore the bottom of a 40-foot-deep training pool. There are dark curtains running around the perimeter (edge) of the pool to block out light and stop reflections.



An illustration of what a base on the planet Mars might look like.

PUZZLES & JOKES

Stumped? Don't worry, you can find the solutions to all the puzzles at: whatonearthmag.com/answers

SPORTS WORD SEARCH

Can you spot the names of 12 sports objects hidden in our word search puzzle? Good luck!

J A C K J
W A H B V V D U A
V O Q W C J O J V R T
A O A P K A L K K W R A C
K H R Q V N A C Y R O U F
M I F R E A D W O F S W I R R
T L L L A L S U C S I D G I C
B H I C B C S W E E S T G S S
O N Q T Q P K Y L A E E T B P
S P L X B N I E T I C R E E G
N O T A B I P T K I L F E
U S N L V C O U E Q P P Q
T H L U M G H W D U D
L Q W W G S U C P
I R R X K

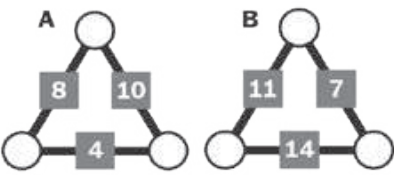
- | | | |
|--------|---------|-------------|
| ARROW | FRISBEE | PUCK |
| BALL | JACK | RACKET |
| BATON | JAVELIN | SHUTTLECOCK |
| DISCUS | OAR | TEE |

NUMBER TRIANGLES

In the triangles below, the numbers inside the squares are the sums of the two numbers in the connected circles. For example:



Can you figure out which number should appear in each of the circles? All the numbers in the circles are between 1 and 10, and a number can only be used once in each triangle.



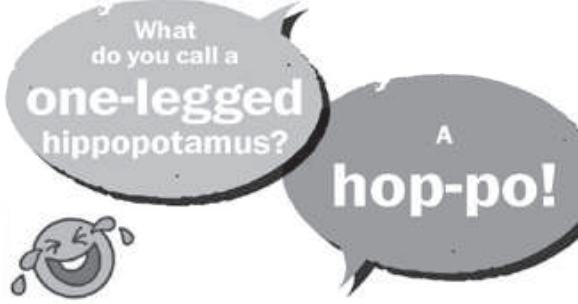
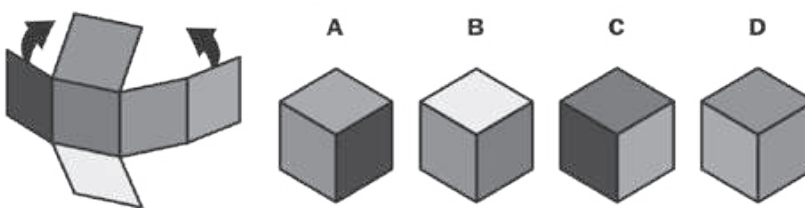
SUDOKU

Fill all the empty squares so that every row, column and 3x2 box contains each of the numbers 1 to 6.

4		5		1	6
	1	6			
2			1		5
					3
6	3	1			4
	4				3

CUBE IT!

The six-sided shape on the left can be folded to form a cube. Only two of the cubes on the right can be made by it. Which are they?



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