



## Rise of the robots!



For thousands of years, people have imagined machines that could talk and move by themselves. Today, robots are everywhere.

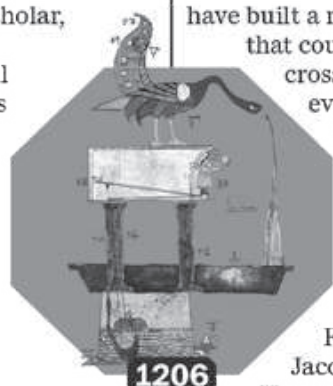
Let's take a look at the history of robots — from early mechanical clocks to today's robot dance teams. By Benjamin Weiner

**R**obots are machines that can act like living beings: Some can walk around; others can move objects from one place to another. You may think that robots are a modern invention, but actually people have been imagining and designing robots for thousands of years! Of course, we've come a long way since the first robot creations. How did we get to this brave new world of the robot? And where are we going next? To find out, we will travel back in time to discover the amazing history of robots. Let's robo-go!

**1400 B.C.**  
The ancient Babylonians develop a water clock, a machine that uses a regular flow of water to measure time. This ingenious device is considered to be one of the first robotic machines.

**400 B.C.**  
The Chinese engineer King-Shu Tse designs a mechanical bird and horse.

**1206**  
The Muslim scholar, engineer and inventor Ismail al-Jazari writes *The Book of Knowledge of Ingenious Mechanical Devices*, which describes dozens of amazing machines, including a "robot band" that consisted of four automated mechanical musicians.



1206

**1302**  
The Artois royal family creates "prank robots" around their castle in France. Sneaky machines were set up to dump water on their guests and cover them in flour!

**1495**  
Italian artist and inventor Leonardo da Vinci is said to have built a robotic knight that could stand, sit, cross its arms and even raise its visor. It is the first known human-shaped robot in Europe.

**1739**  
French inventor Jacques de Vaucanson creates a mechanical duck that could beat its wings and splash around in a pool. It could also "eat" grain from

a human's hand, appear to digest it, and then push a poop-like pellet out of its bottom!

**1902**  
Leonardo Torres Quevedo of Spain develops one of the first systems for remote control, using radio signals to operate machines from a distance. In 1906, he operated a boat filled with human passengers from more than a mile away.

**1939**  
Konrad Zuse invents the main language of modern computers. It is made up of strings of 0s and 1s. This binary coding system enables us to program machines to solve math problems, store information and so much more.

**1950**  
Alan Turing invents the "Imitation Game," which is now often known as the Turing Test. The test puts a human being in conversation with an unknown partner, and they have to determine whether the partner is a human or a computer.

**1961**  
Unimate 001, the first robotic arm, is used in a factory assembly line in the U.S. to pick up hot pieces of metal and place them in a cooling liquid.

**1994**  
The CyberKnife medical robot is used to reduce or remove unwanted tumors, or growths,

inside the body with very precise beams of radiation.

**1997**  
NASA's Sojourner becomes the first wheeled robot to explore another planet. This robot was equipped with six wheels, three cameras and lots of scientific tools to explore Mars.

**2005**  
Robots dressed in ballgowns that predict and respond to the movements of their human partners in ballroom dance are exhibited in Japan.

**2010**  
Driverless cars, which use a combination of computers, video cameras and other sensors to drive and navigate, are tested on roads.

**2016**  
The robotics company Boston Dynamics creates Spot, a robotic dog. Spot can run up a flight of stairs and even grip and turn a door handle to open it.

**2023**  
Botbar, a coffee shop that uses a robot to make coffee, opens in New York. The robot barista, whose name is Adam, even asks for tips!

**2026**  
A team of dancing robots performs as part of a festival celebrating Lunar New Year in China. The robots are able to do backflips and breakdancing moves along with martial arts and dance routines.

**2050?**  
The singularity is the name for a hypothetical point in the future when robots and computers powered by artificial intelligence (AI) might become smarter than humans, and able to learn and develop by themselves. Some people are concerned about the singularity's potential impact on humans. Other experts predict that such a thing won't happen at all.



2016

## PUZZLES & JOKES

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

### SCIENCE WORD SEARCH

Can you spot the 12 science words hidden in our word search puzzle? Good luck!

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

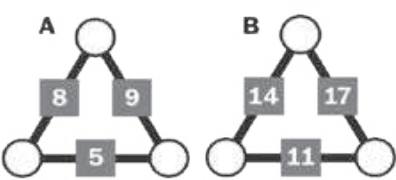
ATOM CELL DNA  
GRAVITY LASER MAGNET  
ORBIT OXYGEN PRISM  
QUARK VACUUM VOLT

### 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.



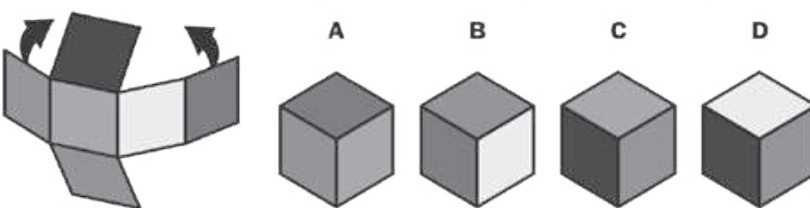
### SUDOKU

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

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

### 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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