

Most likely number of contactable alien civilizations is 36

Level 2 • Upper intermediate

1 Warmer

Test your general knowledge in this space quiz.

- How many planets are there in our solar system?
 - 7 (+ 8 dwarf planets)
 - 8 (+ 5 dwarf planets)
 - 7 (+ 3 giant planets)
- A light year is ...
 - the distance that light travels in one year.
 - the light that travels around the Earth in one year.
 - the distance from the Earth to the Sun.
- A light year is ...
 - just under a million kilometres.
 - just under five billion kilometres.
 - just under ten trillion kilometres.
- The distance from the Earth to our moon is ...
 - 40,384 km.
 - 384,400 km.
 - 500,843 km.
- Man first walked on the moon in ...
 - 1959.
 - 1962.
 - 1969.

2 Key words

Match the key words with the definitions. Then find them in the article to read them in context. The paragraph numbers are given to help you.

assumption

estimate

evolve

habitable

indication

mission

reasonable

equation

insight

conservative

- a chance to understand something or learn more about something _____ (para 2)
- an amount that you guess or calculate using the information available _____ (para 3)
- a calculation that must consider several factors _____ (para 4)
- something that you consider likely to be true even though you have no proof _____ (para 6)
- sensible and fair, with good grounds for thinking that it is true and correct _____ (para 8)
- used to describe a guess that is usually less than the actual amount _____ (para 10)
- a sign that something will happen, is true or exists _____ (para 11)
- If a place is _____, you can live there. (para 13)
- come into existence gradually over a long period of time _____ (para 13)
- a flight or journey into space _____ (para 15)

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Scientists say most likely number of contactable alien civilizations is 36

Nicola Davis

15 June, 2020

- 1 They may not be little green men. They may not arrive in a big spaceship. But according to new calculations, there could be more than 30 intelligent civilizations in our galaxy today able to communicate with others.
- 2 Experts say the work does not only offer insights into the chances of life beyond Earth. It could also tell us more about our own future and place in the universe.
- 3 "I think it is extremely important and exciting because, for the first time, we really have an estimate for the number of intelligent civilizations that we could contact one day. This is something that has been a question for thousands of years and is still not answered," said Christopher Conselice, a professor of astrophysics at the University of Nottingham and a co-author of the research.
- 4 In 1961, the astronomer Frank Drake suggested what became known as the Drake equation. It listed seven factors that scientists would need to know to come up with an estimate for the number of intelligent civilizations. These factors included the average number of stars that form each year in the galaxy and the time a civilization would need to be able to send out signals.
- 5 But few of the factors are measurable. "Drake-equation estimates have ranged from zero to a few billion civilizations – it is more like a tool for thinking about questions," said Conselice.
- 6 Now Conselice and colleagues write in the *Astrophysical Journal* how they added new data and assumptions to the equation to come up with their estimates.
- 7 "Basically, we made the assumption that intelligent life would form on other Earth-like planets like it has on Earth, so within a few billion years, life would automatically form as a natural part of evolution," said Conselice.
- 8 The assumption, known as the Astrobiological Copernican Principle, is reasonable because everything from chemical reactions to star formation happens if the conditions are right, he said. "If intelligent life forms in a scientific way, you would expect many civilizations within our galaxy," he said.
- 9 He added that he believes alien life would have similarities in appearance to life on Earth. "We wouldn't be very shocked by seeing them," he said.
- 10 On Earth, life formed between 4.5bn and 5.5bn years after star formation. Using this timescale as an assumption, there are likely today to be between four and 211 civilizations in the Milky Way that are able to communicate with others. Thirty-six is the most likely figure, but Conselice said that this number is conservative.
- 11 The team add that our civilization would need to survive at least another 6,120 years for two-way communication. "They would be quite far away – 17,000 light years is our calculation for the closest one," said Conselice. "If we do find things closer, that would be a good indication that an intelligent civilization can last for millions of years."
- 12 Dr Oliver Shorttle from the University of Cambridge, who was not involved in the research, said several factors needed to be understood to make such estimates, including how life on Earth began and how many Earth-like planets could actually support life.
- 13 Dr Patricia Sanchez-Baracaldo, an expert on how Earth became habitable, from the University of Bristol, said, "As we evolved on this planet, it is possible that intelligent life evolved in another part of the universe."
- 14 Professor Andrew Coates, of the Mullard Space Science Laboratory at University College London, said the assumptions made by Conselice and colleagues were reasonable, but the search to find life was likely to take place closer to home for now.
- 15 "The new estimate is interesting but it will be impossible to test it using current techniques," he said. "In the meantime, research on whether we are alone in the universe will include visiting likely objects within our own solar system, for example with our Rosalind Franklin Exomars 2022 rover to Mars, and future missions to Europa, Enceladus and Titan (moons of Jupiter and Saturn). It's a fascinating time in the search for life elsewhere."

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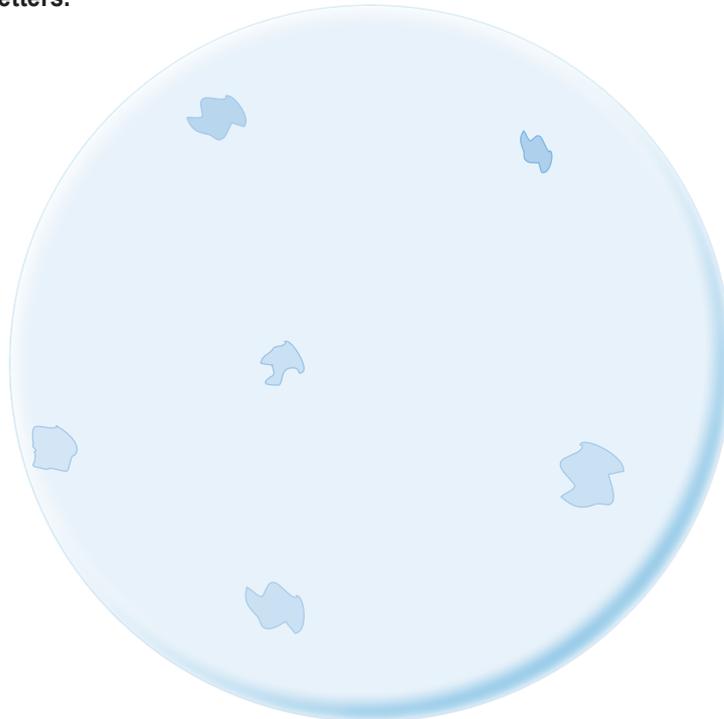
3 Comprehension check

Are the statements true (T) or false (F) according to the article? Correct any that are false.

1. An improved version of a 60-year-old equation has suggested that there are no more than 36 other intelligent civilizations in our galaxy.
2. One of the reasons why experts think there is intelligent life forms on other planets is because it exists here on Earth.
3. The team worked with the assumption that, within a few million years, intelligent life would automatically form on Earth-like planets.
4. The new calculations indicate that we might be able to hold a conversation with another intelligent life form within the next 60 years.
5. A professor of astrophysics says that aliens are likely to have a completely different appearance to humans.
6. Finding intelligent life on other planets would give hope for the long-term survival of life on Earth.

4 Space vocabulary

- a. Find all the space-related words and phrases in the article. Write them into the planet. Note which of them need capital letters.



- b. With a partner, take it in turns to use one of the words in a sentence. Continue until you have used all the words.

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5 Discussion

- Do you think there is intelligent life on other planets?
- Should we spend money on looking for alien civilizations?
- What questions would you want to ask an alien?

6 Space quotes

Use the words in the box to complete the space quotes.

beyond

Control

forty-two

Earth

frontier

mankind

star

1. 'One small step for man, one giant leap for _____.' – Neil Armstrong, the first man to walk on the moon
2. 'Space: the final _____.' – Captain James T Kirk, in *Star Trek*
3. 'Ground _____ to Major Tom.' – David Bowie, the first line from his song 'Space Oddity'
4. 'Returning to _____, that was the challenging part.' – Buzz Aldrin, one of the first two humans to land on the moon
5. 'Second _____ to the right and straight on 'til morning.' – J M Barrie, *Peter Pan*
6. 'To infinity and _____.' – Buzz Lightyear, from the *Toy Story* films
7. 'The Answer to the Great Question of Life, the Universe and Everything is _____.' – Douglas Adams, *The Hitchhiker's Guide to the Galaxy*

7 Further reading

Find out more about the Drake equation and its seven factors.

www.theguardian.com/science/across-the-universe/2013/sep/04/equation-alien-life-universe