



---

# Google Reveals Cutting-Edge Quantum Chip Innovation

## Description

Google has introduced a new chip called Willow, which can solve a problem in just five minutes that would take one of the world's fastest supercomputers a septillion years to complete. This chip is a breakthrough in the field of quantum computing, where scientists aim to create incredibly powerful computers using principles from particle physics.

Named as the best quantum processor built so far, Willow represents significant progress in error correction, a key challenge in quantum computing for nearly 30 years. Quantum computers, like Willow, work differently from traditional computers by using quantum mechanics to solve problems much faster. This technology could revolutionize various industries, from creating new medicines to designing nuclear fusion reactors.

While Willow is a major milestone in quantum computing, experts caution that a commercially useful quantum computer is still years away. However, countries like the UK are investing in quantum technology, with the recent launch of the National Quantum Computing Centre. Businesses are also getting involved, with 50 quantum companies in the UK attracting significant funding and creating jobs.

In the race to make quantum computers practical, researchers are exploring different approaches, such as trapped-ion qubits capable of working at room temperature. Despite the challenges, the advancements in quantum computing hold the promise of transforming industries and solving complex problems in the future.

---

## Vocabulary List:

1. **Breakthrough** /'breɪkθruː/ (noun): A significant and dramatic discovery or development.
2. **Revolutionize** /ˌrevəˈluːʃənəɪz/ (verb): To transform an industry or area completely usually in a positive manner.
3. **Milestone** /'maɪlstoʊn/ (noun): An important event or point in development.
4. **Significant** /sɪɡ'nɪfɪkənt/ (adjective): Of considerable importance; worthy of attention.
5. **Advancements** /əd'vænsmənts/ (noun): The process of promoting a cause or plan; progress or improvements.
6. **Qubits** /'kjuːbɪts/ (noun): The basic unit of quantum information representing a quantum state.

## Comprehension Questions



## Multiple Choice

1. What is the name of the new chip introduced by Google in the field of quantum computing?  
Option: Willow  
Option: Titan  
Option: QuantumSpeed  
Option: ParticleChip
  
2. How long would it take for one of the world's fastest supercomputers to solve a problem that Willow can solve in just five minutes?  
Option: A million years  
Option: Ten thousand years  
Option: A billion years  
Option: A septillion years
  
3. What is a key challenge in quantum computing that Willow represents significant progress in?  
Option: Speed optimization  
Option: Error correction  
Option: Algorithm development  
Option: Quantum entanglement
  
4. Which country recently launched the National Quantum Computing Centre to invest in quantum technology?  
Option: United States  
Option: Germany  
Option: United Kingdom  
Option: Japan
  
5. What type of qubits are researchers exploring as an approach to making quantum computers practical?  
Option: Superconducting qubits  
Option: Trapped-ion qubits  
Option: Topological qubits  
Option: Photonic qubits
  
6. Quantum computers work differently from traditional computers by using which principles to solve problems faster?  
Option: Mechanical engineering  
Option: Quantum mechanics



---

Option: Chemical reactions

Option: Astrophysics laws

### True-False

7. Willow is the best quantum processor built to date.
8. A commercially useful quantum computer is already available for consumer use.
9. The recent launch of the National Quantum Computing Centre was in the United States.
10. Trapped-ion qubits operate at extremely low temperatures.
11. The advancements in quantum computing may revolutionize various industries.
12. Quantum computers solve problems faster primarily due to speed optimization techniques.

### Gap-Fill

13. Willow can solve a problem in just \_\_\_\_\_ minutes that would take one of the world's fastest supercomputers a septillion years to complete.
14. The National Quantum Computing Centre was recently launched in the year \_\_\_\_\_.
15. Trapped-ion qubits are an approach to making quantum computers practical by working at \_\_\_\_\_ temperature.
16. Quantum computers use principles from \_\_\_\_\_ to solve problems much faster than traditional computers.
17. Improvements in quantum computing aim to revolutionize various industries, from creating new medicines to designing \_\_\_\_\_ reactors.
18. Experts caution that a commercially useful quantum computer is still \_\_\_\_\_ away.



## Answer

**Multiple Choice:** 1. Willow 2. A septillion years 3. Error correction 4. United Kingdom 5. Trapped-ion qubits  
6. Quantum mechanics

**True-False:** 7. True 8. False 9. False 10. False 11. True 12. False

**Gap-Fill:** 13. five 14. 2021 15. room 16. quantum mechanics 17. nuclear fusion 18. years

## Answer

### CATEGORY

1. Sci/Tech - LEVEL3

### Date Created

2024/12/10

### Author

aimeeyoung99

ESL-NEWS.COM