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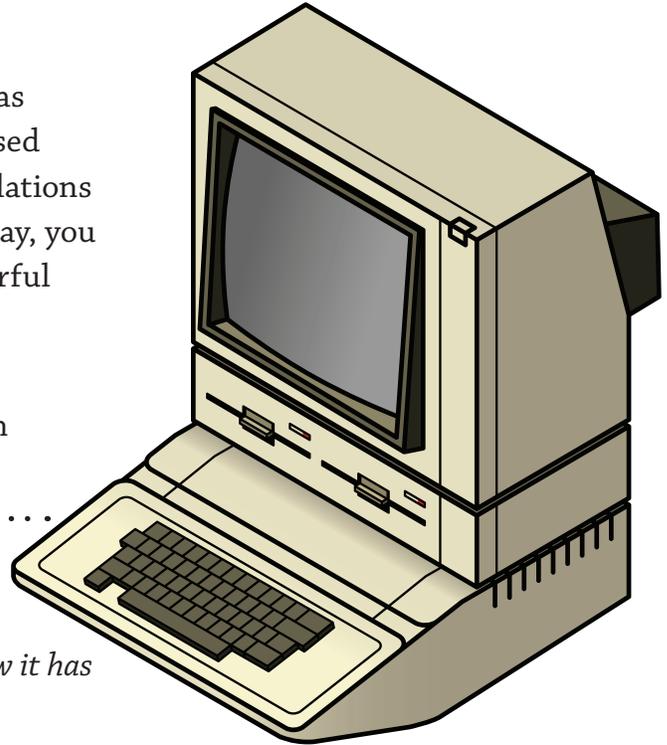
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History of Computers

Computers! Virtually no other form of technology has become so powerful so quickly. In 1969, scientists used computers the size of entire rooms to perform calculations that helped astronauts land safely on the moon. Today, you can hold a computer in your hand that is more powerful than the room-sized machines from 1969.

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Find It!

Do you know how computer technology has advanced since the earliest calculating machines? Do you know how it has advanced at such an astonishing speed?

To calculate the answers to these questions:

Use the "Search" Tool to find the answers below. You'll want to start with the "Computer" article's History section, then see where history takes you!

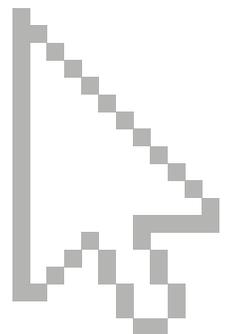
Who invented what?

Match each person's name with his or her invention or idea.

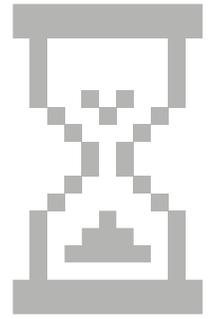
- | | |
|-----------------------------------|---|
| ____ 1. Blaise Pascal | A. Linux open-source operating system |
| ____ 2. Gottfried Wilhelm Leibniz | B. first computer with transistors |
| ____ 3. Ada Lovelace | C. binary number system |
| ____ 4. Herman Hollerith | D. first concept of a computer program |
| ____ 5. Seymour Cray | E. punched-card tabulator for the U.S. census |
| ____ 6. Gordon Moore | F. Intel Corporation, the first microprocessor manufacturer |
| ____ 7. Linus Torvalds | G. World Wide Web |
| ____ 8. Tim Berners-Lee | H. first automatic calculating machine |

***Users of the Advanced database can find extension activities at the end of this webquest.**

9. Before the 1940's, what did the term "computer" usually refer to?
10. The Jacquard loom used long belts of _____ to automate the weaving process.
11. The English mathematician Charles Babbage came up with the idea for a mechanical computer called the difference engine. When was a working version of his computer built?
12. Boolean algebra and logic uses the _____ number system to perform complex calculations and logical operations.
13. International Business Machines Corporation (IBM) is a major computer company today. What was the name of this company when it was originally founded in 1896?
14. During World War II (1939-1945), the British designed devices called the Colossus machines. What did these machines do?
15. One of the first general-purpose electronic computers, called ENIAC, became operational in 1946. What does ENIAC stand for?
16. Who were the two founders of Apple Computer, Inc.?
17. In 1976, the Apple II personal computer was released. What were some of this computer's advantages over earlier computers?
18. Who were the two founders of Microsoft Corporation?
19. Instead of manufacturing computer hardware, Microsoft Corporation became successful by making what?
20. What was the name of the forerunner of the Internet, created by the United States military in the late 1960's?



21. What is a web browser?
22. Which company released the BlackBerry smartphone in 2002?
23. Apple's iPhone was released in 2007. Name two ways that it differed from earlier smartphones.
24. What is the name of Google's smartphone operating system?
25. Name two ways a *smartwatch* differs from an ordinary digital watch.
26. Almost all computers today have a CPU, an idea developed by the Hungarian-born mathematician John von Neumann. What does CPU stand for?
27. Xerox Corporation developed the first graphical user interface in the late 1970's. What is a graphical user interface?
28. A bit is a binary digit—1 or 0. How does a transistor represent a bit?
29. Electrons are subatomic particles. What branch of physics describes the behavior of electrons in transistors?
30. What is superposition? How might computers of the future make use of superposition?



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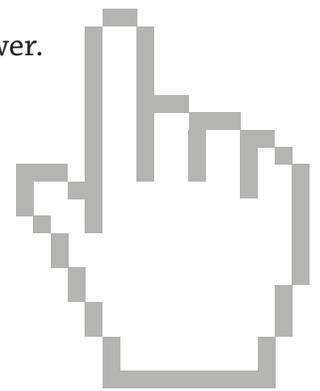
Moore's Law

31. *The first microprocessor chip, made in 1971, had 2,500 transistors. Since then, the number of transistors on a computer chip has doubled about every two years—a trend known as Moore's Law. The more transistors on a chip, the more powerful it is. Fill in the table below to see how fast transistor counts increase. (To fill in a row, multiply the previous row's transistor count by two. Feel free to use a calculator—the numbers get pretty big!)*

Year	Number of transistors	Year	Number of transistors
1971	2,500	1995	
1973	5,000	1997	
1975	10,000	1999	
1977	20,000	2001	
1979	???	2003	
1981		2005	
1983		2007	
1985		2009	
1987		2011	
1989		2013	
1991		2015	
1993		2017	

32. Moore's law describes a/an _____ growth in computing power.

33. Do you think Moore's Law will continue forever? Why or why not?



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Extension Activity 1: Computers of the Future

Virtually no other technology has developed as quickly as computers. Early electronic computers of the 1960's were the size of rooms. Today, a smartphone has more computing power than those room-sized computers. Some modern computers come in the form of watches and eyeglasses, and others are built into such machines as cars and coffeemakers. What will computers of the future look like?

Design a computer for the year 2050. You can draw a diagram, or a person using the machine (or machines). Write a short explanation of how your future-computer works. Use your imagination!

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Extension Activity 2: Back in Time

Check out the "Related Information" tab in the "Computer" article. Under the heading "Back in Time" you can read articles from early editions of the World Book Year Book, dating back to the 1920's. Each article is preserved as it was written originally for the time.

Read several Back in Time articles, and describe how our understanding of computers has evolved as new discoveries were made!

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Extension Activity 3: Computers in the Ancient Past

Imagine you somehow traveled back in time to an ancient civilization: Greece, Rome, China, Egypt—you can pick the destination. Naturally, these ancient people would be curious about a time-traveler from the future and all of your modern technology.

How would you explain to someone from an ancient civilization how a smartphone works? Remember, ancient people were very smart, but also prone to superstition. If you're not careful in your explanation, you might make them fearful and angry!