

# Science 1000 (Wareham): Computing in the 20th Century and Beyond

<b>Date</b>	<b>Topic</b>
Oct 14	Getting Here: The First Computers (pre-1940)
Oct 17	Getting Here: The Rise of the Machines (1940–1970)
Oct 19	Getting Here: The Rise of the Machines (Cont'd) Getting Here: The Networked Society (1970–now)
Oct 21	Getting Here: The Networked Society (Cont'd) Where We Are: Big Data and Privacy
Oct 24	Where We Are: Big Data and Privacy (Cont'd) Where We Are: Artificial Intelligence
Oct 26	Where We Are: Artificial Intelligence (Cont'd) Where We're Going: The Wild Blue Yonder
Oct 28	Section quiz

# Science 1000 (Wareham): Computing in the 20th Century and Beyond

Almost all quizzed material will be in the on-line course notes, with the remainder coming from the lectures. The section quiz will be out of 50 marks and will have the following question format:

- True/False (12 marks)
- Match inventors to technology (12 marks)
- Match technology to decade (12 marks)
- Fill in the blank (14 marks)

# Science 1000: Part #1 (Wareham):

## Getting Here: The First Computers (pre-1940)

**WHAT IS A COMPUTER (REALLY)?**

**WHAT WERE THE FIRST COMPUTERS?**

## What *is* a Computer? (Take I)

**numbers** → **calculator** → **results**

## The First Computers



Nicole-Reine Lepaute  
(1723–1788)

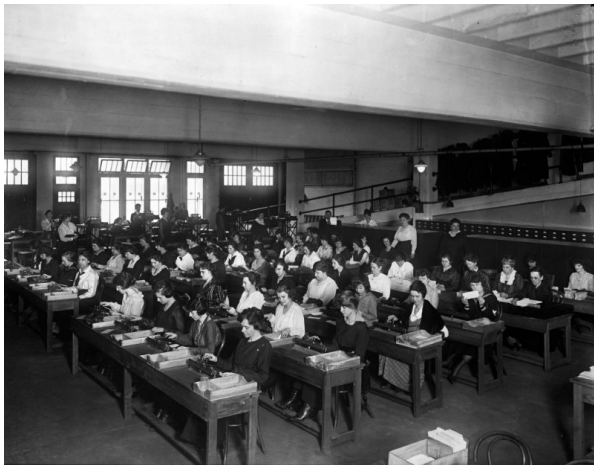


Gertrude Blanch  
(1896–1996)

## The First Computers (Cont'd)

- From the early 1600's until the 1930's, a computer was a person who performs calculations, *i.e.*, computes.
- Early human computing was done for problems in astronomy, *e.g.*, the 1758 return of Halley's comet (Alexis-Claude Clairaut, Joseph-Jerome Lelande, and Nicole-Reine Lepaute (1757)).
- Computing subsequently used to compute various mathematical tables used in navigation (Nevil Maskelyne: *Nautical Almanac* (1766–now)), surveying (Gaspard de Prony: *Tables du Cadastre* (1790–1801)), and the insurance industry.
- Computers worked at home separately or together in organized groups.

## The First Computers (Cont'd)



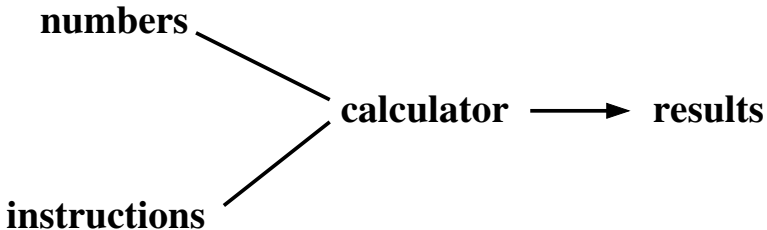
## Mechanical Computers (Cont'd)

- Many aids to human calculation throughout history, *e.g.*, writing, abacus, quipu, slide rule.
- True mechanical computers emerged in the 17th century, *e.g.*, the 1642 addition machine of Blaise Pascal (*1623–1662*).



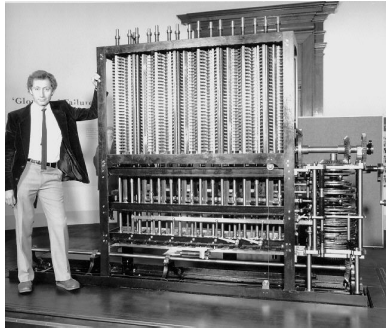
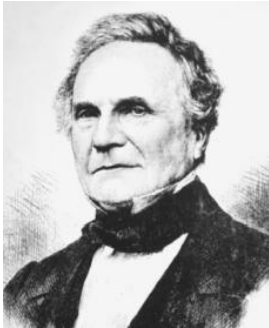


## What is a Computer? (Take II)



Overall speed of calculation can only increase if input, calculation, and output operations **all** undergo **same** increase in speed.

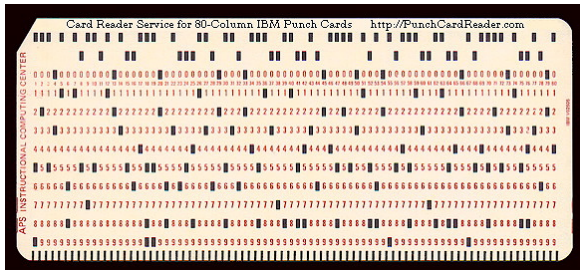
## Mechanical Computers (Cont'd)



- Punch cards used as computation control mechanism by Charles Babbage (1791–1871) in his uncompleted Difference and Analytical Engines.

## Mechanical Computers (Cont'd)

- Storage of data on punch cards pioneered by Herman Hollerith (1859–1929) for 1890 US Census.



- Success of punchcard tabulators parlayed by Thomas Watson Sr. into International Business Machine (IBM).