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

Date	Topic
Date	**Topic**
Sep 9	Getting Here: The First Computers (pre-1940)
Sep 11	Getting Here: The First Computers (Cont'd)
	Getting Here: The Rise of the Machines (1940–1970)
Sep 14	Getting Here: The Rise of the Machines (Cont'd)
Sep 16	Getting Here: The Networked Society (1970–now)
Sep 18	Getting Here: The Networked Society (Cont'd)
	Where We Are: Big Data and Privacy
Sep 21	Where We Are: Big Data and Privacy (Cont'd)
	Where We Are: Artificial Intelligence
Sep 23	Where We Are: Artificial Intelligence (Cont'd)
	Where We're Going: The Wild Blue Yonder
Sep 25	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 $\longrightarrow$ **calculator** $\longrightarrow$ **results**
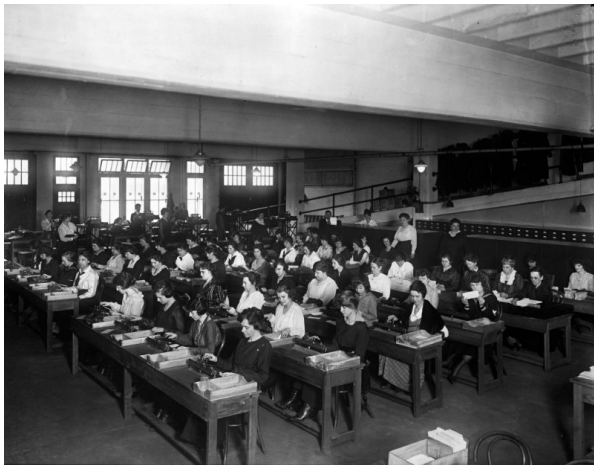
The First Computers

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.
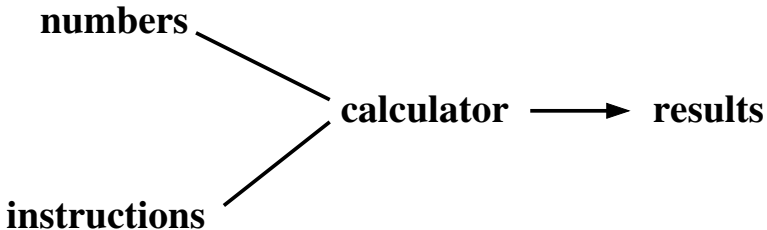
The First Computers (Cont'd)

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).
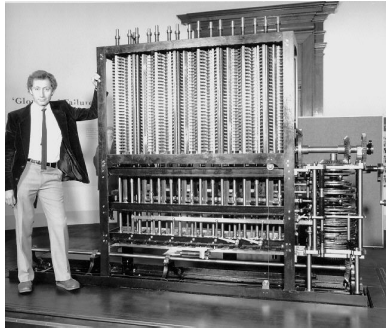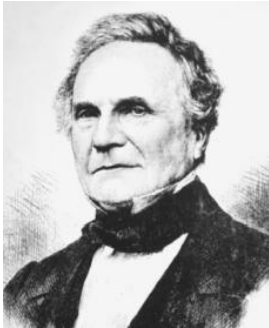
What *is* a Computer? (Take II)

numbers

calculator ⟶ **results**

instructions

Overall speed of calculation can only increase if input, calculation, and output operations **all** undergo **same** increase in speed.
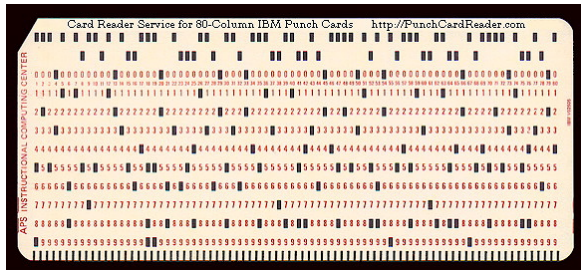
Mechanical Computers (Cont'd)

- 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).