LOGIC - From the Greek “logos” meaning “word”. The study of the principles of reasoning.

Early history:

- Origins around 4th century BC in
  - China (Mo Zi, the Logicians)
  - India (Hindu, Buddhist philosophy)
  - Greece - mainly Aristotle
  - Name ‘Logic’ due to Zeno the Stoic (around 300BC)

- Beginnings of formal Logic -
  - René Descartes (1596 -1650)
  - Gottfried Leibniz (1646 -1716)
  - George Boole (1815 -1864)
  - Augustus De Morgan (1806 -1871)

“Father of Modern Logic” - In 1879 Gottlob Frege’s “Begriffsschrift” brought in variables and quantifiers
The Modern Era:

Albert Einstein, 1950:
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When we say that we understand a group of natural phenomena, we mean that we have found a constructive theory which embraces them.
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Hilbert and formal systems
- The Paradoxes (Russell, etc.)
- Hilbert’s Programme - try to capture all of mathematics in consistent logical theories
- The power of the axiomatic method

The 1930s - Gödel, Turing, Church
- The notion of algorithm clarified
- The discovery of the link between proofs and computer programs ...
- Gödel’s Theorem, and the limits of logical theories - and of computers