What are the fundamental capabilities and limitations of computers?

- Some very specialized but important models of computation.
- Finite automaton - used in text processing, compilers, hardware design.
- Context-free grammar - used in programming languages.

- Which problems cannot be solved with computers?
- In the 1930's, it was discovered that some problems are not solvable.
- This required formulating precisely what it means for a problem to be solvable.
- These ideas helped lead to the construction of the first computers.

- What makes some solvable problems computationally hard and others easy?
- Develop a scheme to classify problems according to their computational difficulty.