

## Lecture 13: Quiz

Name:

### Problem 1

The computer on the ground floor of the Harvard science center is called:

- a) ENIAC
- b) Bomba
- c) Mark I
- d) Colossus

### Problem 2

The ancient Greek analog which is believed to have been designed by Archimedes is called the

- a) Antikythera
- b) Astrolabe
- c) Abakus
- d) Schickard machine

### Problem 3

What is experimental mathematics?

- a) Publish theorems which are likely to be true.
- b) Assist as a mathematician in an experimental lab.
- c) Search for relations and theorems using computers and calculations.
- d) Perform physical experiments in a lab.

### Problem 4

Which first significant digit appears more often in Benford's law

- a) the digit 1 appears most often.
- b) the digit 5 appears most often.
- c) the digit 9 appears most often.
- d) all digits appear with the same frequency

### Problem 5

One of the following problems is NP hard. Which one?

- a) Deciding whether  $n$  is prime
- b) Deciding whether two graphs are isomorphic.
- c) The Turing halte problem
- d) The Goldbach problem

### Problem 6

When was Pascal's calculator built? a) 1542

- b) 1642
- c) 1742
- d) 1842

### Problem 7

Which of the following is impossible: a) Enumerate all Turing machines. b) Building a Turing machine which decides whether a machine halts or not. c) Emulating a Turing machine d) Using a Turing machine to factor integers.

### Problem 8

What is Moore's law ?

- a) Everything which can go wrong, will go wrong.
- b) The number of transistors on a microchip double every 2 years.
- c) It is necessary to replace a computer every 2 years.
- d) The singularity is near.

### Problem 9

We have looked at the Goldbach problem. What was this problem?

- a) There infinitely many prime twins.
- b) Every even integer is a sum of two primes.
- c) The golden ratio can be approximated by rational numbers.
- d) The problem of finding the statistics of the first significant digit of the primes.

### Problem 10

When is the project due?

- a) May 16
- b) May 17
- c) May 18
- d) May 19