

## Intro

The theory of computation deals with three Cs:

- Computability: How we know whether a problem is computable?
- Complexity: How fast does a program run? How much memory does it use?
- Correctness: Can we tell whether a program is correct?

We will deal with computability and complexity in this course.

## Mars Rover

- Look it up – there was a software bug that caused it to stop right after it landed

## Exponentials

- exponentials tend to be problematic, e.g. Finding the possible subgroups of a large group.

## Deck of Cards

- there are  $52!$  permutations/shuffles for a deck of cards
- you can't generate all these combinations
- best you can do is take a sample (or a few samples), and hope that it's representative