Computer Science

What is a computer?
- Information in, output out
- Database of information
- Electronic machine, do different tasks, Coded/programmed
- Solves problems

Computation : processing/transforming information.

Given a starting number n :   repetition.

As long as n is > 1 :   math

Conditional

- If n is even, divide it by 2
- Otherwise, if n is odd, multiply it by 3 and add 1.

Example.

$n = 15 \rightarrow 46 \rightarrow 23 \rightarrow 70 \rightarrow 35 \rightarrow 106$

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$4 \leftarrow 8 \leftarrow 16 \leftarrow 5 \leftarrow 10 \leftarrow 20 \rightarrow 40 \leftarrow 80 \leftarrow 160$

$2 \rightarrow 1$

$57 \xrightarrow[26 \text{ steps}]{} 1.$

$25 \xrightarrow[20 \text{ steps}]{} 1$

$37 \xrightarrow[22 \text{ steps}]{}$

$157 \xrightarrow[?]{} 1.$

$7 \xrightarrow[16]{} \text{ steps} \quad 1.$

5 components of Computation:
 ① input
 ② output
 ③ math / arithmetic
 ④ conditionals ("if")
 ⑤ repetition

Commands/blocks
What the world looks like.

character moving around etc.

didn't see this directly
in Minecraft

if lava block...

repeat n times...

Errors

3 main types of errors:
 ① syntax error — program is not valid. eg.
    grammar error, spelling error.

 ② runtime error — program runs, but something goes
    wrong, ie. crashes.

 ③ semantic error — program runs fine, but doesn't
    do what you wanted.