

Start with a number n .

As long as n is not 1:

- If n is even, divide it by 2.

- If it is odd, multiply by 3 and add 1.

} Algorithm
= precise instructions.

Example: $n = 6 \rightarrow 3 \rightarrow 10 \rightarrow 5 \rightarrow 16 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$

$7 \rightarrow 22 \rightarrow 11 \rightarrow 34 \rightarrow 17 \rightarrow 52 \rightarrow 26 \rightarrow 13 \rightarrow 40 \rightarrow 20$

$9 \rightarrow 28 \rightarrow 14 \rightarrow$

$-2 \rightarrow -1$

0)

Collatz Conjecture

5 basic components of algorithms:

- Arithmetic

- Conditionals (if)

- Repetition

- Input — effect of the world on the program

- Output — effect on the world

Different types of errors

- Syntax error.

— kind of like a spelling or grammar error. — Not a valid program.

- Runtime error

— Something goes wrong while the program is running. "Crashes".

- Semantic error

— Program doesn't do what you want.