



# Information Theory

# Key question

- How can information be measured?
- What is entropy?



Claude Shannon

# Shannon's prediction and entropy of printed text experiment

## Available alphabet

Click the character you expect to be next in the sentence.

**Tip:** The  $\_$  character is used to represent the space character between words.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z \_ .

## Sentence

?

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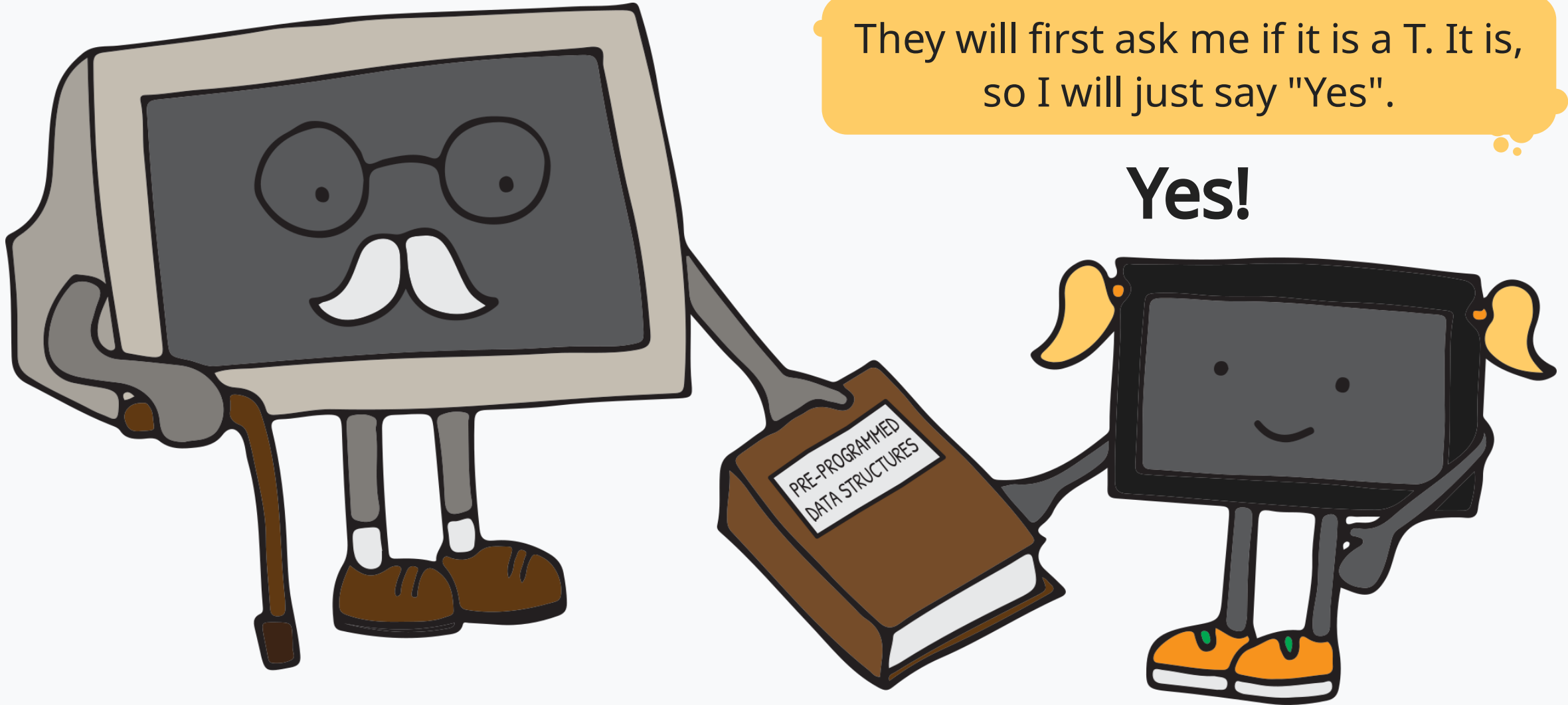
0

Show statistics

I think I will ask if it is a T.

They will first ask me if it is a T. It is,  
so I will just say "Yes".

**Yes!**





**Message:**

a a a a a a a a a

*What comes next?*

Message:

z q a v

*What comes next?*

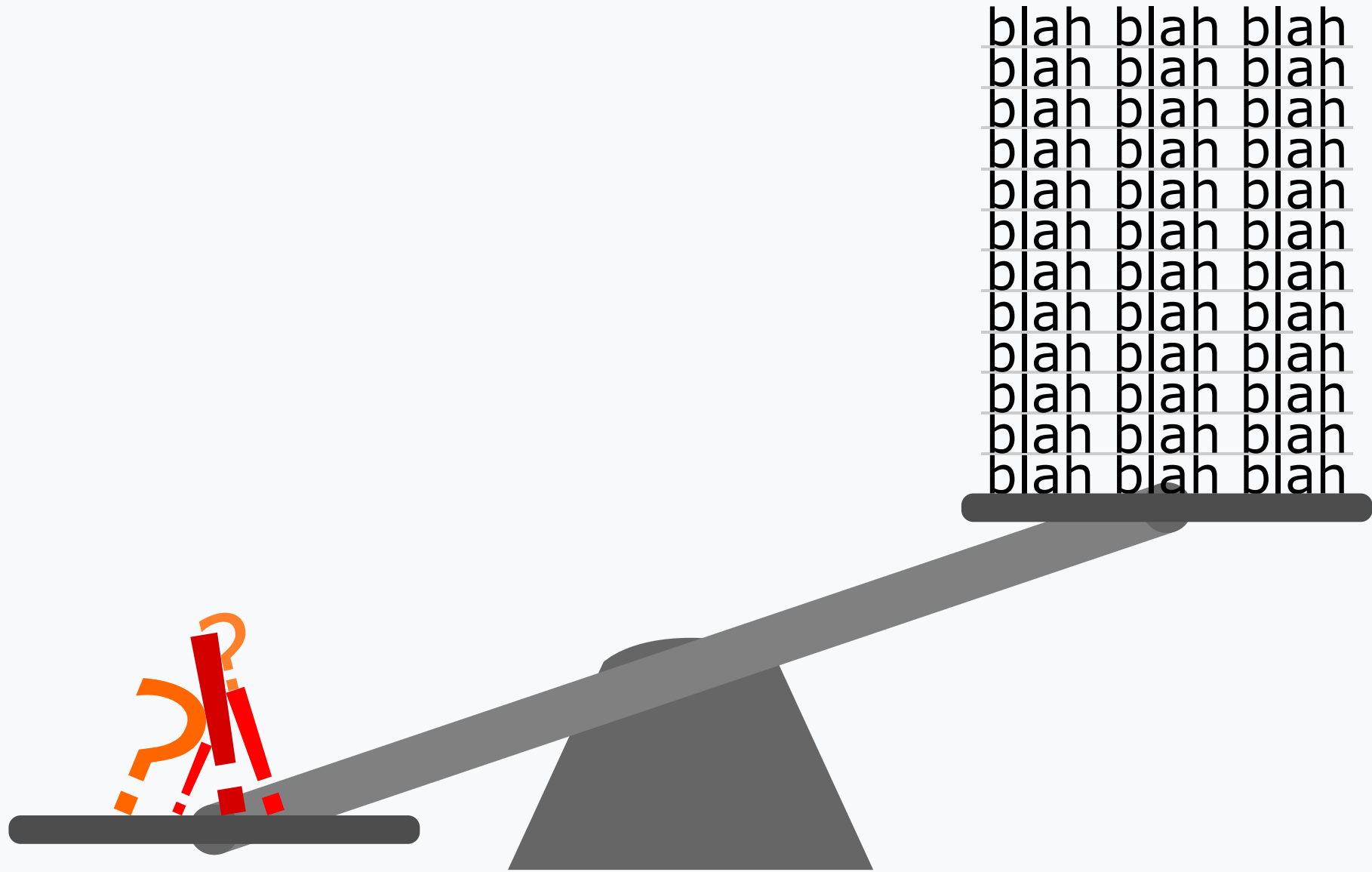


**Message:**

a b c a b c a b c

*What comes next?*

							?	?	?	?
?	?	?	?	?	?	?	?	?	?	?



# Supporting Resources

- Original CS Unplugged activity

<https://classic.csunplugged.org/activities/information-theory/>

- Computer Science Field Guide: Shannon interactive

<https://www.csfieldguide.org.nz/en/interactives/shannon-experiment/>

- CS Unplugged at home: Guess the sentence

<https://www.csunplugged.org/en/at-home/guess-the-sentence/>