

Year 8 Computer Science Representations Knowledge Organiser

Key Word	Definition
Representation	The form in which data is stored, processed, and transmitted.
Symbol	Something used for or regarded as representing something else.
Storage	A process through which digital data is saved.
Processing	Transforming raw data into meaningful output.
Communication	A process by which information is exchanged between individuals through a common system of symbols, signs, or behaviour.
Character	A display unit of information equivalent to one alphabetic letter or symbol.
Coding	A method of making something easy to recognize or distinct.
Encoding	The process of putting a sequence of characters (letters, numbers, punctuation, and certain symbols) into a specialized format.
Decoding	To take out of code and put into understandable language.
Coding Scheme	Converts information from one form of data to another.
Representation Size	The number of symbols required to code a message.
Physical Medium	The materials that are used to store or transmit information.
Binary Digit	The smallest unit of data that a computer can process and store – 0 or 1.
Digital System	Something that represents information by using digits.
Decimal Numbers	The base 10 numbering system.
Binary Numbers	The base 2 numbering system.
Conversion	The process of translating a number between different number systems.

Year 8 Computer Science Developing for the Web Knowledge Organiser

Key Word	Definition
Units	The type of measurement.
Multiples	The numbers you get when you multiply a certain number by an integer.
Prefix	A letter or group of letters that can be added to the beginning of a word to change its meaning.

1 bit
0
1

2 bit
00
01
10
11

3 bit
000
001
010
011
100
101
110
111

To convert bits to bytes:
divide the number of bits by 8
because this is how many groups of 8 bits, i.e. bytes, 'fit' in the sequence

bits
bytes
÷8

To convert bytes to bits:
multiply the number of bytes by 8
because there are 8 bits in every byte

bits
bytes
×8

1000
×
2
100
×
7
10
×
1
1
×
8
2000 + 700 + 10 + 8

1001
×
1001
8
×
0
0
×
0
1
×
1
8 + 0 + 0 + 1
9
in decimal

16
8
4
2
1
1
1
0
1
0
26
in decimal

bits
bytes
×8
÷8

no prefix
kilo
mega
giga
tera
×1000
÷1000

prefix short meaning
kilo- K thousands
mega- M millions
giga- G billions
tera- T trillions

The Binary Game

Instructions:
If you see a decimal number on the right, click the bits to make the binary number match.
If you see a binary number, enter the decimal value in the green box.

0 0 0 0 1 0 0 0
0 0 0 0 0 0 0 0
128 64 32 16 8 4 2 1 20

Try it!

Page Visits: _____

This game is an adaptation of the Binary Game from Cisco Systems

Built on Code Studio

In this unit, we...

Learned what **binary digits** are and how they are used to represent **text** and **numbers** in computer systems.

**Data and
Information**

Next year, we will...

Explore how **images** and **sounds** are represented as sequences of binary digits.

Use software tools to **edit** images and sounds.

**Creating
Media**

Learning Graph

