## Binary memory game

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Using your knowledge of binary numbers, play the Binary Memory game.



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## You will need

- Binary and decimal game cards
- Scissors
- Understanding of binary numbers:

Learn more about binary

- Two or more players

- Flat surface to lay cards on


## About the activity

In this activity you will play the game of Memory, collecting cards when you match a binary and decimal number.

The winner is the person who collects the most cards.


## Binary numbers: What's that?

Before you play the game, learn more about what a binary number is and how to turn a binary number into a decimal number.

- James May introduces binary
- Computer Science Unplugged

| Quick Reference Card |  |
| :---: | :---: | :---: |
| $\qquad$Decimal Binary <br> 1 1 <br> 2 10 <br> 3 11 <br> 4 100 <br> 5 101 <br> 6 110 <br> 7 111 <br> 8 1000 <br> 9 1001 <br> 10 1010 <br> 11 1011 <br> 12 1100 <br> 13 1101 <br> 14 1110 <br> 15 1111 |  |

## 1 Let's get started

Cut out each of the Binary Memory game cards. You should have 30 cards in total. Shuffle the cards.

Lay all the cards in rows, face down, to form a large rectangle.

Tip: The first few times you play, it may help to have the quick reference card next to you.


## 2 What's next?

Turn over any two cards.
If the two cards match, keep them.
If they don't match, turn them back over.

## What to know:

- Remember what was on each card and where it was.
- Watch and remember during the other player's turn.



## 3 Congratulations!

When the last pair is matched, you have finished the game.

Count up all your pairs. The person with the most matches is the winner.


## Binary and decimal game cards

Before beginning this activity, print and cut out binary and decimal cards.

You can download a PDF of the binary and decimal cards, and a quick reference card, from the Digital Technologies Hub website.

Binary numbers are in red and decimal numbers are in black.

| 1 | 2 | 3 |
| :---: | :---: | :---: |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| 10 | 11 | 12 |
| 13 | 14 | 15 |


| 1 | 10 | 11 |
| :---: | :---: | :---: |
| 100 | 101 | 110 |
| 111 | 1000 | 1001 |
| 1010 | 1011 | 1100 |
| 1101 | 1110 | 1111 |

## Why are we learning about this?



The binary number system is a base- 2 number system. This means it only has two numbers: 0 and 1. All information in a computer (words, pictures, movies, sound) is stored and transmitted as sequences of bits, or binary digits.

A bit is a single piece of data that can be thought of as either 0 or 1 . Each binary number is made up of bits; for example, the number 1010 is made of 4 bits. Eight bits is known as a byte. A byte might look like: 01000100 (this example represents the letter D).

Find out more here.

