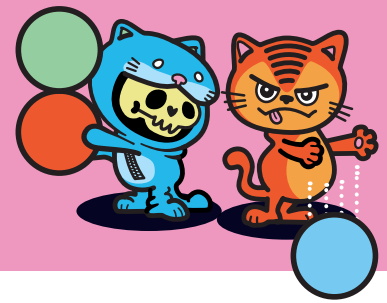




# Qaboom

A Quantum Arcade Game



## What is Qaboom?

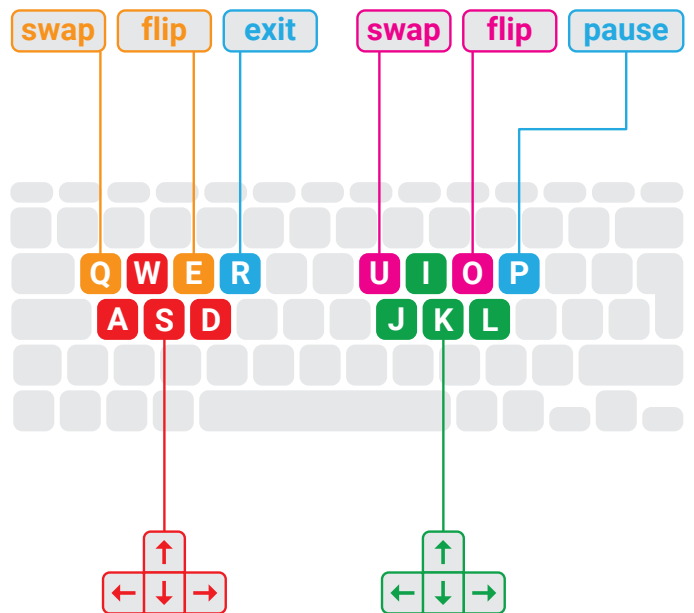


Qaboom is a new Tetris-like game inspired by quantum computing. It's very simple to play.

Pieces called **qubits** fall onto the screen. You can move them left and right, and rotate them as they fall. The game ends when the pieces pile up too high, but you can clear them using **measurements**. **Gates** help you strategically change the color of qubits to clear more faster. You gain points for every piece you clear. Qaboom can be played with one or two players.

## Using the Controls

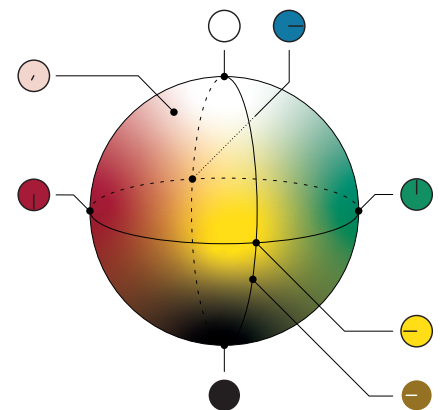
- Moves pieces left
- Moves pieces right
- Makes pieces fall down fast
- flip** (with qubit) rotates pair of qubits 90°
- flip** (with gate) increase rotation angle of gate by 90°
- flip** (with measurement) flips color of measurement to opposite color on sphere
- swap** puts one piece in your inventory for future use



## Qubit Colors Explained

Understanding the coloring system is essential to building your strategy. Imagine a sphere colored white at the North Pole, black at the South Pole, and a rainbow along the equator. Every piece that drops down onto the screen has a color corresponding to a point on the sphere's surface.

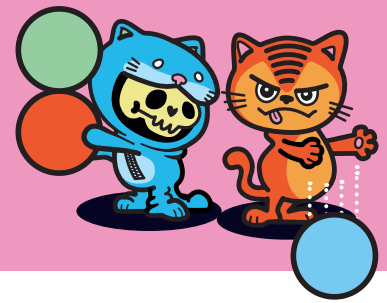
There is an arrow drawn on each circle which gives you information about where that color is on the sphere. The angle of the arrow tells you the angle around the equator of the sphere, and the length tells you how close the color is to one of the two poles.





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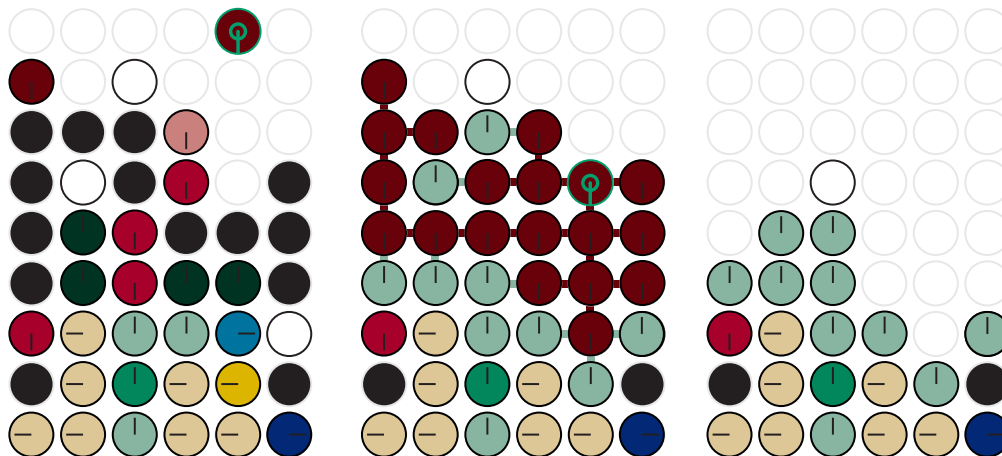
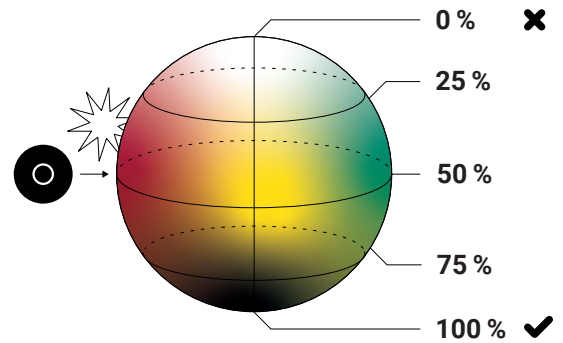


## Measurements Clear Qubits

To help you clear the board, single circles will appear regularly throughout the game – we call these **measurements**.

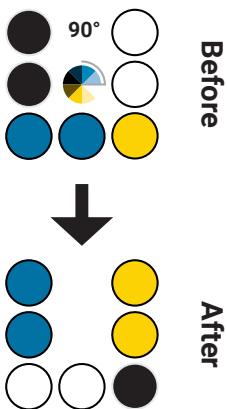
A measurement collapses nearby qubits to one of two colors: its own, or the opposite color on the sphere, and clears all the qubits which match its own color. The closer a qubit's color is to the measurement color, the higher chance it has to turn into that color.

**Tip:** Use the **Flip** button to switch to the opposite color (e.g., white ↔ black, red ↔ green).



If an adjacent qubit collapses to the opposite color, the measurement effect will stop there. If a qubit collapses to the chosen color, the measurement effect will continue to spread through the whole board!

## How to Use Gates



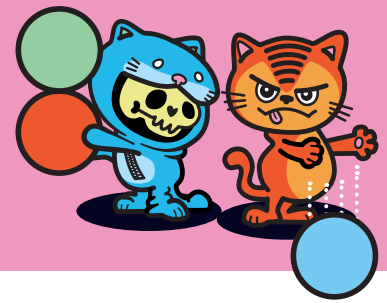
To help you change the colors of qubits, spinning wheels of color will appear regularly throughout the game – we call these **gates**. A gate changes all the qubit states within a 3x3 box around its landing spot by a certain rotation.

**Tip:** Use the **Flip** button to change the rotation effect of a gate (0°, 90°, 180°, 270°).

**Example:** A 90° rotation on this gate will send Blue ▶ White ▶ Yellow ▶ Black.

A 180° rotation will swap white and black, and swap blue and yellow.





## Strategy Tip

You can clear the entire board with just two measurements if you plan carefully!

Place qubits of similar colors next to each other, and store a measurement using the **Swap** button so you can use it at the perfect moment.

## Qubit Meaning

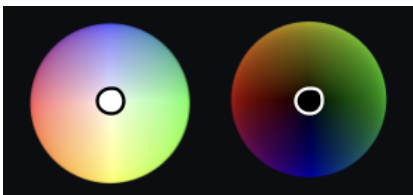
Each circle is a qubit, and its color represents its state.

Qubits are the fundamental units of information used in quantum computers. Unlike bits in classical computers, qubits exist not only in the state 0 or 1 (white or black on the sphere), but some **superposition** of both states at the same time.

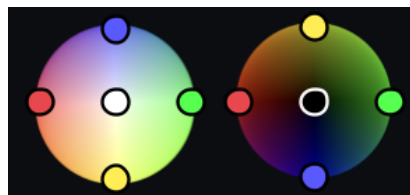
## Level Guide

The qubit states which will show up on each level of the game are marked below. Each diagram includes top and bottom view of the colored sphere (the northern and southern hemispheres).

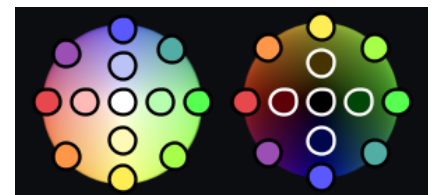
### Level 1



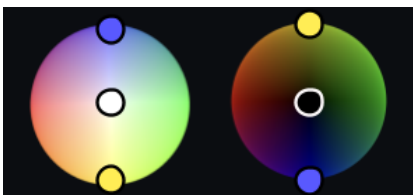
### Level 5



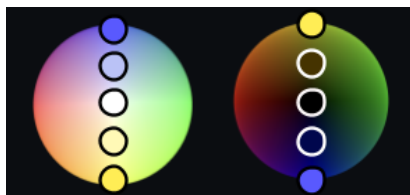
### Level 9



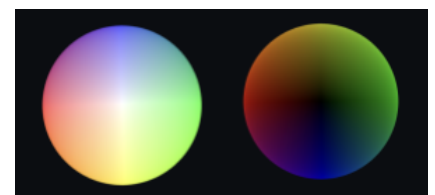
### Level 2



### Level 6



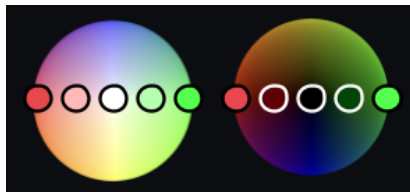
### Level 10+ (all colors possible)



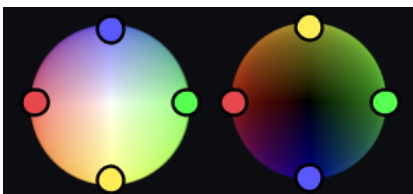
### Level 3



### Level 7



### Level 4



### Level 8

