


# Blocks

**Blocks** are puzzle-piece shapes that are used to create code in [Scratch](#). The blocks connect to each other vertically like a jigsaw puzzle, where each data type ([hat](#), [stack](#), [reporter](#), [boolean](#), or [cap](#)) has its own shape and a specially shaped slot for it to be inserted into, which prevents syntax errors. Series of connected blocks are called [scripts](#).

Blocks are often easier to work with than text-based programming, as one has to memorize the commands typed and syntax errors may occur. However, text-based programming is more flexible, as blocks cannot be easily edited.

There are ten categories of blocks: [Motion](#), [Looks](#), [Sound](#), [Event](#), [Control](#), [Sensing](#), [Operators](#), [Variables](#), [List](#), and [My Blocks](#). The list blocks are shown under the Variables Blocks.

In total, there are seven [Hat Blocks](#), five [C Blocks](#), thirty-one [Reporter Blocks](#), thirteen [Boolean Blocks](#), two [Cap Blocks](#) and fifty-nine [Stack Blocks](#).

 **Note:** Block numbers do not include extensions.

## Block Shapes

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There are six different block shapes: [Hat](#), [Stack](#), [Boolean](#), [Reporter](#), [C](#) and [Cap](#).

### Hat blocks



The shape of a Hat block.

*Main article:* [Hat Block](#)

**Hat blocks** are the blocks that start every script. They are shaped with a rounded top and a bump at the bottom — this is so you can only place blocks below them. There are 11 Hat blocks in the Scratch editor, six of which are in the [Events](#) category, one in the [Control](#) category, and one in the category [My Blocks](#) (if one has created one custom block).

### Stack blocks



The shape of a Stack block.

Main article: [Stack Block](#)

**Stack blocks** are the blocks that perform the main commands. They are shaped with a notch at the top and a bump on the bottom — this is so blocks can be placed above and below them. There are 77 Stack blocks — the most common block shape.

## Boolean blocks



Main article: [Boolean Block](#)

**Boolean blocks** are the conditions — they are either true or false. For example, asking a computer: "Does  $2 + 2 = 4$ ?", and it would either tell you "Yes" or "No". With a hexagonal shape, there are 13 of these blocks.

## Reporter blocks



Main article: [Reporter Block](#)

**Reporter blocks** are the values. Reporter blocks can hold numbers and [strings](#). It is like asking a friend, for example, "What is  $2 + 2$ ?", and they would answer "4". It can also report a [variable](#). For example, "What is your age?" and they may answer: "15". Shaped with rounded edges, there are 37 of these blocks — not counting the theoretically infinite amount of Reporter blocks that can be made for each variable and list.

## C blocks



Main article: [C Block](#)

**C blocks** are blocks that take the shape of "C's". Also known as "Wrap blocks", these blocks loop the blocks within the Cs or check if a condition is true. There are five C blocks, and they can be found in the Control category. C blocks can be bumped at the bottom, or capped.

## Cap blocks



**Cap blocks** are the blocks that end scripts. They are shaped with a notch at the top and a flat bottom — this is so you cannot place any blocks below them. There are two Cap blocks which can both be found in the Control category.

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**Motion blocks** are the blocks that control a [Sprite's](#) movement. There are 17 Motion blocks in Scratch 3.0.

## Looks blocks

**Looks blocks** are the blocks that control how a sprite looks. There are 23 Looks blocks in Scratch 3.0. Three of the 19 sprite Looks blocks have a counterpart for the Stage.

## Sound blocks

**Sound blocks** are the blocks that control sound. There are 16 Sound blocks in Scratch 3.0. The note blocks in 3.0 have been moved to the [Music Extension](#).

Scratch 3.0 has the following Sound Reporter block:

- `volume` — The volume.

## Events blocks

**Events blocks** are blocks that control events and the triggering of scripts. There are 8 Event blocks in Scratch 3.0.

- `broadcast` — Sends a broadcast throughout the Scratch program, activating When I Receive () blocks that are set to that broadcast.
- `broadcastandwait` — Like the Broadcast () block, but pauses the script until all scripts activated by the broadcast are completed.

## Control blocks

**Control blocks** are the blocks that control scripts. There are 11 Control blocks in Scratch 3.0.

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## Sensing blocks

**Sensing blocks** are the blocks that detect things. There are 21 Sensing blocks in Scratch 3.0.

## Operators blocks

**Operators blocks** are the blocks that perform math functions and string handling. There are 18 Operators blocks in Scratch 3.0.

Scratch 3.0 has the following seven Operators Boolean blocks:

- `<` — The condition for checking if a value is less than the other.
- `=` — The condition for checking if two values are equal.
- `>` — The condition for checking if a value is greater than the other.
- `and` — True if both conditions are true.
- `or` — True if either condition is true.
- `not` — Makes the condition checked if it is false, not true, or true, not false.
- `contains?` Checks if the first parameter's text contains the second parameter's text — if it does, the block returns true.

## Variables blocks

**Variables blocks** are the blocks that hold variables and lists. There are 5 Variables blocks and 11 list blocks in Scratch 3.0.

Scratch 3.0 has the following Variables Reporter block:

- `variable` — The variable's value.