

BLOCK-BASED CODING

Demonstration Set

for **ScrATCH**

Set demostrativo de la programación en bloques para Scratch
Kit de démonstration de programmation par blocs pour Scratch
Demonstrationsset zum blockbasierten Programmieren mit Scratch



Scratch is owned and provided by the Scratch Foundation and was originally developed by Dr. Mitch Resnick and his teams at MIT's Lifelong Kindergarten Group and MIT Media Lab. Scratch is available for free at www.scratch.mit.edu and can also be downloaded on the App Store, Google Play, and Microsoft Store. You can learn more about Scratch and The Scratch Foundation at www.scratch.org.

*Engage students with visual
coding on any magnetic surface!*

 **WARNING:**
CHOKING HAZARD - Small parts.
Not for children under 3 years.



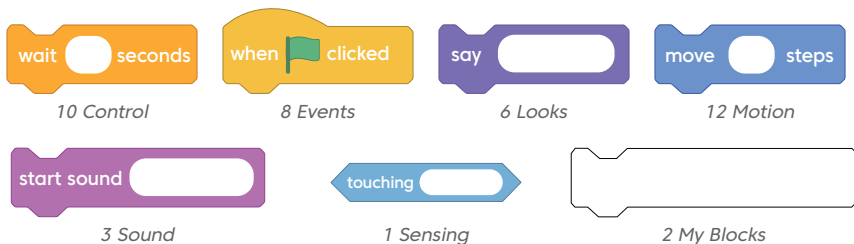
Introduction

Enhance your coding and creative learning curriculum with the Block-Based Coding Demonstration Set for Scratch! This exciting offline companion to the Scratch online program offers a hands-on, screen-free introduction to early block-based coding. Teachers can model concepts in a way that's developmentally appropriate, building lifelong skills such as collaboration, computational and design thinking, and creative problem-solving. With flexible display options, this set supports a variety of teaching approaches, making it a valuable addition to your classroom, after-school program, and beyond.

What's Included

- 140 Peel-And-Stick Magnets
- 42 Color-Coded Scratch Blocks:

*Blocks are
write-on/wipe-off!*



How to Use

Setting Up Your Demonstration Set

Peel-and-stick magnets are provided to attach the cards to a magnetic surface. Simply peel off the backing and stick the magnets to the back of a card. Cards also attach easily with tape, tacks, etc., on different surfaces.

Scratch Tips

What Is a Sprite?

In Scratch, a sprite is a graphic object or character that can be programmed to move, respond to events, and interact with other sprites.

Teacher Tip: When building your demonstration code, use a real-life sprite (e.g., a student or classroom object) to carry out the task. When students are using Scratch online, they will choose a sprite from the bank of available characters.

What Are Backdrops?

Backdrops are scenes used as backgrounds for coding projects. Each new coding project begins by selecting a backdrop and a sprite. When using Scratch online, have students choose the backdrop that best fits the activity. This will set the scene and add creativity to any coding project.

Teacher Tip: When working with the demonstration set, select an area of the classroom to be your real-world backdrop. Try different locations to simulate how backdrops can change within Scratch.

Write-On/Wipe-Off Space

During your demonstration, use the write-on/wipe-off space on the blocks to customize your code. This space is where you will add variables, such as a number of steps or a word or phrase for the sprite to say. So be sure to point out the blank space as you introduce block-based coding using this set.

Block Exploration


Ready, set, explore with the Block-Based Coding Demonstration Set for Scratch! Scratch is a unique online platform that makes learning to code intuitive and fun for students. Unlike traditional programming languages, Scratch uses visually appealing blocks instead of written commands, making it easier for beginners to understand the basics of programming. In Scratch, the blocks are the building units used to create the code. These blocks come in a variety of colors and shapes, each playing a different role in the coding process. By connecting these colorful Scratch blocks like puzzle pieces to code and build a program, students will be prepared for future text-based coding.

This hands-on set includes a diverse selection of the most common Scratch blocks, designed to give users a comprehensive offline Scratch experience. Detailed descriptions of the blocks, their unique features, and their functions are provided below to help support students as they build programs and run scripts in the classroom or online.


Block Descriptions


Motion Blocks


Motion blocks allow students to control their sprite's movement by controlling the sprite's direction, coordinate position, and speed. Here's a short breakdown of the Motion blocks offered in the set:

 Move the sprite a given number of steps in the direction the sprite is facing

Teacher Tip: When you move to the left/down, place a minus sign in front of the number. This symbol tells the program to move backwards.

 Change the sprite's direction by a given number of degrees

 Move the sprite to an x- and y- coordinate position in a given amount of time

 Point the sprite in a given direction

change x by

Change the horizontal position of the sprite by a given number of grid spaces

change y by

Change the vertical position of the sprite by a given number of grid spaces

Teacher Tip: Scratch uses a coordinate system to help a sprite find its place. To create your own grid in the classroom, use painter's tape or a similar material to outline squares on the floor, with each square representing 20 steps. Guide students to use the x-axis of the grid to represent the horizontal location of the sprite and the y-axis to represent the vertical position.

if on edge, bounce

Make the sprite point in a direction that mirrors the direction it came from

Looks Blocks

On the Scratch online program, Looks blocks allow students to change the appearance of the sprite and allow the sprite to communicate through a speech bubble. With these physical blocks, students should simulate the sprite's speech by saying the message written in the blank space aloud. Here's a short breakdown of the Looks blocks offered in the set:

say

Give the sprite a speech bubble

switch backdrop to


Change the backdrop to a specified one

hide

Hide the sprite

Sound Blocks

When using Scratch online, Sound blocks allow students to incorporate sound effects or music into a coding project. With these physical blocks, students should simulate playing sounds and adjust the volume by making it louder or quieter. Here's a short breakdown of the Sound blocks offered in the set:

start sound


Play a sound and continue running the script

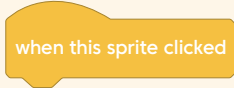
change volume by

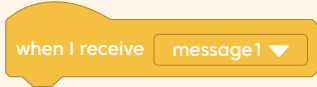
Change the volume of a sprite by a certain amount


Events Blocks

Events blocks are the most important blocks in Scratch. These blocks trigger or begin a command or action. Without these blocks, scripts will not run. Here's a short breakdown of the Events blocks offered in the set:

 Activate the script once the green flag has been touched


 Activate the script once the sprite is clicked or touched

 Activate the script once a broadcast is sent


 A message that activates the scripts

Control Blocks

Control blocks allow students to manage the flow of a program. They help control how and when different parts of the project are executed. These blocks allow students to create complex and interactive programs. Here's a short breakdown of the Control blocks offered in the set:

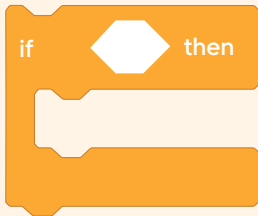
 Pause a script for a certain amount of time

Teacher Tip: Explain that the wait block is used to slow down the commands; otherwise, a computer will perform them so quickly we cannot easily see them.

 Blocks stacked inside will loop a specified number of times before the script continues to run



Blocks stacked inside will continue in a loop until stopped



If its Boolean condition is true, the blocks inside will run the script

Sensing Blocks

Sensing blocks are used to detect various things, such as the location of a mouse pointer (online), the distance between two sprites (online), and whether two sprites are touching. See below for an image and description of the **touching** block included in the set.



Check to see if sprites are touching or to detect the edge of a defined area

My Blocks

My Blocks are customizable blocks that can be adapted for use in any program. To incorporate these blocks, simply write a command on the write-on/wipe-off surface provided using a dry-erase marker.



Design your own block!

Get Started Activity

Looking for ways to start incorporating your Block-Based Coding Demonstration Set for Scratch into your daily coding lessons? Try this sample activity.

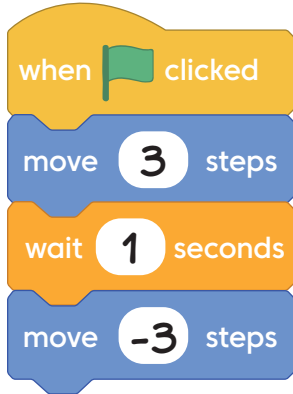
Side to Side

Objective: Break down early coding concepts

Materials: Scratch blocks (pictured below), dry-erase marker (not included)



1. Place a **when green flag is clicked** block on a magnetic surface.
2. Add a **move_steps** block. Place it under the **when a green flag is clicked** block and connect the blocks like puzzle pieces. Write 3 on the write-on/wipe-off space. Have students act out the code as a real-life sprite by moving to the right three steps when you touch the green flag.
3. Explain to students that programmers revise or make changes to their code. Add a **wait_seconds** block. Write 1 in the white space.



4. Add another **move_steps** block. Write -3 in the white space. Have students act out the code when you touch the green flag, moving right three steps, pausing for 1 second, and then moving three steps left.

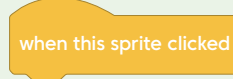
Block-Based Challenge

Explore more advanced learning options by using the following prompts to build students' coding skills and promote discussion:

Can you program your real-life sprite to spin?



How can you modify your code to add a second real-life sprite?



How can you add a My Block to your code?



Can you program your real-life sprite to say something?



After practicing and experimenting with this demo set, encourage students to continue exploring by running their scripts on Scratch online.



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Use a wet- or dry-erase marker when writing on the cards to ensure repeated use. Test your marker first on the corner of one card to ensure it does not leave a permanent mark. Use a damp cloth when removing wet-erase marks. Do not saturate the cards with water, as the material may warp.

Para poder reutilizar las tarjetas, escribe sobre ellas con un rotulador de borrado en húmedo o de borrado en seco. Prueba primero el rotulador en la esquina de una de las tarjetas para comprobar que no deja una marca permanente. Para borrar las marcas de rotulador de borrado en húmedo, usa un trapo húmedo. No satures las tarjetas con agua ya que el material puede deformarse.

Utilisez un marqueur effaçable à sec ou soluble pour écrire sur les cartes afin de pouvoir les réutiliser. Testez-le au préalable dans le coin d'une carte pour vous assurer qu'il ne laisse pas de marque indélébile. Utilisez un chiffon humide pour effacer les marqueurs solubles. Ne saturez pas les cartes d'eau pour éviter qu'elles ne se déforment.

Damit Sie das Set wiederverwenden können, nehmen Sie zum Beschriften der Karten bitte einen nass oder trocken abwischbaren Stift. Testen Sie den Stift zuerst an der Ecke einer Karte, um sicherzugehen, dass er keine dauerhaften Rückstände hinterlässt. Nass abwischbare Stifte mit einem feuchten Tuch abwischen. Durchtränken Sie die Karten nicht mit Wasser, da sich das Material wellen kann.

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