



Introduction to conditionals

Scratch lesson plan – Code Playground



Lesson overview

Teach students to use conditionals in Scratch, understanding how conditionals allow the program to make decisions based on specific conditions. Students will create a 'Rock, paper, scissors' game to see how conditionals can change program behaviour.

Time	Key learning outcomes	Resources
30 mins	<ul style="list-style-type: none">Recognise and use if and if, else block in ScratchUse conditionals to make decisions in a 'Rock, paper, scissors' gameUnderstand how nested conditionals make code easier to read and more efficient.	<ul style="list-style-type: none">Laptops or desktop computersAccess to Scratch website - https://scratch.mit.eduProjector or smartboard for live demonstration

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Lesson introduction (5 minutes)

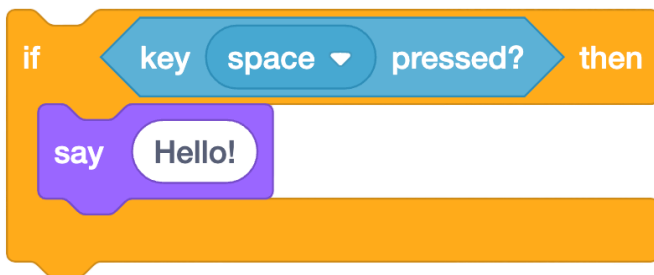
Introduce the concept of conditionals

Conditionals help us make decisions. Ask students to think about times they've used 'if' in real life. For example, 'if it's raining, I'll bring my coat' or 'if I finish my homework, I can play.' Just like us a program uses conditionals to decide what to do.

Types of conditionals in Scratch

- **if, then:** Checks if a condition is true, then runs the code inside the block
- **if, then, else:** Checks if a condition is true. If true, it runs the first code; if false, it runs the code after **else**.

Show a simple **if, then** block, like **if [key pressed] say "Hello"**. Explain how the sprite says "Hello" only if the key is pressed.



Activity – Rock, paper, scissors game

Set up a basic structure where the computer picks a random choice (rock, paper, or scissors).

Imagine playing the game rock, paper, scissors with a friend, you use logic to choose what you think might win against an opponent. Conditionals allow us to program a selection of choices that can be randomly chosen. However, a computer hasn't got all the information to make a logical choice like us.

Instructions

1. Explain how we'll use **if, then** blocks to check what the computer picked
2. Help them set up the conditions, setting **if hand = 1** to say "Rock"
3. **Duplicate two further blocks underneath the 'Rock' conditional**, **If hand = 2** to say "Paper" and **else** to say "Scissors".

Think of it as asking 'If I'm holding up one finger, I mean Rock; if two, I mean Paper. The computer does the same with numbers.

Ask your class

- What would happen if we skipped one of the choices? Would the game still work?
- How could we simplify the code using 'if, then, else' blocks?



Code snippets

```

when clicked
  set hand to pick random 1 to 3
  if hand = 1 then
    say Hello! for 2 seconds
  
```

```

when clicked
  set hand to pick random 1 to 3
  if hand = 1 then
    say Rock for 3 seconds
  if hand = 2 then
    say Paper for 3 seconds
  if hand = 3 then
    say Scissors for 3 seconds
  
```

```

when clicked
  set hand to pick random 1 to 3
  if hand = 1 then
    say Rock for 3 seconds
  else
    if hand = 2 then
      say Paper for 3 seconds
    else
      say Scissors for 3 seconds
  
```

Summary

The following information is an example of what a child at an expected level would be able to demonstrate when completing these activities with additional examples to demonstrate how this would vary for a child with emerging or exceeding achievements.

Assessment guidance

Differentiation – Lower ability/ASN

- Print screenshots of each Scratch block so students can easily locate them
- Focus on having students create a single conditional to check one choice, like **if hand = 1 then say "Rock"**
- Act out the rock, paper, scissors choices to help students understand how conditionals are making the game's decision.

Differentiation – Higher ability/extension

- Challenge students to add more choices (e.g. lizard, Spock)
- Consider adding a users choice to compare and provide winner or loser based on their choice vs the computer.

Plenary

- Discuss what students learned about conditionals and how they used them to make decisions in their game. Ask volunteers to share how the compute used conditionals to display rock, paper, or scissors
- Ask students to think of other games or situations that need decisions. Examples: 'If I score a goal, I celebrate.'

Assessment questions

- What does a conditional do in code? - Look for students to recognise that conditionals make decisions by checking if something is true or false
- What is the difference between **if** and **if, else** in Scratch? **If** only checks one condition; **if, else** checks one, then performs an action for either true or false
- How would you set up a conditional to display 'Rock' if the computer picks 1? Expected answer **if hand = 1 then say "Rock"**