Lesson Plan: Maze Game

Year Group: 7 | **Duration:** 50 minutes | **Topic:** Conditionals & Flowcharts

1. Overview

Core Concept: Conditionals — IF/ELSE statements that let programs make decisions based on conditions.

Learning Objectives:

- Write IF/ELSE statements for simple decision scenarios
- Represent decision logic as a flowchart using correct symbols
- Trace execution through conditional logic
- Understand that every diamond in a flowchart is a yes/no question

Key Vocabulary:

Term	Definition
Conditional	A statement that runs different code depending on whether a condition is true or false
IF	Checks a condition — if true, runs the body
ELSE	Runs when the IF condition is false
Condition	A question with a yes/no (true/false) answer
Flowchart	A diagram showing the steps and decisions in a process
Decision diamond	The diamond shape in a flowchart, representing a yes/no question

2. Before the Lesson

Print:

- ☐ `resource-maze-grid.md` — 1 per group of 4, print A3 if possible
- ☐ `resource-trigger-cards.md` — print and cut, 1 set per group (place face-down on grid squares before lesson)
- ☐ `worksheet-flowchart.md` — 1 per student

Prepare:

- Place cut trigger cards face-down on maze grid squares before students arrive
- Each group needs a small token (coin, eraser) to mark position on the maze

3. Timed Lesson Flow

0–5 min — Hook: Reading a Flowchart

1. Draw on the board: a simple flowchart — "Is it raining?" → Yes: Take umbrella → No: Wear sunglasses → Both paths → "Leave the house"
2. Ask: *"Can anyone read this? What does each shape mean?"*
3. Introduce shapes: oval = start/end, rectangle = action, diamond = decision (yes/no branches).

5–10 min — Flowchart Shapes

1. Draw each shape on the board with its label and a brief description.
2. Key point: **diamonds always have exactly TWO exits — YES and NO.**
3. A flowchart is just a visual algorithm — it shows the same logic as code, but in a diagram.

10–15 min — Explain Maze Rules

1. Navigate from START (A1) to EXIT (E5).
2. On each square, flip the trigger card and read the rule.
3. Follow the rule — it may change your score, health, or position.
4. While playing, write down the IF/ELSE logic for each trigger card on the flowchart worksheet.

15–35 min — Play the Maze

1. Groups play. One student moves the token; others write the IF/ELSE for each trigger card encountered.
2. Circulate: check students are writing actual IF/ELSE notation, not just describing what happened.

35–45 min — Draw the Full Flowchart

Students convert their maze journey into a complete flowchart on the worksheet — one diamond per trigger card.

45–50 min — Debrief

- *"What is an IF without an ELSE? What happens if the condition is false and there's no ELSE?"*
- *"What if two conditions are both true at the same time?"*
- *"Could you have an IF inside another IF? What would that look like?"*

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4. Teacher Facilitation Notes

What to look for:

- Students drawing flowcharts as lists (rectangles only) — insist on diamond shapes for decisions
- Students who write IF without specifying the condition clearly — *"What exactly are you checking? What is the yes/no question?"*
- Groups who finish the maze quickly without writing the flowchart — the flowchart IS the main task

Common misconceptions:

- A diamond can have three exits — NO, always exactly two: YES and NO
- IF and ELSE are both required — ELSE is optional; some IFs don't need an else branch

- Flowcharts are the program — flowcharts are a planning tool; they get translated into code

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5. Extension / Early Finisher Tasks

1. **Compound conditions:** Design a new trigger card that uses AND or OR (e.g., "IF health > 5 AND score > 10"). Draw its flowchart.
2. **Nested IF:** Write an IF/ELSE where one branch contains another IF/ELSE. What would the flowchart look like?
3. **Convert to code:** Take your flowchart and write it as pseudocode using IF/ELSE syntax.

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6. Key Takeaway

> **IF/ELSE creates decision points — the program asks a yes/no question and takes a different path depending on the answer. Every diamond in a flowchart is one IF statement.**