

Lesson Plan: Maths and Neuroscience of Decision Making

Topic: How the Brain Makes Decisions - Walk or Bike

Duration: 50–60 minutes

Learning Intentions

- Understand that decision making is a gradual process.
- Explore how evidence, time and uncertainty affect decisions.
- Recognise that simple mathematics can model how the brain decides.
- Apply decision-making ideas to everyday situations.

Success Criteria

- I can explain why some decisions are easy and others are difficult.
- I can describe how new information can change a decision.
- I can explain the ideas of evidence, time and noise in decisions.
- I can give real-life examples of decision making.

Resources

- Maths in the Wild – Decision Making slides
- Projector / interactive board
- Whiteboard and markers
- Worksheets and MCQs

Lesson Structure (with Timing)

1. Starter – What Is a Decision? (5 minutes)

Introduce the lesson using everyday choices such as what to wear or eat.

Pose questions from the slides about right and wrong decisions and speed of deciding.
Explain that students will explore an escape-room style decision task.

2. Simple Choice: Walk or Bike (10 minutes)

Use the walk-or-bike slides to introduce a simple decision.

Discuss factors such as distance, effort, and preference.

Highlight that decisions build up gradually, not instantly.

3. Decisions as Mathematics (10 minutes)

Introduce the idea that decisions can be represented mathematically.

Explain concepts in simple terms: drift (preference), time (thinking duration), and noise (distraction).

Ask students whether strong preferences lead to faster decisions.

4. When Decisions Are Hard (10 minutes)

Explore scenarios with no clear evidence, such as liking walking and biking equally.

Discuss why this makes decisions slower or harder.

Link to real-life choices students find difficult.

5. Changing Your Mind and Time Pressure (10 minutes)

Introduce new information such as weather or signs that influence decisions.

Ask students whether they would change their choice.

Discuss how time pressure can force a decision.

6. Plenary – Big Ideas (5–10 minutes)

Summarise that the same maths explains many kinds of decisions.

Emphasise that these models describe what is happening in the brain.

Encourage students to think about other decisions they make each day.

Assessment for Learning

Assessment through questioning, class discussion. Worksheet, MCQs, and reflection on decision scenarios.