

## WEEK 5

### LOGICAL REASONING, PUZZLES AND NONOGRAMS

#### **Question 1: Logic Riddle - The Three Light Bulbs**

There is a room with 3 light fixtures inside of it. This room is completely sealed off from the outside. You and the 3 switches to the lights are on the outside of the room. When outside the room, you can flip the switches however you want, but you are only allowed to open the door, enter the room, and inspect the bulbs ONCE. After leaving the room, you may not touch the switches. How can you know which switch controls each bulb?

Write in detail the solution you deem appropriate.

#### **Question 2: Identifying Patterns in Number Sequences**

You are given the following number sequences, each following a unique pattern. Identify the pattern in each sequence and predict the next number.

1. **Sequence A:** 2, 4, 8, 16, 32, ?
2. **Sequence B:** 5, 10, 17, 26, 37, ?
3. **Sequence C:** 1, 1, 2, 3, 5, 8, ?
4. **Sequence D:** 100, 50, 25, 12.5, 6.25, ?
5. **Sequence E:** Monday, Wednesday, Friday, Sunday, ?

#### **Question 3: Identifying Patterns in Daily Temperature Readings**

You are provided with the temperature data recorded over a week (in degrees Celsius) at a particular location:

- **Day 1:** 22°C
- **Day 2:** 24°C
- **Day 3:** 23°C
- **Day 4:** 25°C
- **Day 5:** 24°C
- **Day 6:** 26°C
- **Day 7:** 25°C

#### **Tasks:**

1. Identify the pattern in the daily temperature changes.
2. Predict the temperature for **Day 8** based on the observed pattern.
3. Explain a possible real-life situation or phenomenon that could result in this temperature pattern (e.g., weather changes, seasonal trends).