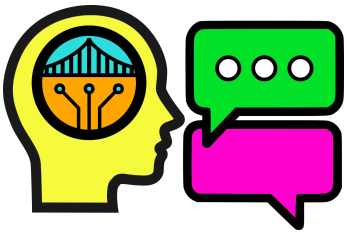

Guess the Password

Lesson summary

Target Audience: *12-14 years old. No previous experience needed, starter level.*
Duration: *45 minutes*
Learning goals:
Students engage in a fun and interactive online challenge where they try to deduce a secret password based on logical clues and patterns. The objective is to help students develop computational thinking skills by:

- Decomposing the problem into manageable parts.
- Recognizing and analyzing patterns.
- Creating and testing hypotheses (Algorithmic thinking).
- Applying logic and deduction to rule out possibilities.
- Abstracting unnecessary information to focus on what matters

Online or offline: online
Computational Thinking:

- **CT-foundations**:
    - Decomposition: Breaking down clues and steps to isolate password components
    - Pattern Recognition: Identifying recurring structures or rules in passwords
    - Abstraction: Ignoring irrelevant clues or distractions
    - Algorithmic Thinking: Systematically testing possibilities to uncover the correct password
    - Logical Reasoning: Deducing correct choices based on logical elimination

Materials

- Pre-made password clue slides or printable PDFs
- Shared document or quiz platform (Google Forms or Kahoot for evaluation)

Preparation

1. **Design 2–3 Password Challenges**, each with a 4–6 character password and a set of clues. Example:
    - Password: 4-letter code (e.g., "BRAV")
    - Clues:
        - The password has one vowel.
        - The first letter comes before C in the alphabet.
        - No letters are repeated.
        - The second letter is a consonant and comes after M.
2. **Create slides or cards** with the password challenge and clues.
3. **Set up**
    - A shared online board for group guesses and collaboration.
    - An optional quiz or feedback form at the end.

Lesson Description - Guess the Password

Introduction (5 minutes)
Welcome students, briefly introduce Computational Thinking and explain the challenge:

"Today, you're going to be codebreakers! Your mission is to guess a secret password using logical clues. This will require careful thinking, teamwork, and smart deduction."

"This activity builds skills like breaking problems into steps, spotting patterns, and testing ideas—these are the same skills computer scientists and coders use!"

Core

Warm-up Activity (5 minutes)

- Present a simple puzzle or riddle involving logic. Use for example the puzzle:

  “I’m thinking of a number between 1 and 10 that’s even and greater than 4. What could it be?”

- Discuss with the students how they figured it out using elimination and logic.

Main Activity – Password Challenge (25 minutes)

Round 1 (10–12 minutes)

- Share the first password challenge (see challenges in the appendix).
- Divide students into small breakout groups (or keep them together if the group is small).
- Ask them to:
  - Analyze clues together
  - Make guesses
  - Use the collaborative board to record eliminated options and possible passwords.
- After 10 minutes, discuss as a class:
  - What was the correct password?
  - How did you eliminate options?
  - Which clues were most helpful?

Round 2 (Optional or Advanced – 10–12 minutes)

- Share a trickier password puzzle.
- Encourage students to apply learning from Round 1.

Debrief and Evaluation (10 minutes)

- Ask reflection questions:
    - What strategies worked best?
    - Did you use trial and error, or logic first?
    - How did your group collaborate?
- Discuss how this applies to real-world computing:
    - Password systems
    - Logic in programming
    - Cybersecurity
- Use a short quiz or poll to check understanding:
    - Match a clue to a possible letter.

Appendix 1 - Password puzzels

Password Puzzle 1: "Code Crackers"

Password Length: 4 letters
Character Set: Capital English letters only (A–Z)
Clues:

1. The password contains only one vowel.
2. No letter is repeated.
3. The first letter comes before D in the alphabet.
4. The second letter is a consonant and comes after M.
5. The last letter is alphabetically just before the second letter.

Password Puzzle 2: "Digital Doors"

Password Length: 5 characters
Character Set: Digits 0–9
Clues:

1. The password has exactly two odd numbers.
2. No digit is repeated.
3. The sum of the digits is 20.
4. The middle digit is the highest.
5. The password starts with an even number.

Password Puzzle 3: "Symbol Secrets" (Advanced)

Password Length: 6 characters
Character Set: Mix of letters and symbols (A–Z, !, @, #, $, %, &)
Clues:

1. The password contains 3 letters and 3 symbols.
2. The second and fifth characters are the same.
3. The first letter is a vowel.
4. The third character is a symbol that comes after @ in this list: !, @, #, $, %, &.
5. The password contains no number or lowercase letter.

Appendix 2: Answer puzzles

Answer puzzle 1:: BNSM ➔ BPNO

- Vowel: Only one (A, E, I, O, U)
- First letter: A, B, or C
- Second letter: N–Z (consonants only)
- Last letter is just before second letter: M if second letter is N, etc.

Answer puzzle 2: 24673, for example ➔ 24635

- Odd numbers: 1, 3, 5, 7, 9
- Even numbers: 0, 2, 4, 6, 8
- Middle digit (3rd): must be the highest
- Use trial-and-error + sum logic to reduce options

Answer puzzle 3:: A@#@B$ —> AB#@B$

- Vowels: A, E, I, O, U
- Symbols after @: #, $, %, &
- Students must test and rearrange character types while obeying clue 2 and clue 4.