# Student Activity Worksheet

Computational Thinking in Digital Support and Security

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## Scenario Case Study

You are working as part of the IT Support and Security Team at a large sixth form college. Recently, the college network has experienced unusual activity:  
- Multiple students have reported being locked out of their accounts.  
- Security logs show repeated login attempts from unknown IP addresses.  
- The helpdesk has received a spike in calls about slow Wi-Fi performance.  
- The safeguarding team is concerned that students may be falling victim to phishing emails.  
  
Your manager has asked you to investigate the issue using a computational thinking approach to identify the problem and propose solutions.

## Task 1: Understanding Computational Thinking (Knowledge)

Individual – 10 minutes

1. Define computational thinking in your own words.  
2. List and explain the four key elements:  
 - Decomposition  
 - Abstraction  
 - Pattern recognition  
 - Algorithm design  
  
Extension: Give one everyday example (non-IT) where you use computational thinking without realising it.

## Task 2: Applying to the Scenario (Application)

Paired – 20 minutes

1. Use decomposition to break the scenario into smaller, manageable problems.  
2. Apply abstraction by identifying which details are relevant and which can be ignored.  
3. Look for patterns in the problems reported by users.  
4. Create an algorithmic plan – step-by-step actions the IT team should take to investigate and resolve the issue.  
  
Extension: Consider what could happen if the team does not use computational thinking to handle the situation.

## Task 3: Reflection and Sector Link (Evaluation)

Group – 15 minutes

1. Discuss how computational thinking can improve efficiency and security in digital support roles (e.g., fault diagnosis, incident response).  
2. Give two examples of how security teams apply computational thinking to detect or prevent cyber attacks.  
3. Write a short paragraph explaining how this links to the Pearson Digital Support and Security (Level 3) curriculum focus on 'problem solving and security resilience'.

## Teacher/Assessor Notes

- Maths/English links: Structured report writing, sequencing logical steps, analysing data trends.  
- Evidence: Students could submit:  
 - Written notes (definitions, decomposition diagrams).  
 - Flowchart or algorithm for incident response.  
 - Reflection paragraph.