

CSE 1300 - Assignment 1

Fall 2025

This assignment continues to build on computational thinking skills. You will apply Decomposition, Algorithmic Thinking, Abstraction, and Pattern Recognition to solve the given problems.

This is an individual assignment, but you may attend a CCSE Tutoring Session if you need help.

Instructions

Document Setup:

- Create a new text document using Microsoft Word.
- Include your full name, KSU ID, and Assignment Number at the top.
- Label each answer clearly.

Submission Guidelines:

- Save your document as a **PDF**.
- Submit your file on D2L under *Assignments* → "*Assignment 1*" before the deadline.

QUESTION 1 – Decomposition (25 points)

Scenario:

NASA is designing an astronaut assistant robot for missions on Mars. The robot must help astronauts with everyday routines inside the spacecraft.

Task:

List at least five distinct tasks or features this robot should perform in the living quarters of the spacecraft.

(Avoid generic answers like "move around." Focus on unique and useful tasks that would truly help astronauts in a confined space.)

QUESTION 2 – Algorithmic Thinking (25 points)

Scenario:

You are working with mission control to design a checklist for launching a rocket safely. The rocket must only launch if all systems are properly checked. The critical systems include:

- Fuel
- Navigation
- Communication
- Weather conditions
- Crew readiness

Task:

Write out the step-by-step algorithm that ensures all these systems are verified before launch. Your steps should be detailed and logical so that the launch process is safe and reliable.

QUESTION 3 – Abstraction (25 points)**Scenario:**

A space museum wants to create simplified signs for exhibits so visitors can easily find items. One section contains the following artifacts:

- Space Suits
- Helmets
- Gloves
- Oxygen Tanks
- Boots

Task:

Create a label with four or fewer words that represents all these items together. The label should be clear and simple enough for visitors of all ages to understand.

QUESTION 4 – Pattern Recognition (25 points)

Scenario:

Space engineers observed a repeating numeric pattern in the energy output of spacecraft solar panels. They want your help to identify the pattern and fill in missing values.

Task:

Identify the calculation sequence (e.g., $(A \times B) - C = D$) and solve for the missing values (W, X, Y, Z).

Table 1

A	B	C	D
2	4	3	5
3	5	2	13
4	6	1	23
W	7	2	26
5	3	4	X

Table 2

E	F	G	H
10	2	4	18
8	3	5	19
6	4	6	20
12	2	3	Y
7	1	2	Z

Submitting Your Work

- Ensure all answers are in a single document.
- Save the document as a PDF.
- Submit it via D2L before the deadline.
- Verify that the correct file has been uploaded successfully.