AP CSA · UNIT 8 2D ARRAY · TEACHER ANSWER KEY

Answer Keys & Grading Notes

Objective-aligned exemplars, full-credit models, and the mistakes to watch for. **Do not distribute to students.**

True-up step: the objective sections below are built from the AP learning objectives. Paste your real Code.org prompts into chat and I'll fill exact question-by-question keys. The *AI-Proof Worked Answers* section matches the handwritten assignment exactly.

A · 2D access

Given int[][] m = {{1,2,3},{4,5,6}}	Answer
`m.length`	2 (number of rows)
`m[0].length`	3 (columns in row 0)
`m[1][2]`	6
`m[0][0]`	1
`last valid access`	m[1][2]

Common mistakes: Swapping row and column ([col][row]); using m.length for columns; assuming all rows have equal length without checking.

B · Row-major traversal

Full-credit exemplar: for (int r = 0; r < m.length; r++) for (int c = 0; c < m[r].length; c++) { … m[r][c] … } — outer over rows, inner over columns.

Common mistakes: Inner loop bounded by m.length instead of m[r].length; swapping r/c in the access; off-by-one bounds.

AI-Proof Worked Answers — 2D Array — Handwritten FRQ

Grade the handwritten sheet against these. Item numbers match the assignment.

Item	Correct answer
`1a) m.length`	2 (number of rows)
`1b) m[0].length`	3 (columns in row 0)
`1c) m[1][2]`	6
`1d) m[0][1]`	2
`2) sumAll`	int s=0; for(int r=0;r<m.length;r++) for(int c=0;c<m[r].length;c++) s+=m[r][c]; return s;
`3) m.length vs m[r].length`	m.length = # of rows; m[r].length = # of columns in row r