AP CSP · UNIT 6 ALGORITHMS · 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 · Linear vs. binary search

Aspect	Answer
`Linear search`	Checks each element in order; works on any list; slower on large lists.
`Binary search`	Repeatedly halves a SORTED list; much faster; requires the list be sorted.
`Key requirement`	Binary search only works if the data is already sorted.

Common mistakes: Using binary search on an unsorted list; saying linear is 'always worse' (it needs no sorting); no mention of the sorted requirement.

B · Efficiency / reasonable time

Full-credit exemplar: An algorithm runs in a reasonable time if its steps grow polynomially with input size; unreasonable (e.g., trying every combination) grows too fast to finish for large inputs.

Common mistakes: Equating 'reasonable' with 'fast on my laptop'; no link to input size growth.

AI-Proof Worked Answers — Algorithm Analysis — Handwritten Brief

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

Item	Correct answer
`1) pseudocode`	count = 0; FOR EACH score: IF score >= 70 THEN count = count + 1; display count
`4) binary search, target 71`	low0/high7 mid3=23 <71 → go right; low4/high7 mid5=56 <71 → go right; low6/high7 mid6=71 → FOUND