AP CSA · UNIT 10 · HANDWRITTEN · AI-PROOF PERFORMANCE TASK

Recursion — Handwritten FRQ

Name: _____ **Period:** _____ **Date:** _____

AP objective: CON-2.L/2.M **Points:** 20

> **Why handwritten, in class:** this replaces a typed task AI can complete. Work every item by hand and **show all your steps** — no AI, phones, or notes. A correct answer with no work earns half credit; the work is what proves it's yours.

Complete each item by hand — show all work

1. Trace mystery(4) fully; show each call and the value it returns — *8 pts*

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```
public int mystery(int n) {
    if (n <= 1) return 1;
    return n * mystery(n - 1);
}
```

> Draw the call stack — show the return value bubbling back up.

2. Write a recursive method sum(int[] a, int i) that returns the sum from index i on; circle the base case — *8 pts*

> No base case = infinite recursion.

3. Explain why binary search requires a sorted array — *4 pts*

Oral defense (teacher — 60 sec)

> Student answers one cold question aloud before grading. A student who did their own work can answer instantly; a copied one can't. ◯ Strong ◯ OK ◯ Weak

Scoring (20 pts)

Criterion	Pts	Earned
Trace w/ returns correct	8	
Recursive method + base case	8	
Binary-search reasoning	4	
Gate: passed oral defense (can explain the work aloud)	req'd	◯ Y ◯ N
Total	20	

> **Integrity gate:** if the student can't explain their work aloud, cap the score at 50% and require a resubmit.