AP CSA · UNIT 9 INHERITANCE · 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 · Inheritance mechanics

Concept	Rule
`extends`	subclass inherits public/protected members of the superclass
`super(...)`	calls the superclass constructor; must be the FIRST line of the subclass constructor
`super.method()`	calls the superclass version of an overridden method
`Override`	same signature in subclass replaces the inherited method
`is-a`	a subclass object IS-A superclass object (Dog is-a Animal)

Common mistakes: Putting super() after other statements (must be first); overloading when they meant overriding; assuming private members are inherited/accessible.

B · Polymorphism (declared vs actual)

Full-credit exemplar: Animal a = new Dog(); a.speak(); — the DECLARED type (Animal) decides which methods are legal to call at compile time; the ACTUAL type (Dog) decides which overridden version runs at runtime.

Common mistakes: Thinking the declared type picks the method body (actual type does); calling subclass-only methods through a superclass reference without a cast.

AI-Proof Worked Answers — Inheritance — Handwritten FRQ

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

Item	Correct answer
`1) Dog subclass`	public class Dog extends Animal { public Dog(String name){ super(name); } public String speak(){ return "Woof"; } }
`2) ref.speak()`	"Woof" — the actual (runtime) type Dog overrides speak()
`3) declared vs actual`	declared type = which calls compile; actual type = which override runs at runtime