**2010 Question 2: AP Line (9 points)**

| Total Scored out of 9 |  |
| --- | --- |

*Intent: Design complete* APLine *class including constructor,* getSlope *and* isOnLine *methods*

+1 Complete, correct header for APLine [ class APLine ]

*Note: Accept any visibility except private*

State maintenance

+1/2 Declares at least one instance variable capable of maintaining numeric value

+1/2 Declares at least three instance variables capable of maintaining numeric values

+1/2 All state variables have private visibility

*Note: Accept any numeric type (primitive or object)*

*Note: Accept any distinct Java-valid variable names*

APLine Constructor

Method header

+1/2 Correctly formed header (visibility not private; name APLine)

+1/2 Specifies exactly three numeric parameters

*Method body*

+1/2 Sets appropriate state variables based on parameters (no shadowing errors)

Note: Interpret instance fields by usage not by name

getSlope

*Method header*

+1/2 Correct method header

(visibility not private; type double or Double; name getSlope; parameterless)

*Method body*

+1/2 Computation uses correct formula for slope

+1 Computation uses double precision (no integer division)

+1/2 Returns computed value

isOnLine

*Method header*

+1/2 Correct formed header (visibility not private; type boolean or Boolean, name isOnLine)

+1/2 Specifies exactly two numeric parameters

*Method body*

+1/2 Computation uses correct formula involving state and parameters ( a\*x + b\*y + c )

+1/2 Computation uses correct comparison test (equal to zero)

+1/2 Returns true if is on this APLine; false otherwise