1. Encapsulation in the Circle class:

In the Circle class, members that are encapsulated are usually the private attributes (e.g., private radius, private color, etc.) that are only accessible within the class. They are often accessed or modified through public methods (getters and setters) rather than directly.

2. Constructor Name:

The constructor of a class must have the same name as the class itself. For example, if the class is named Circle, the constructor must be named Circle().

3. Difference between private and public access modifiers:

- Private modifier: Members (variables, methods, constructors) declared as private can only be accessed within the same class. They are hidden from other classes.
- Public modifier: Members declared as public are accessible from any other class.

4. Validity of the last statement (dot.radius = 5):

This statement is invalid if radius is a private field in the Circle class. Private members cannot be accessed directly from outside the class. To modify radius, you would need a public setter method like dot.setRadius(5).

5. Roo class analysis:

a) Class name: The class is named Roo.
b) Data member name: The data member is x.
c) Accessor method: The accessor method is getX().
d) Modifier method: The modifier (mutator) method is setX(int z).
e) Helper method: The helper method is factor(). This method is private and is used internally within the class to assist in calculations.
f) Constructor name: The constructor is Roo, which matches the class name.
g) Number of method members: There are 4 method members: setX(int z), getX(), calculate(), and factor().

6. Difference between a class and an object:

- Class: A class is a blueprint or template for creating objects. It defines properties (attributes) and methods (behavior) that the objects will have.
- Object: An object is an instance of a class. It is a concrete entity that follows the structure defined by the class and can have its own values for the attributes.

9. Moo class data member analysis:

a) Constant data member: The constant data member is z because it is declared as static final.
b) Variable data members: The variables are y and x. These are the members that can change.
c) Instance member: y is the instance member because it is not static and belongs to an individual instance of the Moo class.
d) Class members: x and z are class members because they are declared static, meaning they belong to the class itself rather than individual instances.