

1. What is the default value of a reference?
 - ☐ A) 0
 - ☐ B) ""
 - ☒ C) null
 - ☐ D) default
2. A default constructor has how many parameters?
 - ☒ A) 0
 - ☐ B) 1
 - ☐ C) 2
 - ☐ D) a variable number
3. Which statement prints the floating-point value 123.456 right justified with a field width of 10?
 - ☐ A) System.out.printf("%d10.3", 123.456);
 - ☐ B) System.out.printf("%10.3d", 123.456);
 - ☐ C) System.out.printf("%f10.3", 123.456);
 - ☒ D) System.out.printf("%10.3f", 123.456);
4. Suppose variable gender is MALE and age equals 60, how is the expression (gender == FEMALE) && (age >= 65) evaluated?
 - ☒ A) The condition (gender == FEMALE) is evaluated first and the evaluation stops immediately.
 - ☐ B) The condition (age >= 65) is evaluated first and the evaluation stops immediately.
 - ☐ C) Both conditions are evaluated, from left to right.
 - ☐ D) Both conditions are evaluated, from right to left.
5. To declare a method as static, place the keyword static before _____ in the method's declaration.
 - ☐ A) the method modifier
 - ☒ B) the return type
 - ☐ C) the method name
 - ☐ D) the argument list
6. Any field declared with keyword _____ is constant.
 - ☐ A) static
 - ☐ B) const
 - ☐ C) constant
 - ☒ D) final
7. Declaring main as _____ allows the JVM to invoke main without creating an instance of the class.
 - ☐ A) public
 - ☐ B) void
 - ☒ C) static
 - ☐ D) final
8. When an object is concatenated with a String:
 - ☒ A) a compilation error occurs.
 - ☐ B) a runtime error occurs.
 - ☐ C) the object's toString method is implicitly called to obtain the String representation of the object.
 - ☐ D) the object's class name is used.
9. A static method can _____.
 - ☐ A) call only other static methods of the same class directly.
 - ☐ B) manipulate only static fields in the same class directly.
 - ☐ C) be called using the class name and a dot (.).
 - ☒ D) All of the above.
10. Overloaded methods always have the same _____.
 - ☒ A) method name
 - ☐ B) return type
 - ☐ C) number of parameters
 - ☐ D) order of parameters
11. Which of the following methods are overloaded with respect to one another?
 - A) public int max (int a, int b) { ... }
 - B) public double max (double a, double b) { ... }
 - C) public int max (int a, int b, int c) { ... }
 - D) public double max (double a, double b, double c) { ... }
 - ☐ A) A and B are overloaded; C and D are overloaded.
 - ☐ B) A and C are overloaded; B and D are overloaded.

- ☐ C) A, B and C are overloaded.
- ☒ D) All these four methods are overloaded.
12. In a class containing methods with the same name, the methods are distinguished by:
- ☐ A) Number of arguments
- ☐ B) Types of arguments
- ☐ C) Return type
- ☒ D) (a) and (b)
- ☐ E) (b) and (c)
13. Which of the following statements about creating arrays and initializing their elements is false?
- ☐ A) The new keyword should be used to create an array.
- ☐ B) When an array is created, the number of elements must be placed in square brackets following the type of element being stored.
- ☒ C) The elements of an array of integers have a value of null before they are initialized.
- ☐ D) A for loop is commonly used to set the values of the elements of an array.
14. Which of the following tasks cannot be performed using an enhanced **for** loop?
- ☐ A) Calculating the product of all the values in an array.
- ☐ B) Displaying all even element values in an array.
- ☐ C) Comparing the elements in an array to a specific value.
- ☒ D) Incrementing the value stored in each element of the array.
15. Which statement correctly passes the array items to method takeArray? Array items contains 10 elements.
- ☐ A) takeArray(items[])
- ☒ B) takeArray(items)
- ☐ C) takeArray(items[9])
- ☐ D) Arrays cannot be passed to methods—each item must be sent to the method separately
16. Consider array items, which contains the values 0, 2, 4, 6 and 8. If method changeArray is called with the method call changeArray(items, items[2]), what values are stored in items after the method has finished executing? public static void changeArray(int[] passedArray, int value){ passedArray[value] = 12; value = 5; } // end method changeArray
- ☐ A) 0, 2, 5, 6, 12.
- ☐ B) 0, 2, 12, 6, 8.
- ☐ C) 0, 2, 4, 6, 5.
- ☒ D) 0, 2, 4, 6, 12.
17. In Java, multidimensional arrays:
- ☐ A) are not directly supported.
- ☐ B) are implemented as arrays of arrays.
- ☐ C) are often used to represent tables of values.
- ☒ D) All of the above.
18. Which of the following sets of statements creates a multidimensional array with 3 rows, where the first row contains 1 value, the second row contains 4 items and the final row contains 2 items?
- ☐ A) int[][] items;
items = new int[3][?];
items[0] = new int[1];
items[1] = new int[4];
items[2] = new int[2];
- ☒ B) int[][] items;
items = new int[3][?];
items[0] = new int[1];
items[1] = new int[4];
items[2] = new int[2];
- ☐ C) int[][] items;
items = new int[?][?];
items[0] = new int[1];
items[1] = new int[4];
items[2] = new int[2];
- ☐ D) int[][] items;
items[0] = new int[1];
items[1] = new int[4];
items[2] = new int[2];
19. An argument type followed by a(n) _____ in a method's parameter list indicates that the method receives a variable number of arguments of that particular type.
- ☐ A) square brackets ([]).
- ☒ B) ellipsis (...).
- ☐ C) varargs keyword.
- ☐ D) All of the above are acceptable to indicate a variable number of arguments.
20. Class _____ represents a dynamically resizable array-like data structure.
- ☐ A) Array
- ☒ B) ArrayList
- ☐ C) Arrays

- ☐ D) none of the above
21. Which statement is false?
- ☐ A) The actual data representation used within the class is of no concern to the class's clients.
 - ☐ B) Clients generally care about what the class does but not how the class does it.
 - ☒ C) Clients are usually involved in a class's implementation.
 - ☐ D) Hiding the implementation reduces the possibility that clients will become dependent on class-implementation details.
22. Which of the following should usually be private?
- ☐ A) Methods.
 - ☐ B) Constructors.
 - ☒ C) Variables (or fields).
 - ☐ D) All of the above.
23. When should a program explicitly use the `this` reference?
- ☐ A) Accessing a private variable.
 - ☐ B) Accessing a public variable.
 - ☐ C) Accessing a local variable.
 - ☒ D) Accessing a field that is shadowed by a local variable.
24. Constructors:
- ☐ A) Initialize instance variables.
 - ☐ B) When overloaded, can have identical argument lists.
 - ☒ C) When overloaded, are selected by number, types and order of types of parameters.
 - ☐ D) a and c.
25. **Set** methods are also commonly called _____ methods and **get** methods are also commonly called _____ methods.
- ☐ A) query, mutator.
 - ☐ B) accessor, mutator.
 - ☐ C) mutator, accessor.
 - ☐ D) query, accessor.
26. Using **public** set methods provides data integrity if:
- ☐ A) The instance variables are **public**.
 - ☐ B) The instance variables are **private**.
 - ☐ C) The methods perform validity checking.
 - ☒ D) Both b and c.
27. Static class variables:
- ☐ A) are **final**.
 - ☐ B) are **Public**.
 - ☐ C) are **Private**.
 - ☒ D) are shared by all objects of a class.
28. Which of the following is false?
- ☐ A) A **static** method must be used to access **private static** instance variables.
 - ☐ B) A **static** method has no **this** reference.
 - ☐ C) A **static** method can be accessed even when no objects of its class have been instantiated.
 - ☒ D) A **static** method can call instance methods directly.
29. Which syntax imports all static members of class `Math`?
- ☐ A) **static import java.lang.Math.***
 - ☒ B) **import static java.lang.Math.***
 - ☐ C) **static import java.lang.Math**
 - ☐ D) **import static java.lang.Math**
30. Instance variables declared `final` do not or cannot:
- ☐ A) Cause syntax errors if used as a left-hand value.
 - ☐ B) Be initialized.
 - ☒ C) Be modified.
 - ☐ D) None of the above.
31. A `final` field should also be declared _____ if it is initialized in its declaration.
- ☐ A) `private`
 - ☐ B) `protected`
 - ☐ C) `public`
 - ☒ D) `static`
32. Which of the following statements is false?
- ☐ A) A subclass is often smaller than its superclass.
 - ☒ B) A superclass object is a subclass object.

- ☐ C) The class following the **extends** keyword in a class declaration is the direct superclass of the class being declared.
- ☐ D) Java uses interfaces to provide the benefits of multiple inheritance.
33. Which of the following keywords allows a subclass to access a superclass method even when the subclass has overridden the superclass method?
- ☐ A) base
- ☐ B) this
- ☐ C) public
- ☒ D) super
34. Superclass methods with this level of access cannot be called from subclasses.
- ☒ A) private
- ☐ B) protected
- ☐ C) public
- ☐ D) package
35. Every class in Java, except _____, extends an existing class.
- ☐ A) Integer
- ☒ B) Object
- ☐ C) String
- ☐ D) Class
36. To avoid duplicating code, use _____, rather than _____.
- ☒ A) inheritance, the "copy-and-past" approach.
- ☐ B) the "copy-and-past" approach, inheritance.
- ☐ C) a class that explicitly extends Object, a class that does not extend Object.
- ☐ D) a class that does not extend Object, a class that explicitly extends Object.

37. Consider the classes below, declared in the same file:

```
class A
{
    int a;
    public A()
    {
        a = 7;
    }
}

class B extends A
{
    int b;
    public B()
    {
        b = 8;
    }
}
```

Which of the statements below is *false*?

- ☒ A) Both variables a and b are instance variables.
- ☐ B) After the constructor for class B executes, the variable a will have the value 7.
- ☐ C) After the constructor for class B executes, the variable b will have the value 8.
- ☐ D) A reference of type A can be treated as a reference of type B.
38. Which of the following is the superclass constructor call syntax?
- ☐ A) keyword **super**, followed by a dot (.)
- ☒ B) keyword **super**, followed by a set of parentheses containing the superclass constructor arguments.
- ☐ C) keyword **super**, followed by a dot and the superclass constructor name.
- ☐ D) None of the above.
39. Which statement is true when a superclass has **protected** instance variables?
- ☐ A) A subclass object can assign an invalid value to the superclass's instance variables, thus leaving an object in an inconsistent state.
- ☐ B) Subclass methods are more likely to be written so that they depend on the superclass's data implementation.
- ☐ C) We may need to modify all the subclasses of the superclass if the superclass implementation changes.
- ☒ D) All of the above.
40. Failure to prefix the superclass method name with the keyword **super** and a dot (.) separator when referencing the superclass's method causes _____.
- ☐ A) a compile-time error.
- ☐ B) a syntax error.
- ☒ C) infinite recursion.
- ☐ D) a runtime error.
41. When a subclass constructor calls its superclass constructor, what happens if the superclass's constructor does not assign a value to an instance variable?
- ☐ A) A syntax error occurs.

- ☐ B) A compile-time error occurs.
- ☐ C) A run-time error occurs.
- ☒ D) The program compiles and runs because the instance variables are initialized to their default values.

42. Which of the following statements is (are) true?

- A. We can use inheritance to customize existing software.
 - B. A superclass specifies commonality.
 - C. A superclass can be modified without modifying subclasses
 - D. A subclass can be modified without modifying its superclass.
- ☒ A) All of the above.
 - ☐ B) None of the above.
 - ☐ C) A, B and C.
 - ☐ D) A, B and D.

43. Which of the following is an example of a functionality that should not be "factored out" to a superclass?

- ☐ A) Both ducks and geese are birds that know how to start flying from the water.
- ☐ B) All vehicles know how to start and stop.
- ☒ C) All animals lay eggs, except for mammals.
- ☐ D) All paints have a color.

44. The default implementation of method **clone** of **Object** performs a _____.

- ☐ A) empty copy
- ☐ B) deep copy
- ☐ C) full copy
- ☒ D) shallow copy

45. The default **equals** implementation of class **Object** determines:

- ☒ A) whether two references refer to the same object in memory.
- ☐ B) whether two references have the same type.
- ☐ C) whether two objects have the same instance variables.
- ☐ D) whether two objects have the same instance variable values.

46. Polymorphism enables you to:

- ☒ A) program in the general.
- ☐ B) program in the specific.
- ☐ C) absorb attributes and behavior from previous classes.
- ☐ D) hide information from the user.

47. Which of the following statements about interfaces is false?

- ☒ A) An interface describes a set of methods that can be called on an object, providing a default implementation for the methods.
- ☐ B) An interface describes a set of methods that can be called on an object, not providing concrete implementation for the methods.
- ☐ C) Interfaces are useful when attempting to assign common functionality to possibly unrelated classes.
- ☐ D) Once a class implements an interface, all objects of that class have an is-a relationship with the interface type.

48. For which of the following would polymorphism not provide a clean solution?

- ☐ A) A billing program where there is a variety of client types that are billed with different fee structures.
- ☐ B) A maintenance log program where data for a variety of types of machines is collected and maintenance schedules are produced for each machine based on the data collected.
- ☒ C) A program to compute a 5% savings account interest for a variety of clients.
- ☐ D) An IRS program that maintains information on a variety of taxpayers and determines who to audit based on criteria for classes of taxpayers.

49. Polymorphism allows for specifics to be dealt with during:

- ☒ A) execution
- ☐ B) compilation
- ☐ C) programming
- ☐ D) debugging

50. Which statement best describes the relationship between superclass and subclass types?

- ☐ A) A subclass reference cannot be assigned to a superclass variable and a superclass reference cannot be assigned to a subclass variable.
- ☐ B) A subclass reference can be assigned to a superclass variable and a superclass reference can be assigned to a subclass variable.
- ☐ C) A superclass reference can be assigned to a subclass variable, but a subclass reference cannot be assigned to a superclass variable.

- ☒ D) A subclass reference can be assigned to a superclass variable, but a superclass reference cannot be assigned to a subclass variable.
51. A(n) _____ class cannot be instantiated.
- ☐ A) final
 - ☐ B) concrete
 - ☒ C) abstract
 - ☐ D) polymorphic
52. Which of the following could be used to declare **abstract** method **method1** in **abstract class Class1** (**method1** returns an **int** and takes no arguments)?
- ☐ A) public int method1();
 - ☐ B) public int abstract method1();
 - ☒ C) public abstract int method1();
 - ☐ D) public int nonfinal method1();
53. Which of the following statements about abstract superclasses is true?
- ☒ A) abstract superclasses may contain data.
 - ☐ B) abstract superclasses may not contain implementations of methods.
 - ☐ C) abstract superclasses must declare all methods as abstract.
 - ☐ D) abstract superclasses must declare all data members not given values as abstract.
54. Consider the abstract superclass below:
- ```
public abstract class Foo
{
 private int a;
 public int b;

 public Foo(int aVal, int bVal)
 {
 a = aVal;
 b = bVal;
 } // end Foo constructor

 public abstract int calculate();
} // end class Foo
```
- Any concrete subclass that extends class Foo:
- ☐ A) Must implement a method called **calculate**.
  - ☐ B) Will not be able to access the instance variable **a**.
  - ☐ C) Neither (a) nor (b).
  - ☒ D) Both (a) and (b).
55. Consider classes **A**, **B** and **C**, where **A** is an abstract superclass, **B** is a concrete class that inherits from **A** and **C** is a concrete class that inherits from **B**. Class **A** declares abstract method **originalMethod**, implemented in class **B**. Which of the following statements is true of class **C**?
- ☐ A) Method **originalMethod** cannot be overridden in class **C**—once it has been implemented in concrete class **B**, it is implicitly **final**.
  - ☐ B) Method **originalMethod** must be overridden in class **C**, or a syntax error will occur.
  - ☐ C) If method **originalMethod** is not overridden in class **C** but is called by an object of class **C**, an error occurs.
  - ☒ D) None of the above.
56. When a superclass variable refers to a subclass object and a method is called on that object, the proper implementation is determined at execution time. What is the process of determining the correct method to call?
- ☐ A) early-binding.
  - ☐ B) non-binding.
  - ☐ C) on-time binding.
  - ☒ D) late(dynamic) binding.
57. Every object in Java knows its own class and can access this information through method \_\_\_\_\_.
- ☒ A) getClass
  - ☐ B) getInformation
  - ☐ C) objectClass
  - ☐ D) objectInformation
58. Assigning a subclass reference to a superclass variable is safe:
- ☐ A) because the subclass object has an object of its superclass.
  - ☒ B) because the subclass object is an object of its superclass.
  - ☐ C) only when the superclass is **abstract**.
  - ☐ D) only when the superclass is concrete.
59. All of the following methods are implicitly final except:
- ☒ A) a method in an **abstract** class.
  - ☐ B) a **private** method.
  - ☐ C) a method declared in a **final** class.
  - ☐ D) **static** method.

60. Declaring a method **final** means:
- ☐ A) it will prepare the object for garbage collection.
  - ☐ B) it cannot be accessed from outside its class.
  - ☐ C) it cannot be overloaded.
  - ☒ D) it cannot be overridden.
61. Which keyword is used to specify that a class will define the methods of an interface?
- ☐ A) uses
  - ☒ B) implements
  - ☐ C) defines
  - ☐ D) extends
62. Which of the following is not possible?
- ☐ A) A class that implements two interfaces.
  - ☒ B) A class that inherits from two classes.
  - ☐ C) A class that inherits from one class, and implements an interface.
  - ☐ D) All of the above are possible.
63. A class that implements an interface but does not declare all of the interface's methods must be declared:
- ☐ A) public
  - ☒ B) abstract
  - ☐ C) interface
  - ☐ D) final
64. Which of the following statements regarding the throw point of an exception is false?
- ☐ A) It specifies the point at which the exception must be handled.
  - ☒ B) It is the initial point at which the exception occurs.
  - ☐ C) It is specified as the top row of the method-call stack at the time the exception occurred.
  - ☐ D) All of the above statements except one are true.
65. To catch an exception, the code that might throw the exception must be enclosed in a
- ☐ A) throws block.
  - ☐ B) catch block.
  - ☒ C) try block.
  - ☐ D) finally block.
66. In Java, after an exception is handled, control resumes \_\_\_\_\_. This is known as the \_\_\_\_\_ model of exception handling.
- ☒ A) after the last catch block (or the finally block, if there is one), termination
  - ☐ B) after the last catch block (or the finally block, if there is one), resumption
  - ☐ C) just after the throw point, termination
  - ☐ D) just after the throw point, resumption
67. The **throws** clause of a method:
- ☐ A) specifies the exceptions a method catches.
  - ☐ B) specifies the exceptions thrown by the calling method.
  - ☒ C) specifies the exceptions a method throws.
  - ☐ D) specifies the exceptions a method throws and catches.
68. Which of the following exceptions is a checked exception?
- ☐ A) ArithmeticException.
  - ☒ B) IOException.
  - ☐ C) RuntimeException.
  - ☐ D) InputMismatchException.
69. Which of the following statements is true?
- ☐ A) The code in a finally block is executed only if an exception occurs.
  - ☐ B) The code in a finally block is executed only if an exception does not occur.
  - ☐ C) The code in a finally block is executed only if there are no catch blocks.
  - ☒ D) None of the above are true.
70. After a finally block has finished executing (and there are no exceptions to be handled):
- ☒ A) control proceeds to the first statement after the finally block.
  - ☐ B) control returns to the throw point.
  - ☐ C) the application exits.
  - ☐ D) control proceeds to the first statement after the last catch block.

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