

Chapter 1

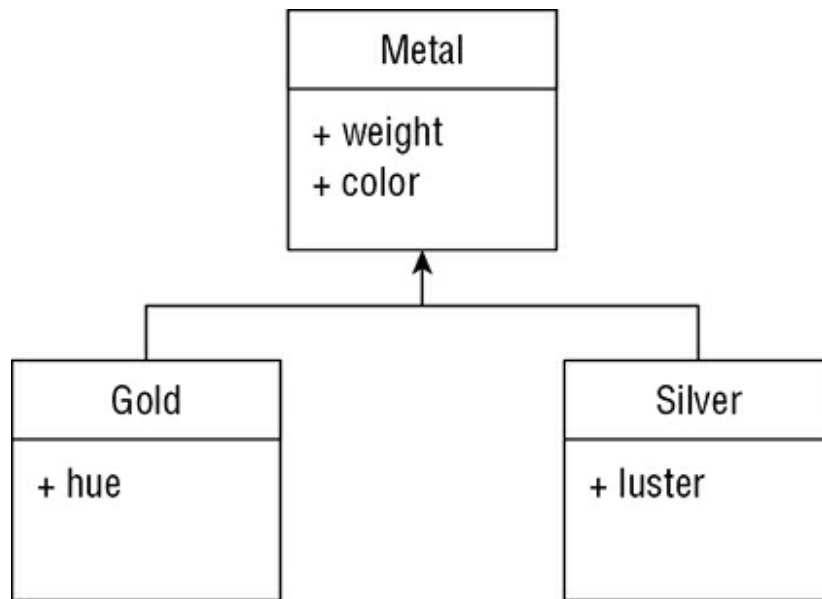
Java Basics

THE OCA EXAM TOPICS COVERED IN THIS PRACTICE TEST INCLUDE THE FOLLOWING:

✓Java Basics

- Define the scope of variables
- Define the structure of a Java class
- Create executable Java applications with a main method; run a Java program from the command line; produce console output
- Import other Java packages to make them accessible in your code
- Compare and contrast the features and components of Java such as: platform independence, object orientation, encapsulation, etc.

- Which of the following method signatures is a valid declaration of an entry point in a Java application?
 - `public void main(String[] args)`
 - `public static void main()`
 - `private static void start(String[] mydata)`
 - `public static final void main(String[] mydata)`
- The following class diagram demonstrates the relationship between `Gold` and `Silver`, which extend the `Metal` class. Assume the attributes are all declared `public`. Which statement about the diagram is not true?



- The diagram demonstrates platform independence in Java.
 - The diagram demonstrates object-oriented design in Java.
 - The `Gold` and `Silver` classes inherit `weight` and `color` attributes from the `Metal` class.
 - `Gold` does not inherit the `luster` attribute.
- What is the proper filename extension for a Java bytecode compiled file?
 - `.java`
 - `.bytecode`
 - `.class`
 - `.dll`
 - Given that a `Date` class exists in both the `java.util` and `java.sql` packages, what is the result of compiling the following class?

```
1: import java.util.*;
2: import java.sql.*;
3: public class BirthdayManager {
```

```
4:     private Date rob = new Date();
5:     private java.util.Date sharon = new java.util.Date();
6: }
```

- A. The code does not compile because of lines 1 and 2.
 - B. The code does not compile because of line 4.
 - C. The code does not compile because of line 5.
 - D. The code compiles without issue.
5. Which of the following is not a facet of traditional object-oriented programming languages?
- A. Objects are grouped as procedures, separate from the data they act on.
 - B. An object can take many forms via casting.
 - C. An object can hold data, referred to as attributes.
 - D. An object can perform actions, via methods.
6. Which variables have a scope limited to a method?
- A. Interface variables
 - B. Class variables
 - C. Instance variables
 - D. Local variables
7. Which package is imported into every Java class by default?
- A. `java.util`
 - B. `java.lang`
 - C. `system.lang`
 - D. `java.system`
8. Which of the following is not a valid code comment in Java?
- A. `// Add 5 to the result`
 - B. `/** TODO: Fix bug 12312 */`
 - C. `# Add configuration value`
 - D. `/* Read file from system */`
9. Which statement about a valid `.java` file is true?
- A. It can only contain one class declaration.
 - B. It can contain one `public` class declaration and one `public` interface definition.
 - C. It must define at least one `public` class.

D. It may define at most one `public` class.

10. Given the following application, fill in the missing values in the table starting from the top and going downward.

```
package competition;
public class Robot {
    static String weight = "A lot";
    /* default */ double ageMonths = 5, ageDays = 2;
    private static boolean success = true;
    public void main(String[] args) {
        final String retries = "1";
        // P1
    }
}
```

Variable Type	Number of Variables Accessible at P1
Class	_____
Instance	_____
Local	_____

A. 2, 0, 1

B. 2, 2, 1

C. 1, 0, 1

D. 0, 2, 1

11. Which statement about `import` statements is true?

A. The class will not compile if it contains unused `import` statements.

B. Unused `import` statements can be removed from the class without causing a class to become unable to be compiled.

C. The class will not compile if a duplicate `import` statement is present.

D. If a class contains an `import` statement for a class used in the program that cannot be found, it can still compile.

12. What is the result of compiling and executing the following class?

```
1: public class ParkRanger {
2:     int birds = 10;
3:     public static void main(String[] data) {
4:         int trees = 5;
5:         System.out.print(trees+birds);
6:     }
7: }
```

A. It does not compile.

B. It compiles but throws an exception at runtime.

- C. It compiles and outputs 5.
- D. It compiles and outputs 15.

3. Which statements about Java are true?

- I. The `java` command can execute `.java` and `.class` files.
 - II. Java is not object oriented.
 - III. The `javac` command compiles directly into native machine code.
- A. I only
 - B. III only
 - C. II and III
 - D. None are true.

4. Which of the following lines of code is not allowed as the first line of a Java class file?

- A. `import widget.*;`
- B. `// Widget Manager`
- C. `package sprockets;`
- D. `int facilityNumber;`

5. Which one of the following statements is true about using packages to organize your code in Java?

- A. Every class is required to include a package declaration.
- B. To create a new package, you need to add a `package.init` file to the directory.
- C. Packages allow you to limit access to classes, methods, or data from classes outside the package.
- D. It is not possible to restrict access to objects and methods within a package.

6. Given that the current directory is `/user/home`, with an application Java file in `/user/home/Manager.java` that uses the default package, which are the correct commands to compile and run the application in Java?

- A. `javac Manager`
`java Manager`
- B. `javac Manager.java`
`java Manager`
- C. `javac Manager`
`java Manager.class`
- D. `javac Manager.java`
`java Manager.class`

17. Structuring a Java class such that only methods within the class can access its instance variables is referred to as _____.
- A. platform independence
 - B. object orientation
 - C. inheritance
 - D. encapsulation
18. What is the output of the following code snippet?

```
String tree = "pine";
int count = 0;
if (tree.equals("pine")) {
    int height = 55;
    count = count + 1;
}
System.out.print(height + count);
```

- A. 1
 - B. 55
 - C. 56
 - D. It does not compile.
19. Which of the following is true of a Java bytecode file?
- A. It can be run on any computer with a compatible JVM.
 - B. It can only be executed on the same type of computer that it was created on.
 - C. It can be easily read and modified in a standard text editor.
 - D. It requires the corresponding .java that created it to execute.
20. What is the correct character for terminating a statement in Java?
- A. A colon (:)
 - B. An end-of-line character
 - C. A tab character
 - D. A semicolon (;)
21. What is the result of compiling and executing the following class?

```
1: public class Tolls {
2:     private static int yesterday = 1;
3:     int tomorrow = 10;
4:     public static void main(String[] args) {
5:         Tolls tolls = new Tolls();
6:         int today=20, tomorrow = 40;
7:         System.out.print(today + tolls.tomorrow + tolls.yesterday);
8:     }
```

9: }

- A. The code does not compile due to line 6.
- B. The code does not compile due to line 7.
- C. 31
- D. 61

12. Given the following class definition, which is the only line that does not contain a compilation error?

```
1: public ThisClassDoesNotCompile {  
2:     double int count;  
3:     void errors() {}  
4:     static void private limit; }
```

- A. Line 1
- B. Line 2
- C. Line 3
- D. Line 4

13. Which of the following features allows a Java class to be run on a wide variety of computers and devices?

- A. Encapsulation
- B. Object oriented
- C. Inheritance
- D. Platform independence

14. Which of the following is not a property of a JVM?

- A. It prevents Java bytecode from being easily decoded/decompiled.
- B. It supports platform independence.
- C. It manages memory for the application.
- D. It translates Java instructions to machine instructions.

15. Which of the following variables are always in scope for the entire program?

- A. Package variables
- B. Class variables
- C. Instance variables
- D. Local variables

16. Given the following wildcard `import` statements, which class would be included in the import?

```
import television.actor.*;
import movie.director.*;
```

- A. television.actor.recurring.Marie
- B. movie.directors.John
- C. television.actor.Package
- D. movie.NewRelease

27. Which is the correct order of statements for a Java class file?

- A. import statements, package statement, class declaration
- B. package statement, class declaration, import statement
- C. class declaration, import statements, package declaration
- D. package statement, import statements, class declaration

28. Given the following class definition, what is the maximum number of `import` statements that can be discarded and still have the code compile? For this question, assume that the `Blackhole` class is defined only in the `stars` package.

```
package planetarium;
import java.lang.*;
import stars.*;
import java.lang.Object;
import stars.Blackhole;

public class Observer {
    public void find(Blackhole blackhole) {}
}
```

- A. Zero
- B. One
- C. Two
- D. Three

29. Given the following class definition, which command will cause the application to output the message `White-tailed`?

```
package forest;
public class Deer {
    public static void main(String... deerParams) {
        System.out.print(deerParams[2]) ;
    }
}
```

- A. `java forest.Deer deer 5 "White-tailed deer"`
- B. `java forest.Deer "White-tailed deer" deer 3`
- C. `java forest.Deer Red deer White-tailed deer`

D. `java forest.Deer My "deer White-tailed"`

10. Which of the following is a true statement?

- A. The `java` command compiles a `.java` file into a `.class` file.
- B. The `javac` command compiles a `.java` file into a `.class` file.
- C. The `java` command compiles a `.class` file into a `.java` file.
- D. The `javac` command compiles a `.class` file into a `.java` file.

11. Which of the following statements about Java is true?

- A. Java is a procedural programming language.
- B. Java allows method overloading.
- C. Java allows operator overloading.
- D. Java allows direct access to objects in memory.

12. Given the following code, what values inserted in order into the blank lines, allow the code to compile?

```
_____agent;  
public _____Banker {  
    private static _____getMaxWithdrawal() {  
        return 10;  
    }  
}
```

- A. `import, class, null`
- B. `import, interface, void`
- C. `package, int, int`
- D. `package, class, long`

13. What is the output of the following application?

```
public class Airplane {  
    static int start = 2;  
    final int end;  
    public Airplane(int x) {  
        x = 4;  
        end = x;  
    }  
    public void fly(int distance) {  
        System.out.print(end-start+" ");  
        System.out.print(distance);  
    }  
    public static void main(String... start) {  
        new Airplane(10).fly(5);  
    }  
}
```

A. 2 5

B. 8 5

C. 6 5

D. The code does not compile.

4. What is one of the most important reasons that Java supports extending classes via inheritance?

A. Inheritance requires that a class that extends another class be in the same package.

B. The program must spend extra time/resources at runtime jumping through multiple layers of inheritance to determine precise methods and variables.

C. Method signature changes in parent classes may break subclasses that use overloaded methods.

D. Developers minimize duplicate code in new classes by sharing code in a common parent class.

5. Which of the following is a valid code comment in Java?

A. ////////// Walk my dog

B. #! Go team!

C. / Process fails at runtime /

D. None of the above

6. Which of the following method signatures is not a valid declaration of an entry point in a Java application?

A. `public static void main(String... arguments)`

B. `public static void main(String arguments)`

C. `public static final void main(String[] arguments)`

D. `public static void main(String[] arguments)`

7. Given the file `Magnet.java` below, which of the marked lines can you independently insert the line `public String color;` into and still have the code compile?

```
// line a1
public class Magnet {
    // line a2
    public void attach() {
        // line a3
    }
    // line a4
}
```

A. a1 and a3

- B. `a2` and `a4`
- C. `a2`, `a3`, and `a4`
- D. `a1`, `a2`, `a3`, and `a4`

8. What is required to define a valid Java class file?

- A. A `class` declaration
- B. A `package` statement
- C. At least one `import` statement
- D. The `public` modifier

9. What is the proper filename extension for a Java source file?

- A. `.jav`
- B. `.class`
- C. `.source`
- D. `.java`

10. Given that a `Math` class exists in both the `java.lang` and `pocket.complex` packages, what is the result of compiling the following class?

```
1: package pocket;
2: import pocket.complex.*;
3: import java.util.*;
4: public class Calculator {
5:     public static void main(String[] args) {
6:         System.out.print(Math.floor(5));
7:     }
8: }
```

- A. The code does not compile because of line 2.
- B. The code does not compile because of line 3.
- C. The code does not compile because of line 6.
- D. The code compiles without issue.

11. Given a class that uses the following `import` statements, which class would not be automatically accessible within the class without using its full package name?

```
import dog.*;
import dog.puppy.*;
```

- A. `dog.puppy.female.KC`
- B. `dog.puppy.Georgette`
- C. `dog.Webby`
- D. `java.lang.Object`

12. _____ is the technique of structuring programming data as a unit consisting of attributes, with actions defined on the unit.

- A. Encapsulation
- B. Object orientation
- C. Platform independence
- D. Polymorphism

13. Given the following class definition, what is the maximum number of `import` statements that can be discarded and still have the code compile? For this question, assume that the `Broccoli` class is in the `food.vegetables` package, and the `Apple` class is in the `food.fruit` package.

```
package food;
import food.vegetables.*;
import food.fruit.*;
import java.util.Date;

public class Grocery {
    Apple a; Broccoli b; Date c;
}
```

- A. 0
- B. 1
- C. 2
- D. 3

14. Given the following application, what is the expected output?

```
public class Keyboard {
    private boolean numLock = true;
    static boolean capLock = false;
    public static void main(String... shortcuts) {
        System.out.print(numLock+" "+capLock);
    }
}
```

- A. true false
- B. false false
- C. It does not compile.
- D. It compiles but throws an exception at runtime.

15. What is the result of compiling and executing the following class?

```
public class RollerSkates {
    static int wheels = 1;
    int tracks = 5;
    public static void main(String[] arguments) {
```

```

        RollerSkates s = new RollerSkates();
        int feet=4, tracks = 15;
        System.out.print(feet + tracks + s.wheels);
    }
}

```

A. The code does not compile.

B. 5

C. 10

D. 20

16. What is the result of compiling and executing the following class?

```

package sports;
public class Bicycle {
    String color = "red";
    private void printColor(String color) {
        color = "purple";
        System.out.print(color);
    }
    public static void main(String[] rider) {
        new Bicycle().printColor("blue");
    }
}

```

A. red

B. purple

C. blue

D. It does not compile.

17. Which statements about calling the compilation command `javac` and the execution command `java` are true?

I. `java` may use a period `.` to separate packages.

II. `javac` takes a `.java` file and returns a `.class` file.

III. `java` may use a slash `(/)` to separate packages.

A. I only

B. II only

C. I and II

D. I, II, and III

18. What is the result of compiling and executing the following application?

```

package forecast;
public class Weather {
    private static boolean heatWave = true;
    public static void main() {

```

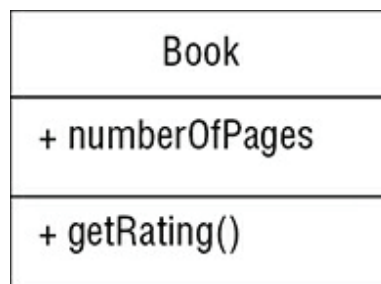
```

        boolean heatWave = false;
        System.out.print(heatWave);
    }
}

```

- A. true
- B. false
- C. It does not compile.
- D. It compiles but throws an error at runtime.

9. Given the following class diagram, which Java implementation most closely matches this structure?



- A.

```
public class Book {
    public int numOfPages;
}
```
- B.

```
public class Book {
    public String getRating() {return null;}
}
```
- C.

```
public class Book {
    public int numberOfPages;
    public String getRating() {return null;}
}
```
- D.

```
public class Book {
    void numberOfPages;
}
```

10. Which statement about the JVM is true?

- A. The JVM schedules garbage collection on a predictable schedule.
- B. The JVM ensures that the application will always terminate.
- C. The JVM requires a properly defined entry point method to execute the application.
- D. A Java compiled code can be run on any computer.