

Part 1

1. Define the term "method."

A standalone, named, block of code with a very specific purpose that can return values. It may also require specific arguments be given to it to accomplish the job it was intended to perform. They promote software reusability and extensibility.

2. What are the three ways to call a method?

Only using the name. Using an class instance with the dot operator followed by method name for non-static methods. Using the class name with the dot operator followed by the method name for static methods.

3. What are the similarities between using an enum class and using a set of final variables?

Final's and Enum's values cannot be changed--they are constant.

4. What are overloaded methods? Are methods with the same name that only differ in return type valid over-loaded methods?

Method overloads are methods by the same name in the same class, whose signatures are different. An overload must have a different argument list; return type is not looked at when determining if the method is an overload.

5. Why do identifiers have scope?

To follow the Principle of Least Privilege. Data should only be accessible only for as long as it is needed.

Part 2

1. What is the output of the following code segment?

```
1  int a = 5;  
2  int b = -6;  
3  System.out.println( Math.max( ( Math.abs( b ) ), a ) );
```

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2. What is output by the following code segment?

```
1  int a = -6;  
2  
3  System.out.println( Math.sqrt( Math.pow( Math.abs( a ), 2 ) ) );  
4  
5  int a = 6;  
6  
7  System.out.println( Math.sqrt( Math.pow( Math.abs( a ), 2 ) ) );
```

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Use the following method declaration to answer Questions 1 and 2:

```
1 public int method1( int x )
2 {
3     if ( x <= 10 )
4         x += 10;
5     else
6         x -= 10;
7
8     return x;
9 }
```

1. What is output by the following code segment?

```
1 int a = 6;
2
3 System.out.println( method1( a ) );
4
5 a = 15;
6
7 System.out.println( method1( a ) );
8
9 a = 10;
10
11 System.out.println( method1( a ) );
12
13 a = -10;
14
15 System.out.println( method1( a ) );
```

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2. What is output by the following code segment?

```
1  int a = 15;  
2  int b = 5;  
3  
4  System.out.println( method1( method1( a ) ) + method1( b ) );  
5  
6  a = 0;  
7  b = 0;  
8  
9  System.out.println( method1( method1( a ) ) + method1( b ) );  
10  
11 a = 5;
```

```
12  b = 15;  
13  
14  System.out.println( method1( method1( a ) ) + method1( b ) );  
15  
16  a = -10;  
17  b = 10;  
18  
19  System.out.println( method1( method1( a ) ) + method1( b ) );
```

10

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Given the following class declaration, answer Questions 1, 2 and 3.

```
1  import java.util.Scanner;
2
3  public class Greeting
4  {
5      int inputNumber; // number input by user
6      String greetingString; // greeting to display to user
7
8      public void greeting()
9      {
10         Scanner input = new Scanner( System.in );
11
12         // obtain user input
13         System.out.println(
14             "Enter 1 for an English greeting\nEnter 2 for a Spanish greeting" );
15
16         inputNumber = input.nextInt(); // input integer from user
17
18         greet( inputNumber );
19
20         // call method greet to determine appropriate greeting
21         System.out.println( greetingString );
22     } // end method greeting
23
24     // the greet method
25     public void greet ( int x )
26     {
27         if ( x == 1 )
28             greetingString = "Hello."; // English greeting
29         else if ( x == 2 )
30             greetingString = "Hola."; // spanish greeting
31         else
32             greetingString = "Invalid input";
33     } // end method greet
34 } // end class Greeting
```

```
1  public class GreetingTest
2  {
3      public static void main( String args[] )
4      {
5          Greeting application = new Greeting();
6          application.greeting();
7      } // end main
8  } // end class GreetingTest
```

1. What is displayed when the user enters 1?

Enter 1 for an English greeting

Enter 2 for a Spanish greeting

Hello.

2. What is displayed when the user enters 2?

Enter 1 for an English greeting

Enter 2 for a Spanish greeting

Hola.

3. What is displayed when the user enters 3?

Enter 1 for an English greeting

Enter 2 for a Spanish greeting

Invalid input.