

1. Write an expression that stores a random integer from -4 to 7 inclusive into an int variable.

```
int x = (int)(Math.random()*12)-4;
```

2. When would short circuit evaluation occur for this statement?

```
if ( x+y>7 || z>8 )
```

If x+y is more than 7 Java does not check z because the compound expression (an OR) is already true.

3. When would short circuit evaluation occur for this statement?

```
if ( x+y>7 && z>8 )
```

If x+y is not greater than 7 Java does not check if z > 8 because the compound expression (an AND) is already false.

4. What is output?

```
int x = 1;
if( x == 3 )
    System.out.println("C");
    System.out.println("A");
System.out.println("T");
```

A
T

5. What is output?

```
System.out.println(Math.pow(3, 4));
```

3⁴ = 81

6. Simplify:

```
!( x!=5 || x>y )
```

x = 5 && x <= y

7. What is output?

```
System.out.println(61%3);
```

1

8. Complete this truth table:

A	B	!A	!A B
T	T	F	T
T	F	F	F
F	T	T	T
F	F	T	T

9. Finish this code below to print "cold" if temp is less than 68, "just right" if temp is from 68 to 75 inclusive, and "hot" if temp is greater than 75.

```
int temp = /* initialized with valid data*/;
```

```
if (temp < 68)
    System.out.println("cold");
else if (temp > 75)
    System.out.println("hot");
else
    System.out.println("just right");
```

10. Write code to compare two String variables, **pwd1** and **pwd2**. Print "same" if they are equal.

```
if (pwd1.equals(pwd2))
    System.out.println("same");
```

11. What is output by the following?

```
String c = new String("WCHS");
String d = new String("WCHS");
System.out.print(c==d);
```

false

12. The following code gets a String from the user and store it in **temp**. Write code to check if the String **temp** is in the variable **phrase**. If it is present, print "found", if not, print "not found."

```
String phrase = "apple";
Scanner scan = new Scanner(System.in);
System.out.println("Enter a word: ");
String temp = scan.nextLine();
```

```
if (phrase.indexOf(temp) > -1)
    System.out.println("found");
else
    System.out.println("not found");
```

13. What is output?

```
int x = 31 % 8;
if ( x > 10)
    System.out.println(1);
else if ( x > 8 )
    System.out.println(2);
else if ( x > 6 )
    System.out.println(3);
else if ( x > 4 )
    System.out.println(4);
else
    System.out.println(5);
```

$x = 7$

3

14. Write the method thirteenCheck which accepts two integers as inputs and returns true if either of them is 13 or if their sum or difference is equal to 13 and returns false otherwise.

```
public boolean thirteenCheck(int a, int b) {
    if (a == 13 || b == 13) return true;
    int c = Math.abs(a - b);
    if (c == 13) return true;
    c = Math.abs(a + b);
    if (c == 13) return true;
    return false;
}
```

there are many ways to do this obviously

15. What is printed by the following?

```
String temp = "mars.lander";
System.out.println(temp.length());
```

11

The last question uses the following class:

```
public class Frog
{
    //attributes not shown

    public Frog() {
        //implementation not shown }

    public void hop(int n) {
        //moves Frog forward n spaces
        //implementation not shown }

    public int getLocation() {
        //returns Frog location
        //implementation not shown }
}
```

16. Consider the following code, which sets up a race between two Frogs, where each Frog hops forward by a random integer value from 1 to 10.

```
Frog a = new Frog();
Frog b = new Frog();
a.hop((int) (Math.random()*10)+1);
b.hop((int) (Math.random()*10)+1);
```

Write code to check and report which Frog wins the race or if it is a tie.

```
if (a.getLocation() > b.getLocation())
    System.out.println("A wins");
else if (a.getLocation() < b.getLocation())
    System.out.println("B wins");
else
    System.out.println("Tie");
```