

Evaluate the following expressions:

1. `1 + 2 * 3`
2. `(1 + 2) * 3`
3. `12 % 5`
4. `5 % 12`
5. `1 + 1 / 2`
6. `(1 + 1) / 2`
7. `3/2 + 1`
8. `3/(2 + 1)`
9. `16 % 11 % 6`
10. `16 % (11 % 6)`
11. `'G' - 'D'`
12. `('M' + 'N') % 2`
13. `'5' - '3'`
14. `"325".charAt(1)`
15. `"325".charAt(1) == 2`
16. `1 + "2 * 3"`
17. `"tomato".substring(3,5)`
18. `"" + 12 / 5 + 12 % 5`
19. `"wednesday".substring("monday".length())`
20. `12 / 5 + 12 % 5 + ""`

If `b` is a boolean variable and `n` is an integer variable evaluate or simplify the following expressions:

21. `b != false`
22. `b || !b`
23. `++n == n++`
24. `n > 10 && n < 12`
25. `n++ - ++n`
26. `b && true`
27. `n++ == --n`
28. `n > 10 || n < 12`

29-36. You compile and run this code. What does it print?

```
public class One {  
  
    public static int fun(int n, int m) {  
        System.out.println(n + " vs. " + m);  
        if (n == m) return n;  
        else if (n > m) return fun(n-m, m);  
        else return fun(n, m-n);  
    }  
  
    public static void main(String[] args) {  
        System.out.println(One.fun(60, 225));  
    }  
}
```

37-52. You compile and run the following code. What does it print?

```
public class Two {
    public static int fun(int n) {
        System.out.println(" --> " + n);
        if (n == 0) return 0;
        else if (n == 1) return 1;
        else return fun(n-1) + fun(n-2);
    }
    public static void main(String[] args) {
        System.out.println(Two.fun(5));
    }
}
```

53. In the code above what is the value returned by `Two.fun(20)`?

54-60. You compile and run the following code. What does it print?

```
public class Three {
    public static int fun(int a, int b, int n, int m) {
        System.out.println("(" + a + ", " + b + ", " + n + ", " + m + ")");
        if (m == 0) return 0;
        else if (n == m) return b;
        else return Three.fun(b, a+b, n+1, m);
    }
    public static void main(String[] args) {
        System.out.println(Three.fun(0, 1, 0, 5));
    }
}
```

61. In the code above what is the value returned by `Three.fun(20)`?

62-66. You compile the code below. What gets printed when you run it?

```
public class Four {
    public static void main(String[] args) {
        int n = 27;
        System.out.println(n);
        n = (n % 2 == 0) ? n / 2 : 3 * n + 1;
        System.out.println(n);
        n = (n % 2 == 0) ? n / 2 : 3 * n + 1;
        System.out.println(n);
        n = (n % 2 == 0) ? n / 2 : 3 * n + 1;
        System.out.println(n);
        n = (n % 2 == 0) ? n / 2 : 3 * n + 1;
        System.out.println(n);
        n = (n % 2 == 0) ? n / 2 : 3 * n + 1;
    }
}
```