

1.

A	B	A && B	A B
T	T	T	T
T	F	F	T
F	T	F	T
F	F	F	F

2.

A	B	!A	!A && B	A B	!(A B)
T	T	F	F	T	F
T	F	F	F	T	F
F	T	T	T	T	F
F	F	T	F	F	T

Always fill in the A and B columns like I did on the first one. That's how you start these problems. (If you prefer using 1s and 0s over Ts and Fs, that's fine, the form is what matters.)

3. Test the variable, **value**, with a single if statement. If it is between 23 and 78 inclusive, print "yes".

```
int value = /* Code not shown sets value to a valid integer */
```

```
if (value > 22 && value < 79) system.out.println("yes");  
or value >= 23 && value <= 78
```

4. Mixing it up: make a truth table for (!A || B) && !B

A	B	!A	!B	!A B	(!A B) && !B
1	1	0	0	1	0
1	0	0	1	0	0
0	1	1	0	1	0
0	0	1	1	1	1

I switched to using 1s and 0s here just because. (either T or F or 0 or 1 fine.)

5. Fill out this truth table then choose the best answer below:

A	B	!B	A !B	A && B	(A && B) !B	(A !B) && ((A && B) !B)
1	1	0	1	1	1	1
1	0	1	1	0	1	1
0	1	0	0	0	0	0
0	0	1	1	0	1	1

← true here

← and here

Which statement is true about the above truth table? (circle your choice)

- a. the final column is false when A and B are the same. **b. the final column is true when A and B are the same.**

6. Given the following variable declarations:

```
int x = 4;
int y = -3;
int z = 4;
```

What are the results of the following relational expressions (true or false)?

x == 4 **T** x == y **F** x == z **T** y == z **F**

x + y > 0 **T** x - z != 0 **F** x * (y + 2) > y - (y + z) * 2

y * y <= z **F** y / y == 1 **T**

$4(-1) > -3 - (-1) \cdot 2$ **T**
 $-4 > -3 - 2$
 $-4 > -5$ **yes**

7. What is printed, if anything, when the following code runs?

```
int temp = 65;
if(temp > 74)
    System.out.println("It is not cold.");
    System.out.println("Turn on the fan.");
```

Turn on the fan

8. What is wrong with this if statement?

```
if (cost = 5)
{
    System.out.println("the cost is 5");
}
```

1. no parens
2. one =, needs ==
3. should not have a ;

9. Assume you have two integer variables a and b properly initialized. Write an if statement that checks if a is greater than b and prints "yes" if so.

```
if (a > b)
    System.out.println("yes");
```

10. What is printed when the following code runs?

```
int a = 7;
int b = 9;
if(a > b)
    System.out.println("A");
    System.out.println("B");
if(b == a)
    System.out.println("C");
    System.out.println("D");
if(a != b)
{
    System.out.println("E");
    System.out.println("F");
}
```

BDEF

11. What is printed when the following code runs?

```
int score = 93;
if (score >= 90) grade = "A";
if (score >= 80) grade = "B";
if (score >= 70) grade = "C";
if (score >= 60) grade = "D";
System.out.println(grade);
```

A D