AP Computer Science A
Unit 3. Boolean Expressions. Exercises

Assume that all code compiles and runs unless otherwise suggested.

1. What is printed?	int n = 20; // n += 3; System.out.println(n);
2. What is printed?	double a = 44.0; /* a = a + 5.6; a = 32.8; */ System.out.println(a);
3. What is printed?	System.out.println(10 > 90);
4. What are the possible values of n? 5. What might/will be printed?	int n = (int)(2*Math.random()); boolean b = n == 1; System.out.println(b);
6. If the user enters 82, what is displayed? 7. If the user enters 2, what is displayed? 8. If the curly braces are removed, there would be a compiler error. True False	Scanner get = new Scanner(System.in); System.out.print("Enter a number: "); int x = get.nextInt(); if (x < 7) { System.out.print("A"); System.out.print("B"); } else System.out.print("C");
9. If the user enters 10, what is displayed? 10. If the user enters 12, what is displayed? 11. Are the curly braces required in this code? 12. If the Boolean expression was changed to x <= 11 then the results would change. True False	Scanner get = new Scanner(System.in); System.out.print("Enter a number: "); int x = get.nextInt(); System.out.print("AA"); if (11 >= x) { System.out.print("BB"); } System.out.print("CC");

13. If the user enters 10, what is displayed?

14. If the user enters 4, what is displayed?

15. If the user enters 2, what is displayed?

16. If the user enters 12.8, then
a) there will be a compiler error.
b) there will be a runtime error.
c) there will be a logic error.
d) there will be no error. 27.8 will be printed.

```
Scanner get = new Scanner(System.in);
System.out.print( "Enter a number: " );
int x = get.nextInt();

if ( x != 10 )
        x = x + 3;

if ( x > 7 )
        x = x + 12;
else
        x = x - 1;

System.out.println( x );
```

17. How many assignments are in this snippet?

18. How many boolean expressions are there?

19. If *a* has an initial value of 30, what is its final value?

```
if ( a == 20 )
        a = 99;
else
        a = 2*a;

if ( a >= 50 )
        a =  a + 1;
```

20. If the user enters 38, what is displayed?

21. If the user enters -4, what is displayed?

22. If the user enters 99, what is displayed?

```
Scanner read;
read = new Scanner(System.in);
System.out.print( "Enter a number: " );
int num = read.nextInt();

if ( num < 13) {
        System.out.print( "ZZ" );
} else if ( num < 20) {
        System.out.print( "YY" );
} else if ( num < 40 ) {
        System.out.print( "XX" );
}
System.out.print( "WW" );
```

23. If k has an initial value of 13, what is its final value?

24. If k has an initial value of 22, what is its final value?

25. If k has an initial value of 4, what is its final value?

```
// k is declared and assigned a value
if ( k < 5 )
        k += 2;
else if ( k < 10 )
        k += 5;
else if ( k < 20 )
        k += 6;
```

26. If k has an initial value of 10, what is its final value?

27. If k has an initial value of 30, what is its final value?

28. Lines 7 and 8 can be deleted without changing how the code runs.

TRUE FALSE

```
    // k is declared and assigned a value
1   if ( k < 11 )
2           k += 4;
3   else if ( k < 40 )
4           k++;

5   if ( k > 11 )
6           k = k - 2;
7   else if ( k > 22 )
8           k -= 4;
```

29. If x has an initial value of 8, what is its final value?

30. If x has an initial value of 11, what is its final value?

31. If x has an initial value of 19, what is its final value?

```
// x is declared and assigned a value
if ( x > 10 )
        x = x + 2;
else if ( x < 5 )
        x++;

if ( x <= 20 )
        x = 2*x;
else if ( x > 5 )
        x++;
```

32. Name a string that will cause GH to be printed?

```
Scanner sc = new Scanner( System.in );
System.out.println("String?");
String s = sc.nextLine();
if ( s.length() <= 4 )
        System.out.print("G");
if ( s.indexOf("e") != - 1 )
        System.out.print("H");
```

33. What is the likelihood of T being printed?

```
if ( Math.random() < 0.5 )
        System.out.print("T");
else
        System.out.print("O");
```

34. If x has a value of -5 and y has a value of 63, what is displayed?

35. If x has a value of 47 and y has a value of 47, what is displayed?

36. Select the TRUE statement.
a) H is never printed.
b) H is always printed.
c) H is only printed sometimes.

```
// x and y are declared and initialized

if ( x > 30 || y >= 60 )
        System.out.print( "G" );
if ( x < 100 || x > 40 )
        System.out.print( "H" );
if ( y < 10 || y > 50 )
        System.out.print( "K" );
```

37. If *x* has an initial value of 33, what is its final value? 38. If *x* has an initial value of 62, what is its final value?	*// x is declared and assigned a value* if (x > 30 && x <= 50) x = x + 10; x = x - 4; if (x < 40 && x > 60) x = x + 2;

Version A	Version B
if (x > 10 && x < 20) System.out.print("G"); else if (x > 5 && x < 25) System.out.print("H"); else if (x > 10) System.out.print("K");	if (x > 10 && x < 20) System.out.print("G"); if (x > 5 && x < 25) System.out.print("H"); if (x > 10) System.out.print("K");

Problems 39 to 43 refer to the above code snippets.

39. In version A, if *x* equals 18, what is displayed? _____

40. In version B, if *x* equals 18, what is displayed? _____

41. In version A, if *x* equals 26, what is displayed? _____

42. In version B, if *x* equals 26, what is displayed? _____

44. What is the value of *bob*?	boolean bob = ! (10 > 5);
45. What is printed?	boolean betty = false; betty = !betty; betty = !betty; betty = !betty; System.out.print(betty);

if (x > 5){ if (x < 10) System.out.println("OK"); }	if (x > 5 && x < 10) System.out.println("OK");

46. Do the two above code snippets always produce the same results? _____

If they do not, what value of *x* will cause different results? _____

if (x > 5) System.out.println("NO"); else if (x < 2) System.out.println("NO"); else System.out.println("MAYBE");	if (x < 2 || x > 5) System.out.println("NO"); else System.out.println("MAYBE");

47. Do the above two code snippets always produce the same results? _____

If they do not, what value of *x* will cause different results? _____

if (x > 20) { if (x < 50) System.out.println("ONE"); else System.out.println("TWO"); }	if (x > 20 && x < 50) System.out.println("ONE"); else System.out.println("TWO");

48. Do the above two code snippets always produce the same results? _____

If they do not, what value of *x* will cause different results? _____

49. What is printed?	String s1 = "music"; String s2 = "band"; if (s1.compareTo(s2) > 0) System.out.print(s1); else System.out.print(s2);
50. Why does line 4 NOT cause a compiler error? 51. If the user enters 34 then a) a compiler error occurs. b) a runtime error occurs. c) Z is printed.	Scanner sc = new Scanner(System.in); System.out.println("String?"); String s = sc.nextLine(); if (s.equals("ok")) System.out.print("Y"); else System.out.print("Z");
52. What could *str* be for A to be printed? 53. What could *str* be for B to be printed?	String str; // str is assigned some value if (!s.equals("Y")) System.out.print("A"); else System.out.print("B");
54. What could *s2* be for X to be printed? 55. What could *s2* be for Y to be printed?	String s1 = "llama"; String s2; // s2 is assigned some value if (s1.compareTo(s2) > 0) System.out.print("X"); else System.out.print("Y");