1a: if (grade >= 90) {
System.out.println(“Great job!”);
}

1b: if (number < 20 | | number > 50) {
System.out.println(“Error”);
}

1c: if (y < 100) {
y = y + 2;
}

2. if (num1 > num2) {
System.out.println(“First number is larger.”);
} else if (num1 < num2) {
System.out.println(“Second number is larger.”);
} else {
System.out.println(“Numbers are equal”);
}

3a: if (num % 2 == 0) {
System.out.println("even number");
} else {
System.out.println("odd number");
}

3b: switch (num % 2) {
case 0:
System.out.println("even number");
break;
default:
System.out.println("odd number");
}

4a: Random rand = new Random();

int number = rand.nextInt(50) + 1; // 1 to 50

System.out.println("Random number: " + number);

4b: Random rand = new Random();

int number = rand.nextInt(81) + 20; // 20 to 100

System.out.println("Random number: " + number);

4c: Random rand = new Random();

double number = 10 + rand.nextDouble() * 10; // 10.0 to 20.0

System.out.println("Random double: " + number);

5. Correct version: if (age < 18) {

System.out.println("child");

} else if (age >= 18 && age < 65) {

System.out.println("adult");

} else {

System.out.println("senior");

}

6a: True

6b: False

6c: True

6d: True

6e: True

6f: True

6g: True

8a: True

8b: False – Roundoff errors occur with floating-point, not integers.

8c: False – Nested if and if-else if are different.

8d: False – switch does not accept double.

8e: True

8f: False – Same seed gives same sequence.

8g: True

8h: True

8i: False – ! is evaluated before &&.

8j: True

8k: False – Must use Math.abs(-3);.

8l: True