

PRIME NUMBERS WORKSHEET (using Java)
V22.0002 Deena Engel's Sections

```
1. public class PrimeNumbers {
2.     public static void main(String[] args) {
3.
4.         final int NUM_OF_PRIMES = 50;
5.         int count = 1;
6.         int number = 2;
7.
8.         boolean isPrime = true; // Is the current number is prime?
9.         System.out.println("The first 50 prime numbers are \n");
10.        while (count <= NUM_OF_PRIMES) {
11.            isPrime = true;
12.
13.            int divisor = 2;
14.            while (divisor <= (number/2)) {
15.                if (number % divisor == 0) {
16.                    isPrime = false;
17.                    break;
18.                }
19.                divisor++;
20.            }
21.
22.            if (isPrime) {
23.                if (count % 10 == 0) {
24.                    System.out.println(number);
25.                }
26.                else
27.                    System.out.print(number + " ");
28.                count++;
29.            }
30.            number++;
31.        }
32.    }
33. }
```

Questions:

1. Which variable is used to count the prime numbers? (In this case we are printing the first 50.)
2. Which variable holds the number currently being tested for "primeness"? What is the datatype?
3. Which variable is the flag to indicate whether the current number is a prime? What is the datatype?
4. How many loops are there? Do we know in advance how many times each of these loops will be executed?
5. For each loop, note the three elements of a loop: the priming, test, and update.
6. Where is every place that the flag is either set or changed and why?
7. Why is the command "break" used in line #17?
8. Write comments for lines 18, 20, 25, 29, 31, 32, and 33 to indicate the meaning of the right-hand brace (i.e. which line of code does it "close"? For example, at line 33, you could write:
33. } // end of public class PrimeNumbers