1. Which of these variable declarations are valid?

a = b + 3 * (d + 1); declaration of int to long
b = c * c; valid, declaration of int to int
c = b / 3; valid, not valid, int to short
d = (byte) a + b; not valid, int to byte
d = (byte) (a + b); valid, byte to byte

2. Given the following declarations:

long a = 3;
int b = 4;
short c = 5;
byte d = 6;

Which values will you get from the following statements and which datatype do they belong to?

d/b*a, 3, long
c + b * (d + 1), 33, int
d / (c - 1) * b / 2, 2, int
d%b , 2, int
-c % b, -1, int
c++ % d , 5, int

3. Write a Java program that read in seconds and returns hours, minutes and seconds. For example 1234 should lead to 0:20:24. Test the program with the following: 0, 59, 60, 100, 3600 and 4000.

```java
public class Time {
    public static void main(String[] args) {

        // Convert seconds to hh:mm:ss

        int seconds = 60;
        System.out.println(seconds + ": " + (seconds / 3600) + ":" + (seconds %
3600 / 60) + ":" + (seconds % 60));
        System.out.println();

    }
}
```

4. Write a program that reads the x and y coordinates of two points and calculates and displays the distance between them. Tipp: The integer of the square root of a number x can be obtained using (int)Math.sqrt(x)

```java
public class PointDistance {
    public static void main(String[] args) {

        // Compute distance between two points
        int x1, y1, x2, y2;
        x1 = 50;
        x2 = 60;
        y1 = 90;
        y2 = 100;

        //Distance calculations
        int dx = x2 - x1;
        int dy = y2 - y1;
        int d = (int) Math.sqrt(dx*dx + dy*dy);
        System.out.println("Distance from ("+x1+","+y1+") to
("+x2+","+y2+") is "+d);

    }
}
```