Tutorial 03
Input & Output | Operators | Expressions

Exercise 1:

A. Show the result of the following code: `SEP`
```
1. System.out.println(2 * (5 / 2 + 5 / 2));
2. System.out.println(2 * 5 / 2 + 2 * 5 / 2);
3. System.out.println(2 * (5 / 2));
4. System.out.println(2 * 5 / 2);  SEP
```

B. Are the following statements correct? If so, show the output.
1. System.out.println("25 / 4 is " + 25 / 4);
2. System.out.println("25 / 4.0 is " + 25 / 4.0);
3. System.out.println("3 + 2 is " + 3 + 2);
4. System.out.println("3 + 2 is " + (3 + 2));
5. System.out.println("3 * 2 / 4 is " + 3 * 2 / 4);
6. System.out.println("3.0 * 2 / 4 is " + 3.0 * 2 / 4);

C. Suppose m and r are integers. Write a Java expression for mr2 to obtain a floating-point result.

D. How would you write the following arithmetic expression in Java?
1. $\frac{4}{3(r+34)} - 9(a + bc) + \frac{3+d(2+a)}{a+bd}$
2. $5.5 \times (r + 2.5)^{2.5+t}$

E. Show the output of the following code:
```
double a = 6.5;
a += a + 1;
System.out.println(a);
a = 6;
a /= 2;
System.out.println(a);
```

F. Show the output of the following code:
```
int a = 6;
int b = a++;
System.out.println(a);
System.out.println(b);
a = 6;
b = ++a;
System.out.println(a);
System.out.println(b);
```

G. Is the following code going to print 0.1 and why?
```
System.out.println(1.0 - 0.9);
```

Exercise 2:

Choose the correct answer:

A. The value of 15 / 2 is:
     (i) 7   (ii) 7.5   (iii) 7 ½   (iv) 0.75   (v) none

B. The value of 18 / 3 is:
     (i) 6   (ii) 0.167   (iii) 6.0(iv) none

C. The value of 22 % 7 is:
     (i) 3   (ii) 1   (iii) 3.142   (iv) 22/7

D. The value of 5 % 7 is:
     (i) 0   (ii) 2   (iii) 5   (iv) undefined

E. The value of 17.0 / 4 is:
     (i) 4   (ii) 4.25   (iii) 4.0(iv) undefined

F. The value of 5 - 3.0 + 2 is:
     (i) 0   (ii) 0.0   (iii) 4   (iv) 4.0

G. The value of 7 - 5 * 2 + 1 is:
     (i) -2   (ii) 5   (iii) 6   (iv) none

Exercise 3

What are the values of x, y, z and w after running all statements?

```
int x=5, y, z=3, w;
y = x - z;
z = 2 * y + 3;
w = x - 2 * y + z;
z = w - x;
w++;
```

Exercise 4

Evaluate the following expressions:

A. 3 + 4 * 6 / 8 - 2
B. 3 + 5 * 6 / 4 - 3
C. 3 + 5.0 * 6 / 4 - 3
D. int x=2, y=4;
double z=7.0, w=12.0;
    a. x * w + z - y;
    b. x > w
    c. (x>y) || (z<w)
    d. !(x>w) && (z==w)

Exercise 5

Write a program that changes a given amount of money into smaller monetary units. The program lets the user enter an amount as a double value representing a total in Riyals and Halals, and outputs a report listing the monetary equivalent in the maximum number of riyals, halfs (SR 0.5), quarters (SR 0.25), qirsh (SR 0.5), and halalah (SR 0.01), in this order, to result in the minimum number of coins.

Here is a sampler un:

```
Enter an amount, for example, 11.88: 11.88 ↵
Your amount 11.56 consists of
 11 riyals
 1 halfs
 1 quarters
 2 qirshs
 3 halalahs
```