Expression & Assignment Worksheet for Java

You may only use calculators for arithmetic. Do not enter entire expressions. There will be **no calculators** permitted for the test/s.

1. Define a variable.
2. Define an identifier.
3. A variable can store ____ value/s of its type.
4. Define a constant.
5. Define an expression.
6. Name the four integer data types.
   How many bytes are allotted to each?
7. Name the two floating point data types.
   How many bytes are allotted to each?
8. What is an escape sequence?
9. What is operator precedence?
10. Why are widening conversions safer than narrowing conversions?
11. What does the `new` operator accomplish?
12. Given the following declarations, what is the result of each of the expressions?

```
int w = 2, y = 7, z = 12;

a. w * z
b. w * z + y
c. w * -z
d. w * --z + y++
e. w * z-- + ++y
f. w + z * y
g. w - y + z
h. (w + y) * z
i. y / w
j. y / z
k. w % y
l. y % w
```

13. Given the following declarations, what is the result of each of the expressions?

```
double w = 12.9, y = 3.2;
double z = 12.2;

a. w / z
b. z / w
c. w / z - y
d. w - z * y
e. (w - z) * y
f. z / y / w
g. z / (y / w)
h. y % z
```

14. Given the following declarations, what is the result of each of the assignments?

```
int w = 5, y = 9, z = 2;

a. z = w * y;
b. z += y;
c. y /= z;
d. y %= z;
e. y += y++;
f. y += --y;
```

15. Given the following declarations, what is the result of each of each output?

```
char a = 'a', b = 'B';
char c = ' ', d;
string s = "This is fun.";
int e;

System.out.println
a. ("a = " + a);
b. ("a = " + 'a');
c. (a + b);
d. (s);
e. (s.length());
```

16. Convert the algebraic equations to Java equations.

a. $SA = 4\pi r^2$

b. $V = \frac{4}{3}\pi r^3$

c. $A = s(s-a)(s-b)(s-c)$

d. $D = (x_2 - x_1)^2 + (y_2 - y_1)^2$

e. $X = \frac{-b \pm b^2 - 4ac}{2a}$

Hint: Write two equations

Exercises 2.4

1. Suppose that `x` is a `double` variable whose value is 3.0 just before each statement is executed. Find the value of `x` after execution of the statement.

   (a) `x *= 2;`
   (b) `x += x;`
   (c) `x *= 2/3;`
   (d) `x /= 15/6;`

2. Suppose that, before each statement is executed, the values of the `int` variables `i` and `j` are 4 and 7 respectively. Find their values after execution of the statement.

   (a) `j += i;`
   (b) `i *= j;`
   (c) `i -= j--;`
   (d) `i *= --j;`
   (e) `j %= --i;`
   (f) `j /= ++i;`
   (g) `i *= ++j + 2;`
   (h) `j *= i-- % 3;`

3. Suppose that, before each statement is executed, the values of the `int` variables `i`, `j`, and `k` are 3, 2, and 1 respectively. Find their values after execution of the statement.

   (a) `i = j = k;`
   (b) `i = j += k;`
   (c) `i *= j = k + 2;`
   (d) `i -= j += k++;`
   (e) `i += j *= ++k + 1;`
   (f) `i %= j = k++ % 4;`

4. State the error in each statement.

   (a) `i+3 += j;`
   (b) `i *= j - 2 = k;`

Exercises 2.7

1. Evaluate.

   (a) `6 / 4*2`
   (b) `2 * 3/2`
   (c) `(int)2.7*1.8`
   (d) `(int)2.7*(int)1.8`
   (e) `(int)(2.7*1.8)`