Order of Operations Cheat Sheet and Review Questions. Week 1.2025

Here is a link to a nice resource: https://introcs.cs.princeton.edu/java/11precedence/

Questions mostly containing order of ops or integer related issues:

District 2025

Question 2 What is output by the code to the right? **A)** 1 **B)** 9 **C)** 7 **D)** 0 **E)** There is no output due to a compile error.	`out.println(1 + 2 * 3 - 4 / 5);`
Question 3 What is output by the code to the right? **A)** abcde **B)** abc **C)** ABCDE **D)** ABC **E)** There is no output due to a runtime error.	`out.printf("%3S","abcde");`

Note: In printf the format characters for Strings are %n.ys where n and y are integers. n is the number of characters which will be printed at a minimum i.e. the minimum field width. y is the precision.

```
public class Main {
    public static void main(String[] args) {
        String text = "HelloWorld";

        // %10.5s: Minimum width = 10, precision = 5
        System.out.printf("%10.5s%n", text); // Output: "     Hello"
        // Explanation: Takes first 5 characters ("Hello"), pads with 5 spaces to meet width of 10.

        // %5.3s: Minimum width = 5, precision = 3
        System.out.printf("%5.3s%n", text); // Output: "  Hel"
        // Explanation: Takes first 3 characters ("Hel"), pads with 2 spaces to meet width of 5.

        // %-10.5s: Left-aligned, width = 10, precision = 5
        System.out.printf("%-10.5s%n", text); // Output: "Hello     "
```

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```
    // Explanation: Takes first 5 characters ("Hello"), left-aligns with 5 spaces.
  }
}
```

Question 5

What is output by the code to the right?

A) `true` **B)** `false`

C) There is no output due to a syntax error.

```
boolean a = false;
boolean b = true;
a |= !b & a ^ b & !a;
out.println(a);
```

Question 8

What is output by the code to the right?

A) `101` **B)** `8` **C)** `36` **D)** `6`

E) There is no output due to a runtime error.

```
int a = 34 + 21 & 9;
int b = a | 39 % 7;
a ^= b * 9 / 5;
out.println(a);
```

Question 11

Which of the following packages contains the `Scanner` class?

A) `java.lang.*` **B)** `java.awt.*` **C)** `java.util.*` **D)** `java.io.*` **E)** None of the above.

Question 12

Question 14

What is output by the code to the right?

A) `8` **B)** `64` **C)** `4` **D)** `32`

E) There is no output due to a compile error.

```
out.println(Double.BYTES);
```

Question 16

What is the output by the code to the right?

A) `Greater` **B)** `Not Greater`

C) `-1` **D)** `1`

E) There is no output due to a compile error.

```
out.print("instanceof".compareTo("int")
    > 4 ? "Greater" : "Not Greater");
```

Question 23

What is output by the code to the right?

A) `2042 0` **B)** `1438 2042`

C) `0 1438` **D)** `2042 1438`

E) There is no output due to a runtime error.

```
int x = 1438;
int y = 2042;
x ^= y ^= x ^= y;
out.println(x+" "+y);
```

From Regional 2025

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Question 2

What is output by the code to the right?

A) -2 **B)** 2 **C)** 0 **D)** -1

E) There is no output due to a compile error.

```
out.println(212 / 43 - 394 / 63);
```

Question 3

What is output by the code to the right?

A) true **B)** false **C)** TRUE **D)** FALSE

E) There is no output due to a runtime error.

```
out.printf("%B",-17);
```

Question 5

What is output by the code to the right?

A) true **B)** false

```
boolean a = true ^ true;
a = a & !a || a ^ !a && a | !a;
out.println(a);
```

Question 8

What is output by the code to the right?

A) 727 **B)** 81 **C)** 130 **D)** 87

E) There is no output due to a compile error.

```
int i = 78 % 13 ^ 28;
i += 212 - 39 | 51 / 2;
i = 134 & i * 5 + 77;
out.println(i);
```

Question 13

What is the order of precedence for the operators to the right?

A) II, I, III, IV **B)** II, III, IV, I

C) III, II, I, IV **D)** III, II, IV, I

E) II, III, I, IV

```
I. | (bitwise)
II. ++(pre)
III. *
IV. || (logical)
```

State 2025

Question 2

What is output by the code to the right?

A) 16 **B)** 5 **C)** 38 **D)** 92

E) There is no output due to a compile error.

```
out.print(243+34 / 21-9 * 21-17);
```

Question 5

What is output by the code to the right?

A) true

B) false

```
boolean a = false;
boolean b = true;
a |= a ^ b & !b | a;
b ^= b ^ !a & a | !b;
out.print(a ^ b | a);
```

Question 8

What is output by the code to the right?

A) 54 **B)** 63 **C)** 31 **D)** 22

E) There is no output due to a runtime error.

```
int i = 212;
i &= i - 7 << 4;
i %= i ^ 123 - 17;
out.print(i | 13);
```

E) There is no output due to a compile error.

```
out.print(i);
```

Question 13

What is the order of precedence for the operators to the right?

A) `III, II, I, IV`
B) `I, III, IV, II`
C) `III, I, II, IV`
D) `III, I, II, IV`
E) `III, I, IV, II`

```
I. ==
II. +=
III. <=
IV. ?: (ternary)
```

Question 14

What is output by the code to the right?

A) `5`
B) `3`
C) `8`
D) `6`
E) There is no output due to a compile error.

```
int[] sizes = new int[] {
    Double.BYTES, Float.BYTES,
    Long.BYTES, Integer.BYTES,
    Short.BYTES, Byte.BYTES
};
Arrays.sort(sizes);
out.print(sizes[0]+sizes[2]);
```

Question 16

What is output by the code to the right?

A) `true i`
B) `false 0`
C) `false NaN`
D) `true NaN`
E) There is no output due to a compile error.

```
double x = 0, y = 0;
x /= y--;
y = Math.sqrt(y);
out.print((y == x) + " ");
out.println(y);
```

Question 29

Which of the following boolean expressions, when evaluated over all permutations of `true` and `false`, is equivalent to the truth table to the right?

A) `!C || !B && (!A || C)`
B) `(!A && !B && !C) || A`
C) `(!A && C) || (A && B)`
D) `(A && !C) || (!A && !B)`
E) More than one of the above.

A	B	C	Output
F	F	F	T
F	F	T	T
F	T	F	F
F	T	T	F
T	F	F	T
T	F	T	F
T	T	F	T
T	T	T	F

Question 30

What is the value of the expression to the right?

A) `1024`
B) `2048`
C) `2047`
D) `8192`
E) None of the above.

$2^{23} = 8388608$

Find the value of $8388608 \gg 10$

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District 2025

2 C

3 C

4 D

8 B

11 C

16 B

Regional 2025

2 A

3 C

5 A

8 C

State 2025

2 c

5 B

8 C

13 E

14 A

16 C

29 D

30 D

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Level	Operator	Description	Associativity

16	`()`
	`[]`
	`new`
	`.`
	`::`
		parentheses
		array access
		object creation
		member access
		method reference
			left-to-right

15	`++` `--`	unary post-increment unary post-decrement	left-to-right

14	`+`
	`-`
	`!`
	`~`
	`++`
	`--`
		unary plus
		unary minus
		unary logical NOT
		unary bitwise NOT
		unary pre-increment
		unary pre-decrement
			right-to-left

13	`()`	cast	right-to-left
12	`* / %`	multiplicative	left-to-right
11	`+ -` `+`	additive string concatenation	left-to-right
10	`<< >>` `>>>`	shift	left-to-right

9	`< <=`
	`> >=`
	`instanceof`
		relational	left-to-right

8	`==` `!=`	equality	left-to-right
7	`&`	bitwise AND	left-to-right
6	`^`	bitwise XOR	left-to-right
5	`|`	bitwise OR	left-to-right
4	`&&`	logical AND	left-to-right
3	`||`	logical OR	left-to-right
2	`?:`	ternary	right-to-left

1	`= += -=`
	`*= /= %=`
	`&= ^= |=`
	`<<= >>= >>>=`
		assignment	right-to-left

0	`->` `->`	lambda expression switch expression	right-to-left