

operators and Expressions

- ① Arithmetic operators $\rightarrow +, -, *, /, \%$.
- ② Relational operators $\rightarrow <, <=, >, >=, ==, !=$
- ③ Logical operators $\rightarrow \&\&, ||, !$.
- ④ Assignment $\rightarrow =, +=, -=, *=, /=, \%=$
- ⑤ Increment & Decrement $\rightarrow ++, --$, Post & Pre
- ⑥ Conditional $\rightarrow \text{exp1?exp2:exp3}$
- ⑦ Bitwise $\rightarrow \&, |, \sim, \wedge, \ll, \gg, \gg>$ (shift right with zero fill)
- ⑧ Special operators $\rightarrow$ instanceof, Dot operator.

① for eg $\rightarrow$

class Arithmetic

{
public static void main(String args[])

{

int a=10, b=20;

System.out.println("a=" + a);

"b=" + b);

"a+b=" + (a+b));

"a-b=" + (a-b));

"a*b=" + (a*b));

"a/b=" + (a/b));

}

}

float a=15.5f,
b=10.2f;

Note $\rightarrow$ ① In case modular division (It work on Integer value not on float value)

int a=10, b=2, c;

c = a % b;

c = 10 % 3 = 1

c = -10 % 3 = -1

c = -10 % -3 = -1

c = 10 % -3 = -1

②

4.5 < 10 $\rightarrow$ True

10 < 7+5 $\rightarrow$ True

4.57 = 10 $\rightarrow$ False

③ logical And (&)

OP-1	OP-2	Result		! OP1
true	true	true	T	F
true	false	F	T	F
false	true	F	T	T
false	false	F	F	T

if (marks > 90 & marks <= 100) → first division

if (number < 10 || number > 90)

④

$x = x + 1 \Rightarrow x += 1$

$x = x * 1 \Rightarrow x *= 1$

$x += y + 1 \Rightarrow x = x + (y + 1)$

⑤

$++x$ or $x++$

$--x$ or $x--$

$++x \Rightarrow x = x + 1 \Rightarrow x += 1$

for eg

$x = 5;$

$y = ++x;$

O/P $\Rightarrow y = 6$
 $x = 6$

$x = 5;$

$y = x++;$

O/P $\Rightarrow y = 5$
 $x = 6$

⑥

$a = 10;$

$b = 15;$

$x = (a > b) ? a : b ; \Rightarrow$ if ($a > b$)

$x = a;$

else

$x = b;$

⑦

Bitwise may not be applied to float & double. It performs operation at bit level.

$a = 10;$

$b = 2;$

$c = a \& b;$

$a = 001010$

$b = 000010$

$c = 000010 = 2$

⑧

① This operator allows us to determine whether the object belongs to particular class or not.

person instanceof Student; is true if object person belongs to class student.

②

person.age;

person.salary();

It is used to access the instance variable or methods of class objects.

* Expression $\rightarrow$ $x = a + b * c + d;$
 $y = m / n + m;$

Precedence & priority of arithmetic operator $\rightarrow$

<u>Precedence</u>	High priority	$*$, $/$, $\%$	Precedence $\rightarrow$ Left to Right
	low priority	$+$, $-$	

$$x = 9 - \underline{12/3} + 3 * 2 - 1$$

$$= 9 - 4 + \underline{3 * 2} - 1$$

$$= \underline{9 - 4} + 6 - 1$$

$$= \underline{5} + 6 - 1$$

$$= 11 - 1$$

$$= 10$$