process

input → output

primitives

```
1               2           42
-1000           0           123456789
123456789123456789

'a'             'Q'         ' '
'2'             '\12'       '\t'

true                        false
```
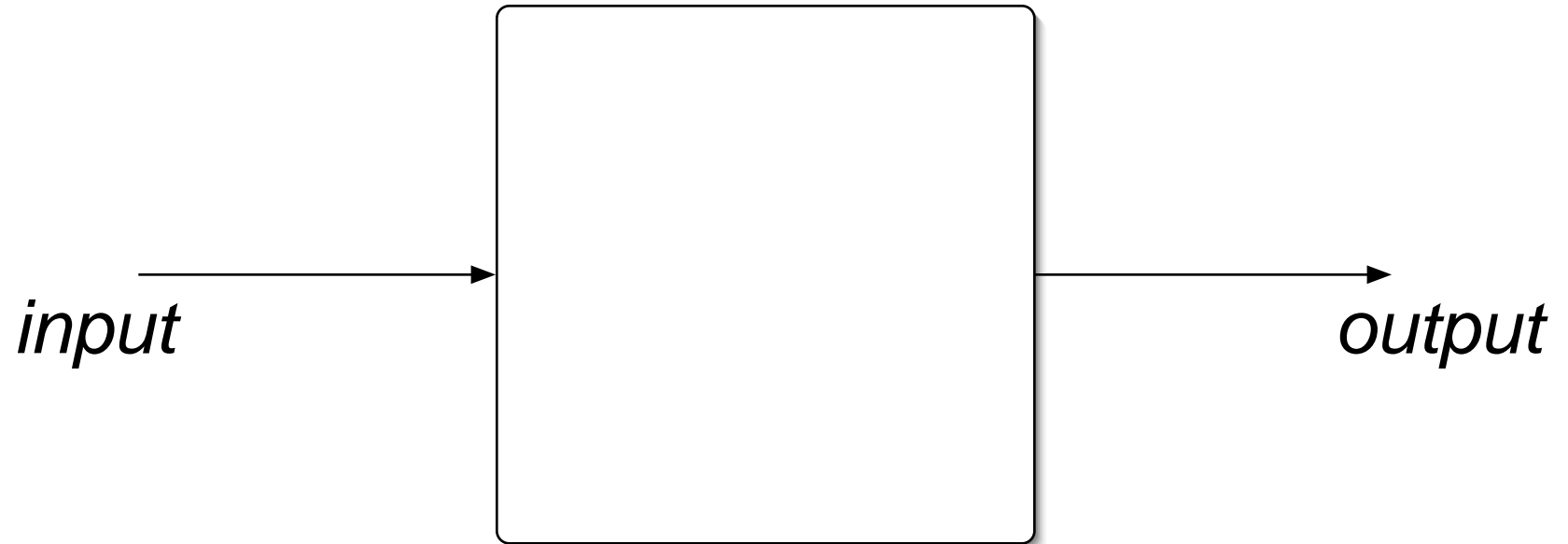
means for combining

```
19 + 12              26 - 3
1000-1000            42 * 26
3/4                  3.0/4.0


19 == 12             26 < 3
1000 <= 1000         42 > 26
3 >= 4               3.0 != 4.0
```

means for combining

```
'a' == 'Q'              ' ' != '2'
'\12' == '\t'           ' ' != (char) 32


true == true        false != false
```

means for
abstracting

x

int

double

char

boolean

names

32

```
int x = 32;
```

x

```
x = 1964;
```

names

```
x = 1964;
year = 1964;
yearOfBirth = 1964;
```

primitives

combinations

abstractions

expressions

statements

```
int x = 32;

System.out.println( x );
```

INTERLUDE

primitives

combinations

abstractions

'E'   'u'   'g'
'e'   'n'   'e'

"EUGENE"

String

```
String instructor = "Eugene";

System.out.println( instructor );
```

char *versus* String

```
String instructor = "Eugene";

instructor.charAt( 4 );
```

money

32.45

(or)

32 dollars
45 cents

picture

2-dimensional
array of pixels

pixel

int red

int green

int blue

```
intensity = (red + blue + green) / 3;
```