

Number, Autoboxing

J10

Number, Integer, Short, Float, etc
Autoboxing

Math

The Number Classes

Normally you will represent numbers with the **primitive** types `int`, `short`, `float`, etc. Java includes ‘boxed’ object analogues to each of these: `Integer`, `Short`, `Float`, etc.

- Number classes have methods (primitives don’t)
 - `toString()`, `parseInt()`, etc.
- Number classes have constants
 - `Integer.MIN_VALUE`, `Short.MAX_VALUE`, etc
- Number classes have a space overhead
 - They are instantiated as true objects

Autoboxing

Classes such as Integer and Character are ‘boxed’ versions of the primitive types `int` and `char` (i.e. object versions of the primitives). Java offers automatic support for boxing and unboxing.

- Boxing: Integer `i = 5;`
- Unboxing: `int j = i;`

The Math class

The Math class contains methods and constants useful for basic mathematics:

- Constants: `Math.PI` and `Math.E`
- Trigonometry: `sin()`, `cos()`, etc.
- Rounding: `abs()`, `ceil()`, `floor()`, etc.
- Comparison functions: `max()`, `min()`
- Exponentials and logs: `exp()`, `log()`, `pow()`, etc
- Random number generation: `random()`