

Step Into Java: doubles

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Java

doubles

What if there were just int's?

Calculate GPA:

$$(3 + 4 + 4 + 4 + 3)/5 = ?$$

$$(3.0 + 4.0 + 4.0 + 4.0 + 3.0)/5.0 = ?$$

doubles

Simple Definition:

- two whole numbers with a decimal between them
- can be +, -, 0
- used for measuring

Advanced Definition:

- Value ranges
 - furthest from zero $1.7e^{308}$
 - closest to zero $1.7e^{-308}$

double's.....

double variable creation:

double joe;

no initial value
in joe

variable

variable

is of type double

name

double's.....

Would this compile?

`System.out.print(joe);?`

double's.....

- don't mix double's and int's when comparing ($<$, $>$)
- don't mix double's and int's when doing math
- don't compare doubles for equality ($=$, $!=$, $<=$, $>=$)

double's.....

```
int john;
```

```
double sam;
```

```
EasyReader sue = new EasyReader();
```

```
sam = sue.readDouble();
```

```
john = (int)sam;
```



casting

(truncates towards zero)

If sam = 5.9, john = 5!

random #'s

- Most games rely on a random number generator.
 - pick a number
 - slot machines
 - lottery
 - black jack

How do you make a random number in java?

How do you make a random number in java?

- Call the `Math.random()` method.
- This is a *static* method....Hmm?
- it provides a value between 0 and 1 (a double)

```
System.out.print(10.0*Math.random());
```

 What does this do?

Lab

Write a java program that is a number guessing game. The user must guess a number between 1 and 1000. The program will tell the user whether the user was correct or not.

Example Program Output

Please guess a number between 1 and 1000:

445

Sorry, your guess was incorrect. The number was 446.