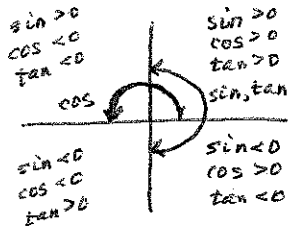


MATHEMATICAL FUNCTIONS (p120)

Math.pow(a, b)      $a^b$   
 Math.exp(a)        $e^a$   
 Math.log(a)        $\ln(a)$   
 Math.log10(a)      $\log_{10}(a)$   
 Math.sqrt(a)        $\sqrt{a} = a^{1/2}$

Math.sin(a)        $\sin(a)$   
 Math.cos  
 Math.tan  
 Math.acos  
 Math.asin  
 Math.atan  
 Math.atan2(y, x)  
 Math.PI  
 Math.toRadians(deg)  
 Math.toDegrees(radians)

} radians



ROUNDING

Math.ceil(a)        $\lceil a \rceil$   
 Math.floor(a)       $\lfloor a \rfloor$   
 Math rint(a)       UNBIASED ROUNDING  
 Math.round(a)      BIASED ROUNDING

MIN/MAX/ABS

Math.max(a, b)  
 Math.min(a, b)  
 Math.abs(a)

RANDOM NUMBERS (p122)

$y = \text{Math.random}()$       $0 \leq y < 1$

CHARACTER DATA TYPE (p125)

ASCII & UNICODE (SEE APPENDIX B)

char letter = 'A'    n = '\u0041'

ESCAPE SEQUENCES    \b    \t    \r    \f    \r    \|    \"    \u    \ddd

CASTING CAN GO EITHER WAY - IMPLICIT IF NO LOSS OF DATA

Character.isDigit(ch) (p128)

- isLetter(ch)
- isLetterOrDigit(ch)
- isLowerCase()
- isUpperCase()
- toLowerCase()
- toUpperCase()

XAMPAD

THE STRING TYPE (p130)

strings ARE INDEXED STARTING AT 0 to (length-1)

String.length()  
 • charAt(index)  
 • concat(string1)  
 • toUpperCase()  
 • toLowerCase()  
 • trim()

instance method vs static method

strings ARE immutable objects

string concatenation using '+' operator.

- ONE OPERAND MUST be a string
- THE '+' ALSO works

READING A CHARACTER FROM CONSOLE (p133)

read a string (nextline) THEN USE charAt(0).

COMPARISONS (p133)

• equals(s1)  
 • equalsIgnoreCase(s1)  
 • compareTo(s1) <0, 0, >0 (s0-s1) AT FIRST DIFF.  
 • compareToIgnoreCase(s1)  
 • startsWith(s1)  
 • endsWith(s1)  
 • contains(s1)

NOTE: USING == DOESN'T COMPARE CONTENTS, BUT REFERENCES.

• substring(start)  
 • substring(start, end)

FINDING SUBSTRINGS (p136)

• indexOf(ch) (s) (ch, from) (s, from)  
 • lastIndexOf(ch) " " "

CONVERTING TO NUMBERS (p137)

Integer.parseInt(s)  
 Double.parseDouble(s)

NUMBER BASE CONVERSIONS (p142)

SINGLE DIGIT - HEX TO DEC, DEC TO HEX

FORMATTING CONSOLE OUTPUT (p145)

System.out.printf (format string, values...);

%b boolean  
 %d decimal integer  
 %c character  
 %f floating point  
 %e sci notation  
 %s string  
 %g %s  
 %WIDTH PRECISION TYPE

↑ MINUS SIGN MAKES IT LEFT JUSTIFIED

%n newline

flags WIDTH WITH LEADING ZERO

+

INCLUDE SIGN

,

GROUPINGS

-

LEFT JUSTIFIED

also date &amp; time specifiers