

Dr. Racket.

# 1. Definition.

(+ 3 4) expression

Interaction Area.

↓ 7 value.

racket evaluate expressions to produce values

(+ 3 (\* 2 3))

(/ (+ (\* 3 2))

to form an expression:

① < primitive > < expression >

② value

Comment: semi-colon

Comment box.

#i pretty close, but not.

# 2. Evaluation

(+ 2 (\* 3 4) (- (+ 1 2) 3))

↑

operator

operand: expression follows.

rules: left → right

inside → outside

← the expression

primitive call

# 3. String and Image

"apple" double quote

(string-append "Ada" " " "Apple")

↑

put two or more strings one after the other

in a single string

(string-length "apple")

(substring "Caribou" 2 4)

Substring from first up to & not include the last index number

(require shldp/image)

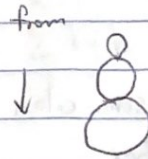
want to use the image functions from the 2nd edition of  
How to Design Programs book.

(circle 10 "solid" "red")

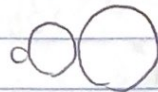
(rectangle 30 60 "outline" "blue")

(text "hello" 24 "orange")

(above (circle 10 "solid" "red")  
(circle 10 "solid" "yellow")  
(circle 10 "solid" "green"))



(beside



(overlay



constant

(define WIDTH 400)

(define HEIGHT 600)

(\* WIDTH HEIGHT)

To form a constant definition

(define <name> <expression>)

↑

az Az09

pretty generous for

(rotate -10 CAT)

(rotate 10 CAT)



```
(require 2htdp/image)
(define (bulb c)
  (circle 40 "solid" c))
```

← to form a function  
 f name  
 (define (<name> <names>...)  
 <expression>) ^ para name

TRUE / FALSE

true / false

predicate: primitive or functions that produce a boolean value

```
(string=? "foo" "bar")
(require 2htdp/image)
(define I1 (rectangle 10 20 "solid" "red"))
(define I2 (rectangle 20 10 "solid" "blue"))
(< (image-width I1)
  (image-width I2))
```

if expression:

```
(if <expression> ; question
   <expression> ; true answer
   <expression> ; false answer)
```

```
if (< (image-width I1)
      (image-height I2))
  "tall"
  "wide")
```

To evaluate an expression

- if the question is not a value, first evaluate and replace with value
- if question is true, → true a. if false → false a.
- if question is a value, produce an error.

ctrl E / cmd E Racket hides the interaction area