Good ~~morning~~! Afternoon!

Warmup: grab a sheet from Mr. Norman and complete the exercises.

Warm up
Domain and Range

Find the domain and range for each code. Remember, the only answers that you may use are the following 3 words: *Number, String, or Image.*

1. (* 5 6)

Domain: number number	Range: number

2. (triangle (+ 1 2) "solid" "red")

Domain: number string string	Range: image

3. (rotate 30 (square 10 "outline" "yellow"))

Domain: number image	Range: image

; rectangle : Number Number String String → image

1. Underline the Name of this function.
2. Circle the Domain of this function
3. Put a box around the Range of this function.

4. (/ 25 5)

   a. What is the name of the function? / or divide

   b. What is the domain? number number

   c. What is the range? number

5. (star 45 "outline" "pink")

   a. What is the name of the function? star

   b. What is the domain? number string string

   c. What is the range? Image

6. (scale 4 (triangle 20 "solid" "blue"))

   a. What is the domain of scale? number image

   b. What is the range of scale? Image

7. (image-height (circle 15 "outline" "green")) → 30

   a. What is the domain of image-height? Image

   b. What is the range of image-height? number

Spiral Review: Draw the circle of evaluation and write the code for the given algebraic expression.

		Circle of evaluation	code
8	$(4 + 3) + (2 \; x \; 10)$		

return quizzes and review

(define age 14) → age = 14

(define name "Bill") → name = "Bill"

Warm up 2
Defining Variables

In our programming language, variables are defined by:

```
(define x 4)
(define y (+ 4 9))
(define z (* x 2))
```

x = 4

y = 4 + 9

z = x * 2

Convert the following three Algebra definitions into Wescheme definitions:

- Dollars = 16.50
- Feet = 2 * 3
- Inches = feet * 12

(define Dollars 16.50)

(define Feet (* 2 3))

(define Inches (* feet 12))

```
z = x + y
age = 14
months = age * 12
days = months * 30
hours = day * 24
minutes = hours * 60
```

Defining a **value** is helpful when a program has lots of identical expressions.

Ex: a program has fifty solid, green triangles

What if a program has fifty green triangles of different sizes?

We want to define our own function that takes in a number and produces a solid green triangle of whatever size we want.

(gt 10) would be a shortcut for (triangle 10 "solid" "green")

(gt 20) would be a shortcut for (triangle 20 "solid" "green")

(gt 1980) would be a shortcut for (triangle 1980 "solid" "green")

(gt 78) would be a shortcut for (triangle 78 "solid" "green")

We will... **Define a function gt, that takes in a Number and produces a solid, green triangle of the given size.**

Define a function gt, that takes in a Number and produces a solid, green triangle of the given size.

Three steps:
- step 1: Write the Contract
- step 2: Give examples
- step 3: Define the function

name : gt
domain: number
range : image

size

page 9

Fast Functions!

; gt : number -> image
name domain range

(EXAMPLE (gt 25) (triangle 25 "solid" "green"))
(EXAMPLE (gt 103) (triangle 103 "solid" "green"))
(define (gt size) (triangle size "solid" "green"))

Define a function gt, that takes in a Number and produces a solid, green triangle of the given size.

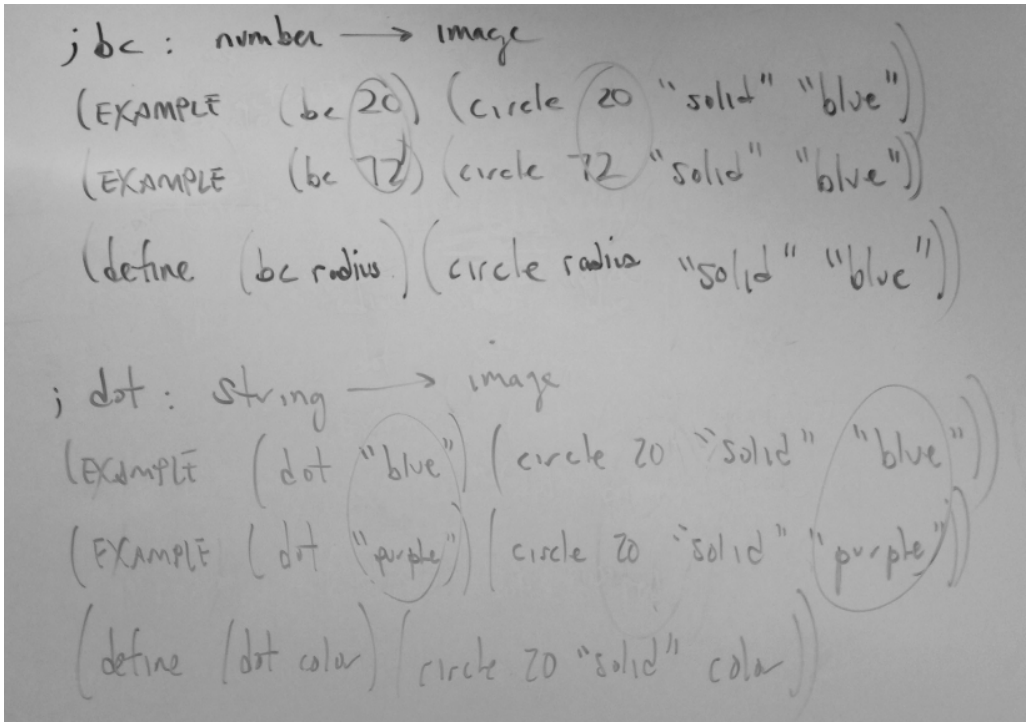
Three steps:
- step 1: Write the Contract
- step 2: Give examples
- step 3: Define the function

page 9

Practice:

1. write a function bc, which takes in a Number and produces a solid, blue circle of the given size.

2. write a function dot, which takes in a color and produces a solid circle of the given color, with radius of 20.


; bc : number → image
(EXAMPLE (bc 20) (circle 20 "solid" "blue"))
(EXAMPLE (bc 72) (circle 72 "solid" "blue"))
(define (bc radius) (circle radius "solid" "blue"))
; dot : String → image
(EXAMPLE (dot "blue") (circle 20 "solid" "blue"))
(EXAMPLE (dot "purple") (circle 20 "solid" "purple"))
(define (dot color) (circle 20 "solid" color))