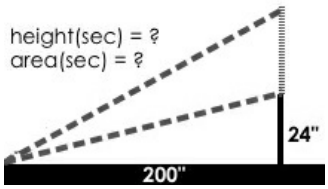
Top Down / Bottom Up

A retractable flag pole starts out 24 inches tall, and grows taller at a rate of 0.6in/sec. An elastic is anchored 200 inches from the base and attached to the top of the pole, forming a right triangle. Using a top-down or bottom-up strategy, define functions that compute the *height* of the pole and the *area* of the triangle after a given number of seconds.



Directions: Define your first function (`height` or `area`) here.

Contract and Purpose Statement

Every contract has three parts…

; `area` : `Number` -> `Number`

function name | *domain* | *range*

; Consumes seconds & produces the area of the triangle with a base of 200 and changing height

what does the function do?

Examples

Write some examples, then circle and label what changes…

(EXAMPLE (`area` `5`) (`* 1/2 (* 200 (height 5))`)

function name | *input(s)* | *what the function produces*

(EXAMPLE (`area` `6`) (`* 1/2 (* 200 (height 6))`)

function name | *input(s)* | *what the function produces*

Definition

Write the definition, giving variable names to all your input values…

(define (`area` `sec`)

function name | *variable(s)*

`(* 1/2 (* 200 (height sec)))`)

what the function does with those variable(s)

Directions: Define your second function (`height` or `area`) here.

Contract and Purpose Statement

Every contract has three parts…

; `height` : `Number` -> `Number`

function name | *domain* | *range*

; Consumes the # of seconds and produces the height, according to h=0.6s + 24

what does the function do?

Examples

Write some examples, then circle and label what changes…

(EXAMPLE (`height` `1`) (`+ (* 0.6 1) 24)`)

function name | *input(s)* | *what the function produces*

(EXAMPLE (`height` `2`) (`+ (* 0.6 2) 24)`)

function name | *input(s)* | *what the function produces*

Definition

Write the definition, giving variable names to all your input values…

(define (`height` `sec`)

function name | *variable(s)*

`(+ (* 0.6 sec) 10)`)

what the function does with those variable(s)