

## SECOND QUIZ

You have 15 minutes from the start of class to complete this quiz. Read the problems with care; work with deliberate speed. Don't give us more than we ask for. The usual instructions apply. Good luck!

### Problem 1 (5 points)

Evaluate each of the following expression(s). (That is, what does DrRacket display in the interactions window when you enter the expression(s) in the definitions window and click Run?)

- (a) `(+  
 (/ 100 (- 30 5))  
 (* 2 (+ 30 20 10)))`
- (b) `; up100: number -> number  
; Return the input value, increased by 100  
(define up100  
 (lambda (n)  
 (+ n 100)))  
  
; halve: number -> number  
; Return 50% of the input value  
(define halve  
 (lambda (n)  
 (/ n 2)))  
  
(up100 75)  
  
(halve 500)  
  
(up100 (halve (halve 2000)))`

### Problem 2 (3 points)

Each of the following statements relates to one of the video lectures (about laptops in the classroom, six characteristics of software, or natural and formal languages). Mark each statement as accurate or inaccurate, and for the inaccurate ones, please say in a few words what's wrong with the statement, according to the video.

- (a) Having a laptop in class can tempt you to check your mail (or something) when the topic gets hard—which is just when you should be asking a question.
- (b) Formal languages are more complex and can express more things than natural languages.
- (c) Skillful professional programmers start typing code at the top of a blank screen, keep on typing, and when they get to the end, they run their code and it works fine without needing much revision.
- (d) Most real-world software has to be changed over time; as circumstances change, a software system must be changed to keep up.

**Problem 3** (12 points)

At the Christopher Columbus Pizzeria, a plain cheese pizza costs \$12.00. The customer can choose additional toppings: Meat toppings cost \$3.00 each; vegetable toppings cost \$1.00 each.

(a) (3 points) Write a contract and a brief purpose statement for the function `pizza-cost` that takes two inputs (representing the number of meat toppings and the number of vegetable toppings chosen, in that order) and returns the cost of the specified pizza, according to the prices above.

(b) (2 points) Write two examples/tests of `pizza-cost` in the form of `check-expect` expressions.

(c) (7 points) Write the function header and function body for `pizza-cost` (i.e., the entire function definition). Use the following defined identifiers in your code:

```
(define PIZZA-BASE-PRICE 12.00)
(define PRICE-PER-MEAT   3.00)
(define PRICE-PER-VEG    1.00)
```