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 (3 points)

Evaluate each of the following expressions. (That is, what does DrScheme display in the interactions window when you enter the expression or click Run?)

(a)
```
(define TAXRATE 0.10)

(define take-home
  (lambda (hours rate)
    (* (- 1 TAXRATE) (* hours rate))))

(take-home 40 10)
```

(b)
```
(define SoCalClimate
   (lambda (temperature)
     (cond
       ((>= temperature 100) 'scorching )
       ((>= temperature 90)  'hot  )
       ((>= temperature 80)  'warm )
       ((>= temperature 70)  'comfortable )
       ((>= temperature 60)  'cool )
       (else 'cold ))))

(SoCalClimate 55)

(SoCalClimate 95)
```

(c)
```
(+
   (* 7 (- 12 10))
   (+ (* 6 6) (/ 80 20)))
```

Problem 2 (6 points)

The Anteater Used Car Lot uses this structure to store information about its automobiles:

```
(define-struct auto (make model year price))
```

where `make` and `model` are strings and `year` and `price` are numbers.

(a) (2 points) Write an expression that constructs and returns a structure representing a 1966 Ford Mustang that sells for $12,500.

(b) (1 point) What is the name of the selector function that takes an `auto` structure and returns the year the car was manufactured?

(continued on reverse)

(c) (3 points) Fill in the body of the function defined below.

```
;; auto-older-than?: auto number -> boolean
;; Return true if auto was manufactured before the specified year (false otherwise)
(define auto-older-than?
  (lambda ( A year-to-check )
```

Problem 3 (11 points)

The price of admission to Disneyland depends on the age of the visitor: Children from ages 3 to 9 cost $59.00 each; visitors 10 and above cost $69.00 each. Write the function TGA (for "total group admission") that takes two inputs (the number of visitors in a group who are 3 to 9 years old and the number who are 10 or over) and returns the total amount due for the group's admission.

Write a contract, a brief purpose statement, the Scheme function definition, and two tests in the form of check-expect expressions. (It will help you to write examples before you define the function, but for this quiz you aren't required to write examples separately from the tests.) Use the following constants in your code:

```
(define PRICE-3-TO-9    59.00)
(define PRICE-10-AND-UP 69.00)
```