

SECOND QUIZ

You have 15 minutes from the start of class to complete this quiz. Read the questions 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)

Complete the following function definition according to the contract and purpose given.

```
;; course-score: number number number -> number
;; Compute a student's overall score in a course given three inputs--a score for all
;; assignments, a score for the midterm, and a score for the final. Assume that the
;; inputs and the return value will all be in the range 0 to 100 and compute the overall
;; score using the weights specified below.
(define ASST-WEIGHT 0.20) ; Assignments worth 20%
(define MIDTERM-WEIGHT 0.30) ; Midterm worth 30%
(define FINAL-WEIGHT 0.50) ; Final worth 50%

(define course-score
  (lambda (assignments midterm final)
```

Problem 2 (5 points)

Evaluate each of the following expressions. The function `even?` is predefined in DrScheme; it returns true if its argument is evenly divisible by 2 (an even number).

(a)

```
(define score-message
  (lambda (score)
    (cond
      ((>= score 90) 'Great)
      ((>= score 80) 'Good)
      ((>= score 70) 'Okay)
      (else 'DoSomethingDifferent))))
(score-message 75)
```

(b)

```
(and (even? 24) (= 7 (/ 14 3)))
```

(c)

```
(or (even? 17) (even? (* 2 (/ 75 25))))
```

(d) `(not (and (even? 28) (even? 24)))`

(e) `(+ 5
 (cond
 ((even? 17) 6)
 (else 20)))`

Problem 3 (15 points)

A quiz is a structure `(make-quiz problems possible)` where `problems` is the number of problems and `possible` is the total number of points possible on the quiz (for all problems together).

(a) (2 points) Write a structure definition for the quiz structure described above.

(b) (2 points) Fill in the following blank with a quiz constructor that describes the quiz you're taking now.

```
(define second-quiz _____)
```

(c) (1 point) Write a Scheme expression that returns the number of points possible on `second-quiz`.

(d) (5 points) Complete the definition of the following function.

```
;; average-points-per-problem: quiz -> number
;; Given a quiz as input, return the average number of points possible per problem.
(define average-points-per-problem
```

(e) (5 points) Complete the definition of the following function.

```
;; add-a-problem: quiz number -> quiz
;; Update a quiz by adding one new problem with a specified number of points. That is,
;; return a quiz that matches the input quiz, but with one more problem and an updated
;; number of possible points (based on the second input).
(define add-a-problem
```