

FIRST QUIZ

Since we have a short quiz today, we'll have long instructions. These instructions will apply for all our quizzes, but we won't repeat them every time. You have 10 minutes to complete this quiz.

Please read all the problems carefully. If you have any questions on what a problem means, don't hesitate to ask. Don't get bogged down on any one problem; if you have trouble on a problem, go on to the next one. Unless a problem specifically asks you to consider errors, you should assume that each problem is correct and solvable, and ask us if you believe otherwise.

Please write your answers clearly—we can't give you credit if we can't decipher what you've written. We'll give partial credit for partially correct answers, so writing something is better than writing nothing. But no question requires an answer longer than two sentences, so don't just write everything you know and hope that the right answer will be included somewhere; we will deduct points for needlessly long answers. Good luck!

Problem 1 (3 points)

- (a) In pair programming, what is the one thing that the person in the navigator role never does?
- (b) When does that person get to do the just-mentioned activity that's forbidden to the navigator?
- (c) What's the best Email address to use to ask course-related questions?

Problem 2 (5 points)

Evaluate each of the following expressions. That is, what does DrScheme display when each of these expressions is executed?

(a) `(+ (- 10 5) (* 20 3))`

(b) `(= (/ 50 5) 15)`

(c)

```
(define goof
  (lambda (n)
    (+ (* 3 n) 1)))
(goof 5)
```

Problem 3 (12 points)

“Preference voting” refers to a variety of techniques for counting votes (without a runoff election) to avoid situations where two candidates “split the vote,” leaving a third candidate with the most votes (though not a majority) even though most voters would have preferred one of the other two candidates.

One preference voting technique allows each voter to designate a first-choice candidate and, optionally, second- and third-choice candidates. When the votes are tallied, a candidate receives three points for each first-choice vote, two points for each second-choice vote, and one point for each third-choice vote.

Write the function `preference-total` that takes three inputs (representing the number of first-choice, second-choice, and third-choice votes, in that order, that the candidate received) and returns the preference vote total for that candidate as described above. Write a contract, a brief purpose statement, the Scheme function definition, and two tests in the form of boolean expressions that should return true if the function works correctly.