Quiz 1

September 5, 2025 9:59 AM

MATH 3042 Quiz 1 Fall 2025

Name: Answers

Student number: A_____

Score: / 10

You may use RStudio on your computer. No other apps or sources of information are allowed.

Before you answer the following questions, you must:

- Load the **mosaic** package: `> library(mosaic)`
- Load the **dplyr** package: `> library(dplyr)`
- Load the dataset **TenMileRace**: `> data(TenMileRace)`
- Open the help file for **TenMileRace**: `> help(TenMileRace)`

1. [2 marks] Suppose we are interested in "senior runners", meaning runners who are 65 years old or older. Complete the R command below that filters all senior runners in **TenMileRace**.

```
> senior.runners <- filter(TenMileRace, age >= 65)
```

or `subset(TenMileRace, age >= 65)`

2. [1 mark] How many senior runners took *more* than 90 minutes (based on **net**) to finish the race?

70

`[ sum(senior.runners$net > 90*60) ]`

3. [2 marks] How many Male senior runners were there and how many Female senior runners were there? Record an R command that gives both numbers at the same time.

```
table(senior.runners$sex)
```

→

F	M
12	80

turn page

4. [3 marks] How many Female senior runners were *faster* than the slowest Male senior runner? Give R command(s) to find this number and record the number.

Ans: 11

Code:
```
> nrow(filter(senior.runners,
              sex == "F",
              net < max(filter(senior.runners,
                               sex == "M")$net)))
```

5. [2 marks] A stem plot for variable **net** for all senior runners is shown below. According to this stem plot, what was the *minimum* value of **net** for senior runners? What was the actual *minimum* value of **net** for senior runners?

stem plot minimum = 4300

actual minimum = 4322

```
> stem(senior.runners$net)

  The decimal point is 3 digit(s) to the right of the |

  4 | 3
  4 | 778888999
  5 | 111112333334
  5 | 5666777777777778889
  6 | 00111222333334444
  6 | 55666777788889999
  7 | 00113444
  7 | 7777
  8 | 144
  8 |
  9 | 02
```