Quiz 1 V2 (Solutions)

September 11, 2025 1:24 PM

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 "masters runners", meaning runners who are 40 years old or older. Complete the R command below that filters all masters runners in **TenMileRace**.

```
> masters.runners <- filter( TenMileRace, age >= 40)
```

2. [1 mark] How many masters runners took *less* than 75 minutes (based on **net**) to finish the race?

353

from:

```
sum( masters.runners$net < 75*60 )
```

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

```
> table( masters.runners$sex )

   F    M
1145 1982
```

turn page

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

```
nrow( filter(masters.runners,
             sex=="F",
             net < max( filter(masters.runners,
                               sex=="M")$net)))
```

Ans: 1145 (all of them)

5. [2 marks] A stem plot for variable **net** for the fastest 200 masters runners is shown below. According to this stem plot, what was the *minimum* value of **net** for these runners? What was the actual *minimum* value of **net** for all masters runners?

stem plot minimum = 3250 seconds

actual minimum = 3251 seconds

```
> stem(filter(masters.runners, rank(net) <= 200)$net)

  The decimal point is 2 digit(s) to the right of the |

  32 | 5
  33 | 3779
  34 | 334566
  35 | 355667
  36 | 333444566788999
  37 | 14447888999
  38 | 11123444555666678899999
  39 | 000222235555666666667788889
  40 | 000012233344444566677777789999999
  41 | 00111122223333344444555555566666666689999
  42 | 0001122222333444444555666666777777
```