Question 1: Olympic running

In the 200m dash finals in the Olympics, 8 runners compete for 3 medals (order matters). In the 2012 Olympics, 3 of the 8 runners were from Jamaica and the other 5 were from different countries. The three medals were all won by Jamaica (Usain Bolt, Yohan Blake, and Warren Weir).

Use the information above to help you answer the following four questions.

Question 1a

1.0/1.0 point (graded)

How many different ways can the 3 medals be distributed across 8 runners?

336 ✔

336

Submit You have used 4 of 10 attempts

Question 1b

1.0/1.0 point (graded)

How many different ways can the three medals be distributed among the 3 runners from Jamaica?

6 ✔

6

Submit You have used 3 of 10 attempts

Question 1c

1.0/1.0 point (graded)
What is the probability that all 3 medals are won by Jamaica?

0.0178 ✔

0.0178

Submit You have used 8 of 10 attempts

Question 1d

1.0/1.0 point (graded)
Run a Monte Carlo simulation on this vector representing the countries of the 8 runners in this race:

```
runners <- c("Jamaica", "Jamaica", "Jamaica", "USA", "Ecuador", "Netherlands", "France", "
```

For each iteration of the Monte Carlo simulation, within a `replicate()` loop, select 3 runners representing the 3 medalists and check whether they are all from Jamaica. Repeat this simulation 10,000 times. Set the seed to 1 before running the loop.

Calculate the probability that all the runners are from Jamaica.

0.0174 ✔

0.0174

Submit You have used 3 of 10 attempts