

Mathematics 1550H – Probability I: Introduction to Probability

TRENT UNIVERSITY, Summer 2023 (S62)

Quiz #2

Tossing

Due just before midnight on Tuesday, 27 June.*

Consider the following experiment:

0. Set the counter n to 1.
1. Toss a fair coin and record the result. Then,
 - if it comes up heads, toss the coin once more and record the result, then end the experiment;
 - if it comes up tails and $n \leq 4$, add 1 to n and repeat step 1;
 - if it comes up tails and $n = 5$, end the experiment.

1. Draw the complete tree diagram for this experiment. *[1]*
2. What are the sample space and probability function of this experiment? *[1]*
3. What is the probability that ...
 - a. the final toss is a tail? *[0.5]*
 - b. the next-to-last toss is a head? *[0.5]*

The random variable X counts the number of tosses made in this experiment.

4. What are the possible values of X and the probabilities that each will occur? *[1]*
5. What is the probability that ...
 - a. X is an even number? *[0.5]*
 - b. X is at least four? *[0.5]*

* You should submit your solutions via Blackboard's Assignments module, preferably as a single pdf. If this fails, you may submit your work to the instructor on paper or by email to sbilaniuk@trentu.ca.