MATH1103 FALL 2022
DISCUSSION SHEET 5

Every discussion you will be assigned three problems and you are encouraged to work in groups.

Problem 1. This is a very open-ended problem! Feel free to share your ideas!

(1) What are the formulas for the circumference and the area of a circle? Any relationship between these two formulas observed? Is that a coincidence?

(2) What are the formulas for the surface area and the volume of a sphere? Any relationship? Is that a coincidence as well?

Problem 2. Let's say we roll **two** ordinary dices simultaneously. Then we can denote the outcome as a pair, i.e., (x, y) where x is the outcome for one dice while y for the other one. Answer the following questions accordingly:

(1) What is the probability of getting a doublet? A doublet looks like (a, a).

(2) If we consider the sum of the pair, i.e., $x + y$, what is the probability of $x + y = 8$? What about $x + y \leq 6$?

(3) If a normal dice is thrown 5 times, what is the probability of getting at least three consecutive 6's?

Problem 3. Jack bought 5 pairs of socks last weekend but he was too lazy to separate each of the pairs. Starting from next Monday, he chooses two random socks every morning without washing them until the end of the week. Answer the following questions:

(1) What is the probability that he finds a matching pair on Monday morning?

(2) What is the probability that he finds a matching pair on Tuesday morning? What about Wednesday, Thursday, Friday?