Homework 1 Answers

BSTA 550

1. Outcomes, events, and sample space

In the below parts, please list (i) one specific outcome, (ii) one event that contains more than one outcome, and (iii) the sample space.

a. Chris has an 5-pack of Gatorade sports drink: 1 orange, 2 lemon-lime, and 2 fruit punch. He blindly grabs one out of the pack over and over if necessary, without replacement, until he finds an orange one. *Note, each lemon-lime is indistinguishable, and each fruit punch is indistinguishable.*

Let L = Lemon-Lime, P = Fruit Punch, and O = Orange. Since L and P are indistinguishable, we do not need include more information on the two bottles.

i. Specific Outcome

(L, P, O) OR (P, O)

ii. Event with More Than One Outcome

iii. Sample Space (Ω)

19 total outcomes

b. A claw machine contains 10 plush toys: 5 Red Squishies (R), 3 Blue Dinosaurs (B), and 2 Yellow Star Puffs (Y). You successfully grab a toy, remove it, and then grab a second toy (sampling without replacement). The result is the ordered pair of the two toys' colors.

i. Specific Outcome

(R, Y) OR (B, R)

ii. Event with More Than One Outcome

iii. Sample Space (Ω)

9 total outcomes

c. You are opening a series of mofusound Cat blind boxes. There are 4 possible figurines to collect: 1 shark cat (S), 1 orange striped fish cat (O), and 1 hen cat (H), and 1 cow cat (C). You buy a single blind box.

i. Specific Outcome

S (Shark Cat) OR O (Orange Striped Fish Cat)

ii. Event with More Than One Outcome

iii. Sample Space (Ω)

4 total outcomes

2. Running a simulation!

We'll all have slightly different answers, but with 100,000 simulations, I got the probability of 0.489.