Complete the following tasks. You need to show work for full credit, and you may use RStudio to finish the calculations. Some answers have been provided. Assemble your work into one PDF document and upload the PDF back into our CatCourses page.

1. In March of 2019, Apple released the second generation AirPods—earbuds with Bluetooth technology. Their small size makes them easy to lose. Suppose that we collected and summarized AirPods ownership among UC Merced students—i.e. how many AirPods they own during their college career—in the probability distribution table below. Compute the standard deviation of the number of AirPods.

AirPods	0	2	4	6
Probability	0.53	0.31	0.13	0.03

2. Suppose that the probability distribution below shows the number of colleges that children of celebrities applied to in 2018. Compute the standard deviation for the number of college applications.

x	0	2	4	6
$P(x)$	0.4	0.3	0.2	0.1

3. Today, our story is about a fictitious food-delivery company called Bobcat Food Delivery (BFD). For simplicity, let us assume that the business analytics measures the size of an order in servings. Use the probability distribution below to compute the standard deviation for the number of servings.[1]

servings	1	2	3	4	5
proportion	0.28	0.28	0.04	0.22	0.18

[1] This was an exam question during the Spring 2021 semester

4. Another query in our hypothetical survey of campus employees asked about how many days per week they need to be on campus during the upcoming semester. Build a range-rule-of-thumb interval

$$(\mu - 2\sigma, \mu + 2\sigma)$$

from the following probability distribution.[2]

Days	0	1	2	3	4	5
Proportion	0.20	0.13	0.29	0.11	0.02	0.25

5. In January of 2021, members of the Investment Club bought stocks in GameStop with the following probability distribution. Compute the coefficient of variation $\frac{\sigma}{\mu}$ for the number of stocks purchased.[3]

Stocks	0	1	2	4
Proportion	0.3077	0.3029	0.2088	0.1806

[2]This was an exam question during Summer 2020
[3]This was an exam question during the Spring 2021 semester

Here are some of answers. Note that numbers may slightly vary depending on when and where the rounding took place.

1. $\sigma \approx 1.6302$ air pods
2. $\sigma = 2$ college applications
3. 1.5074 servings
4. $(-1.2262, 5.9662)$
5. 0.9667