There are three problems from the book and three additional problems called A, B, C.

Exercise 3.13 (about the sum of three uniform random variables)
Exercise 5.2 (about die rolls)
Exercise 5.7 (about applying to college)

For Problem A, let $X, Y \sim \text{Bern}(p)$ be independent.

A.A. I claim that $X^2 \sim \text{Bern}(q)$ for some q. What is q, in terms of p?

A.B. I claim that $XY \sim \text{Bern}(q)$ for some q. What is q, in terms of p?

A.C. I claim that $1 - X \sim \text{Bern}(q)$ for some q. What is q, in terms of p?

Problem B is about the fact that there are two slightly different versions of the geometric distribution, that people use. We have our preferred version. To get at the other version, let's say that $X \sim \text{Jeom}(p)$ if X counts the number of independent Bernoulli trials (each with success probability p) needed to get the first success.

B.A. What is the support of X?

B.B. What is the PMF of X?

C. Do Classwork Problem 30, about a scientist named Jimmy. (You might want to re-read Problem 29 first. We haven't solved Problem 29 yet, but that's okay, and I'm not asking you to solve it in this homework.)