KFUPM	Term 172	Date: 21/4/2018
Mathematics & Statistics	AS 483	Duration: 30 minutes
	Quiz# 6	
Name:	ID #:	Section:

Q1: You are given:

(i) The annual number of claims for an insured has probability function:

$$p(x) = \binom{3}{x} q^x \, (1-q)^{3-x}, x = 1,2,3$$

(ii) The prior density is $\pi(q) = 2q, \quad 0 < q < 1$.

A randomly chosen insured has zero claims in Year 1.

Using Bühlmann credibility, estimate the number of claims in Year 2 for the selected insured.

Q2: An insurer writes a large book of home warranty policies.0020You are given the following information regarding claims filed by insureds against these policies:

(i) A maximum of one claim may be filed per year.

(ii) The probability of a claim varies by insured, and the claims experience for each insured is independent of every other insured.

(iii) The probability of a claim for each insured remains constant over time.

(iv) The overall probability of a claim being filed by a randomly selected insured in a year is 0.10.

(iv) The variance of the individual insured claim probabilities is 0.01.

An insured selected at random is found to have filed 0 claims over the past 10 years.

Determine the Bühlmann credibility estimate for the expected number of claims the selected insured will file over the next 5 years.

Q3: You are given:

(i) Two risks have the following severity distributions:

Amount of Claim	Probability of Claim Amount for Risk 1	Probability of Claim Amount for Risk 2
250	0.5	0.7
2,500	0.3	0.2
60,000	0.2	0.1

(ii) Risk 1 is twice as likely to be observed as Risk 2.
A claim of 250 is observed.

Determine the Bühlmann credibility estimate of the second claim amount from the same risk.