

Homework# 1

Note: Please give the neat and complete solutions of the following questions. Use R or Minitab. All the work must be typed, no hand written work will be excepted, thank you.

- Q #1: Following is the Mendel's data on seed shape from 10 plants:

	Plant	1	2	3	4	5	6	7	8	9	10
seed shape	Round	45	27	24	19	32	26	88	22	28	25
	Wrinkled	12	8	7	10	11	6	24	10	6	7

- If the 10 samples are homogenous, each has the same proportion of round seeds. Estimate the proportion of round seed.
- Perform a chi-square goodness of fit test of hypothesis that round and wrinkled seeds occur in ratio 3:1.

- Q#2: Following is the Mendel's bifactorial data for seed shape and color:

		Seed Shape			
		AA	Aa	aa	Total
Color	BB	38	60	28	126
	Bb	65	138	68	271
	bb	35	67	30	132
	Total	138	265	126	529

- Estimate the frequencies p_A , p_a , p_B and p_b .
- Test the sample for Hardy Weinberg equilibrium using chi-square test for seed color and seed shape.
- Test the sample for Mendal's law of independent assortment.

- Question #3: Consider the following data taken from a study which investigates acute myocardial infarction among Navajo Indians. In the study, 144 victims of acute myocardial were age-and sex-matched with 144 individuals free of heart disease. The members of each pair were then asked whether they had ever been diagnosed as having diabetes. The results are presented below:

Diabetes	MI		Total
	Yes	No	
Yes	46	25	71
No	98	119	217
Total	144	144	288

Test whether the proportion of diabetics among individuals who have experienced an acute myocardial infraction is equal to the proportion of diabetics among those who have not.

- Q#4: Supposed that 10 individuals are scored for a locus with two alleles A, a and 6 AA, 3 Aa, 1 aa individuals are found. Test the sample for Hardy Weinberg equilibrium using chi-square test.