1. (10pts) Do this part on your own. Find two dice somewhere and roll them 50 times.

a) Record how many times you get each of the possible sums on the dice in the first row below.

b) In the second row, enter the empirical probabilities for each sum appearing based on your 50 rolls. Then compute the theoretical probabilities for each sum and enter them in the third row of the table. Round everything to 3 decimal points.

Sum on roll	2	3	4	5	6	7	8	9	10	11	12
Times occured	0	|||3	|||| 4	⤴HT 5	⤴HT⤴HT ⤴HT |||6	⤴HT	6	⤴HT |||| 9	1	|||| 4	|| 2	0
Empirical prob.	0	0.06	0.08	0.1	0.32	0.12	0.18	0.02	0.08	0.04	0
Theoretical prob.	0.028	0.056	0.083	0.111	0.139	0.167	0.139	0.111	0.083	0.056	0.028
	1/36	2/36	3/36	4/36	5/36	6/36	5/36	4/36	3/36	2/36	1/36

c) Are the theoretical and empirical probabilities close? Yes for sums 3,4,5,10,11, no for others

2. (10pts) Do this part with 2 or 3 classmates. Write their names to the left of the rows labeled "Classmate". Each of you has to fill in the table independently, but the last two rows of this table should be the same for everyone in your group (check!).

a) Copy the "Times occured" line from above into row "You" and do the same for each of your classmates.

b) Sum by column and enter the sums in the row "Total".

c) Compute the empirical probability for each sum on the cubes. Recall that your number of experiments is now larger.

Sum on roll	2	3	4	5	6	7	8	9	10	11	12
You	0	3	4	5	16	6	9	1	4	2	0
Classmate	0	2	3	4	14	10	6	3	6	2	0
Classmate	4	4	4	1	8	8	3	8	7	1	2
Classmate	4	4	1	5	8	5	10	5	3	3	2
Total times occured	8	13	12	15	46	29	28	17	20	8	4
Empirical prob.	0.04	0.065	0.06	0.075	0.23	0.145	0.14	0.085	0.1	0.04	0.02

(margin note at left: Random students)

d) Are the empirical probabilities when you include your classmates' results closer to the theoretical probability than when you just used your own results?

Close for sums 2,3,4,7,8,10,11,12, so it appears better.