

## TABLES FOR "PICK A NUMBER" AND "BIRTHDAY" EXAMPLES

### PICK A NUMBER

column 1:  $k$  = number of people in the room

column 2: Have everyone pick a number between 1 and the corresponding number in this column. Then with probability = .90 at *least two people* will pick the same number. You can round *down* if you want, e.g. for 55 people round down and say, "pick a number between 1 and 650."

column 3: The probability is now .95, the famous "19 times out of 20". The numbers are much smaller

column 4: The probability is now .99, i.e. virtual certainty, so the numbers are significantly smaller.

k	.90	.95	.99
10	22	18	13
15	50	40	28
20	89	70	48
25	138	108	73
30	199	155	104
35	270	210	141
40	352	273	183
45	445	345	230
50	548	425	283
55	663	514	341
60	788	611	404
65	925	716	473
70	1072	829	548
75	1230	951	627
80	1399	1081	713
85	1578	1220	803
90	1769	1367	900
95	1970	1522	1001
100	2183	1685	1108

## BIRTHDAY PROBABILITIES

column 1: Number of students

column 2: Probability that at least two (maybe more) students in the class will have the same birthday.

From the table we see that already if there are only 40 students, then with probability .89 (i.e. in 89 out of 100 classes it will be true) at least two students will have the same birthday. For 60 or more it is virtually certain that at least two will have the same birthday.

5	0.02
10	0.11
15	0.25
20	0.41
25	0.56
30	0.70
35	0.81
40	0.89
45	0.94
50	0.97
55	0.98
60	0.99