Appendix C

Using the Table of Randomly Selected Digits (TRSD)

A table of randomly selected digits (TRSD) can be used to simulate probability situations, including random sampling. For the following lessons, please refer to the TRSD at the end of this appendix. After that, you can use any TRSD that you have.

Using the TRSD to simulate the toss of 4 coins

1. Locate the TRSD in this appendix. The random numbers were generated by a computer and then placed in sets of five digits to make it easier to read. The first column entries give row numbers, not randomly selected digits.

2. Turn to one of the pages in the table—it does not matter which one. Choose a place on the table by dropping your pencil and noting where the point is, or by simply looking up or closing your eyes and letting your finger drop onto the page.

3. Suppose your finger is in row 54 at the third set of five in the row—63186. Look only at the first four digits. Consider even digits to represent heads and odd digits to represent tails. The series 6318 would then represent the toss of 4 coins with 2 heads (represented by 6 and 8) and 2 tails (represented by 1 and 3). Make a five-column table with 0, 1, 2, 3, and 4 heads as the column headings. The random number 6318 would represent 2 heads, so place a tally mark in the column with 2 heads as the column heading. Then move down (or across) to the next set of digits, and again consider only the first four: 7808 would represent a toss resulting in 3 heads and 1 tail. Make a tally mark under 3 heads in your table. Continue this process, each time marking your table for the number of heads: 0, 1, 2, 3, or 4.

4. If several people work together, a large number of simulations of the tossing of 4 coins could be made in a short time, if you share your numbers of heads with others in your group or in your class. Suppose each person simulates 20 tosses. If 20 of you do this simulation, then you have simulated tossing 4 coins 400 times. Suppose, over 400 times, you had 3 heads and 1 tail 89 times. Then your experimental probability of getting 3 heads and 1 tail on a toss of 4 coins is $\frac{89}{400}$ or about 22%.

Using five one-digit numbers to simulate the ball drawing in Section 27.3

In this lesson you simulate the drawing of one ball from a bag of 2 red balls and 3 blue balls, noting the color, replacing it, drawing a second ball, and noting its color.

1. Suppose you want to use only five digits in a simulation. To do so, let digits 1 and 2 represent red balls and digits 3, 4, and 5 represent blue balls. Simply ignore the digits 0 and 6–9.

2. Starting in the third set in row 40, for example, we would read 42595 27977 32790 41917 as 4255232411, which translates to b r b b r b r b r r. Or taken in consecutive pairs, they represent five simulations of our draw-two-balls experiment: br, bb, rb, rb, rr. If the event of interest is drawing red followed by drawing blue, this gives no (for the br), no (bb), yes (rb), yes (rb), and no (rr) for the five simulations. Start elsewhere to obtain additional simulations.

Finding a random sample of 10 people from a population of 1000 people

1. Organize the 1000 people in some fashion, such as alphabetically. Then assign a three-digit number to each: 000 to the first person and 999 to the last (or 001 to the first person and 000 to the last).

2. Using the TRSD, choose any place in the table to begin. If the digits are arranged in sets of five, as in the TRSD that follows, ignore the fourth and fifth digits in each five-digit set. Go down a column, take the first three digits of each five-digit set for 10 sets.

3. Locate the individuals corresponding to each of the 10 three-digit numbers.

Notice that this sampling is similar to a situation in which tickets are given for some prize, perhaps a door prize at a party. Each ticket has two parts, and the same number is printed on each part. One part is given away, and the other part is placed in a container. Thus, each person has been assigned a separate number. If there are 10 door prizes, the first 10 tickets taken from the container (in which the tickets have been thoroughly mixed and cannot be seen by the person selecting tickets) are associated with the 10 individuals who get prizes. Here the assignment of numbers is not based on an alphabetical listing but rather numbers are assigned by the order in which people come in the door, and the randomness develops when actually selecting the 10 numbers from a container.

Table of Randomly Selected Digits (TRSD)

1	00328	52694	37864	93224	74454	33886	17120	60932	39090	30674
2	05136	86903	95926	15771	14137	60923	53431	73737	94807	28815
3	68597	06896	48803	17910	23242	80947	11213	46626	41994	52952
4	16508	79646	33229	67582	44466	26119	42263	92222	36894	64348
5	55560	71569	01479	50838	01401	88489	78617	18785	18373	63431
6	78054	04561	17648	44578	24328	50951	20342	09327	22356	83965
7	94263	06048	23880	52193	18220	61567	75479	07541	89554	35294
8	79839	53271	98734	90449	25115	83661	57375	06879	88635	14464
9	27400	92094	82414	10697	82244	39683	50607	34439	47340	54524
10	22074	37659	72120	17121	74096	19442	67012	47905	01723	51894
11	13510	74328	03432	33897	25288	76819	68800	14987	16837	83429
12	06837	57432	66411	45577	36037	49384	28402	58229	95113	35294
13	73796	48766	55343	47984	81150	97408	66449	21678	28767	45622
14	79450	12243	67635	65136	28300	64656	13376	91884	20462	83225
15	07157	56219	48061	35955	44984	11451	81954	92823	45469	74357
16	16681	11972	02904	47489	19646	66585	59072	72368	55431	14384
17	49861	76253	02124	90355	07107	21633	79016	37457	93461	02636
18	07115	06152	48853	11337	67861	85780	73275	60249	32405	75483
19	98981	12028	49873	24083	45466	46227	24934	98524	34531	57160
20	16976	77713	43124	51125	24283	07367	77804	42972	50873	45392
21	44144	47146	44502	76636	65082	00154	34870	79978	88610	62278
22	61338	60404	58235	48140	12647	29989	47295	10621	39595	88988
23	23753	83397	68668	13454	61441	41226	07984	35666	02889	01286
24	02928	81245	33929	42222	91000	34699	06534	95955	01089	22128
25	79316	35342	18326	08735	11378	64982	10511	58252	18660	84592
26	84480	85717	54342	20628	08792	73587	20972	88047	38399	37733
27	02974	29874	18390	37192	91041	44234	50058	41625	26704	87527
28	32360	76575	71309	49530	55794	77803	26079	45151	55748	31066
29	33519	86479	36815	89900	34909	68591	55676	24541	38485	89951
30	13554	71227	42727	47318	34697	84231	56599	82546	11875	46183
31	40151	15156	73100	45755	82729	05132	22862	58245	46562	07497
32	51918	27296	04920	42450	23986	90834	08333	60073	98581	93100
33	14456	30581	64104	87668	12926	75034	35172	48588	04836	16888
34	97263	73552	83536	34733	43368	48072	38810	77930	77025	90136
35	43232	99440	22273	66259	51747	33965	98549	74348	00685	54153
36	05649	78633	78169	24966	16209	17728	28248	52596	66546	73614
37	03584	74328	02146	01357	51985	73958	64630	56757	32487	79447
38	20703	86561	41351	38059	07959	94954	67671	25201	23539	04925
39	49985	86109	07036	28695	37739	57596	79780	42643	20873	22679
40	24810	21716	42595	27977	32790	41917	16299	02555	17322	45460

41	99520	65656	36410	12625	19648	93697	28112	10652	42235
42	62102	78228	98702	74293	59786	84054	16873	32793	84638
43	28776	14173	15452	82453	99591	11248	96008	19620	10672
44	30341	43795	36283	61785	12790	38549	18382	56866	07254
45	07335	34288	71837	40979	77215	50165	97525	16876	67902
46	63031	49913	21132	60661	81667	74420	05177	70525	56756
47	55227	08991	25807	75290	51036	46912	50137	19313	01054
48	07187	60009	75192	83242	45008	50832	44791	15005	86528
49	05578	79854	68733	56726	30931	96012	62957	29167	74916
50	06903	30507	31055	20622	58841	99640	94831	63019	31284
51	18885	12787	08182	82413	00304	08396	78964	27916	85172
52	94712	13085	30764	60275	82590	37636	47960	44288	73630
53	91733	89031	02448	70011	08342	53882	01936	35546	26526
54	35408	29675	63186	78080	46465	61655	42591	16026	22049
55	70347	61939	27336	92975	35678	16381	99724	14338	39027
56	03496	83975	45626	21813	48702	23651	06354	31410	00202
57	57546	45772	53082	42129	75946	89489	96562	65888	15154
58	89102	94034	36681	66499	15275	42090	87960	85226	26362
59	98643	19580	19467	08205	02933	34924	18592	13938	11455
60	95175	71806	30343	23956	95248	54688	20669	15852	11155
61	39051	64845	70678	51559	85434	73803	42769	60961	23117
62	46432	13908	13354	76460	41640	76001	26956	60228	21317
63	36605	18701	86180	00162	12305	69269	11991	87882	11119
64	21533	58679	08156	26606	25840	03851	51338	21161	51890
65	00157	31690	50321	32536	60370	17238	22151	73713	63289
66	63929	08404	59336	60290	29959	48480	48320	80443	55629
67	73663	55260	30418	60083	97982	09192	97978	67257	56478
68	68336	90747	51450	12909	09176	39197	77274	30751	26954
69	50821	73145	85981	42105	43973	88890	13109	71406	08502
70	35310	98983	37857	24024	66015	61904	84624	18102	10179
71	05813	53283	14926	15531	58898	61856	08999	03174	99705
72	17708	37063	19973	80923	71355	06252	31043	98657	33874
73	32944	23558	91868	58182	34669	10380	65135	15034	78889
74	73862	08659	68925	36053	98240	39044	79681	68779	01598
75	26478	87066	04550	07476	44506	23275	13929	17887	98828
76	62394	03161	70705	24091	20144	62002	42858	33828	53014
77	99875	80191	85743	05256	43429	42773	02235	77967	44038
78	00609	73923	25213	44171	27123	99542	23287	24658	93833
79	03866	23612	18808	41231	53141	21022	84255	92455	30274
80	96882	88567	41017	53993	90822	86724	38090	04896	12732