6. a) What is a regression line ?　　　　　　　　3

    b) The following data show the scores obtained by a group
        of 20 students on a college entrance examination and a
        verbal comprehension test. Interpret the data.　　7

Student	College entrance exam (X)	Verbal compre-hension test (Y)	Student	College entrance exam (X)	Verbal compre-hension test (Y)
A	52	49	K	64	53
B	49	49	L	28	17
C	26	17	M	49	40
D	28	34	N	43	41
E	63	52	O	30	15
F	44	41	P	65	50
G	70	45	Q	35	28
H	32	32	R	60	55
I	49	29	S	49	37
J	51	49	T	66	50

MASTER OF ARTS EXAMINATION, 2019

(1st Year, 2nd Semester)

SOCIOLOGY

SOCIAL STATISTICS

COURSE : 2.4

Time : Two hours　　　　　　　　　　　　Full Marks : 30

Answer *any three* question :　　　　　　　10×3

1. Write short notes on :　　　　　　　　　5+5

    a) Note the factors that increase the probability of rejecting
        the null hypothesis.

    b) Discuss the three characteristics of bivariate associations.

2. a) What are the three characteristics of the mean ?　　4

    b) A survey of the ages of residents of nursing homes yielded
        the following measures of central tendency : Mean = 70
        Median = 78 Mode = 83.

        In which direction is the distribition likely to be skewed ?
        　　　　　　　　　　　　　　　　　　　2

    c) Below is a table of the area of New England States in
        square miles. Compute the mean and the median Which
        measure gives a better description of the area of a typical
        New England state ?　　　　　　　　4

[Turn over

State	Area
connecticut	5009
maine	33,215
massachussets	8257
new hampshire	9304
rhode island	1214
vermont	9609

3. What are one-tailed and two-tailed tests ?   4

b. The population in India watches 6.2 hours of TV per day. A random sample of 1017 senior citizens in the state report watching an average of 5.9 hours per day, with a standard deviation of 0.7 in difference significant ?
(Alpha.05)   6

4. Support for abortion was measured with a ten point scale, with higher scores indicating more support. Are there significant differences in support between males and females in Canda and the United States ? Significance level will be set at 0.05 Interpret Sociologically   8+2

Canada

	Males	Females
	$\underline{X}_1 = 4.6$	$\underline{X}_2 = 4.7$
	$S_1 = 2.8$	$S_2 = 3.0$
	$N_1 = 988$	$N_2 = 1074$

United States

	Males	Females
	$\underline{X}_1 = 4.6$	$\underline{X}_2 = 4.4$
	$S_1 = 2.9$	$S_2 = 2.8$
	$N_1 = 569$	$N_2 = 598$

5. Do men and women vary in their opinions about cohabitation? A random sample of 47 males and females has been rated as high or low in their support for "living together". Is the relationship significant? Interpret sociologically? The results are :   8+2

Support for cohabitation	Males	Females	totals
High	15	5	20
Low	10	17	27
totals	25	22	47

Appendix A
Area Under the Normal Curve

Column (a) lists Z scores from 0.00 to 4.00. Only positive scores are displayed, but, since the normal curve is symmetrical, the areas for negative scores will be exactly the same as areas for positive scores. Column (b) lists the proportion of the total area between the Z score and the mean. Figure A.1 displays areas of this type. Column (c) lists the proportion of the area beyond the Z score, and Figure A.2 displays this type of area.
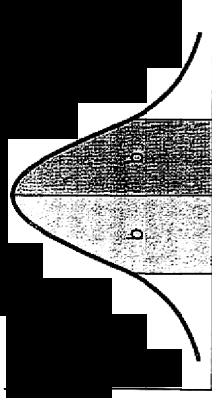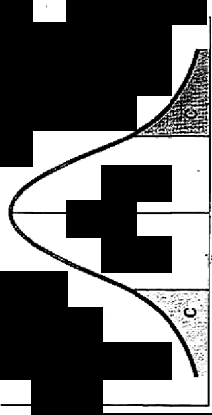

FIGURE A.1   Area Between Mean and Z

FIGURE A.2   Area Beyond Z

(a) Z	(b) Area Between Mean and Z	(c) Area Beyond Z	(a) Z	(b) Area Between Mean and Z	(c) Area Beyond Z
0.00	0.0000	0.5000	0.21	0.0832	0.4168
0.01	0.0040	0.4960	0.22	0.0871	0.4129
0.02	0.0080	0.4920	0.23	0.0910	0.4090
0.03	0.0120	0.4880	0.24	0.0948	0.4052
0.04	0.0160	0.4840	0.25	0.0987	0.4013
0.05	0.0199	0.4801	0.26	0.1026	0.3974
0.06	0.0239	0.4761	0.27	0.1064	0.3936
0.07	0.0279	0.4721	0.28	0.1103	0.3897
0.08	0.0319	0.4681	0.29	0.1141	0.3859
0.09	0.0359	0.4641	0.30	0.1179	0.3821
0.10	0.0398	0.4602	0.31	0.1217	0.3783
0.11	0.0438	0.4562	0.32	0.1255	0.3745
0.12	0.0478	0.4522	0.33	0.1293	0.3707
0.13	0.0517	0.4483	0.34	0.1331	0.3669
0.14	0.0557	0.4443	0.35	0.1368	0.3632
0.15	0.0596	0.4404	0.36	0.1406	0.3594
0.16	0.0636	0.4364	0.37	0.1443	0.3557
0.17	0.0675	0.4325	0.38	0.1480	0.3520
0.18	0.0714	0.4286	0.39	0.1517	0.3483
0.19	0.0753	0.4247	0.40	0.1554	0.3446
0.20	0.0793	0.4207			

(a) Z	(b) Area Between Mean and Z	(c) Area Beyond Z	(a) Z	(b) Area Between Mean and Z	(c) Area Beyond Z
0.41	0.1591	0.3409	0.96	0.3315	0.1685
0.42	0.1628	0.3372	0.97	0.3340	0.1660
0.43	0.1664	0.3336	0.98	0.3365	0.1635
0.44	0.1700	0.3300	0.99	0.3389	0.1611
0.45	0.1736	0.3264	1.00	0.3413	0.1587
0.46	0.1772	0.3228	1.01	0.3438	0.1562
0.47	0.1808	0.3192	1.02	0.3461	0.1539
0.48	0.1844	0.3156	1.03	0.3485	0.1515
0.49	0.1879	0.3121	1.04	0.3508	0.1492
0.50	0.1915	0.3085	1.05	0.3531	0.1469
0.51	0.1950	0.3050	1.06	0.3554	0.1446
0.52	0.1985	0.3015	1.07	0.3577	0.1423
0.53	0.2019	0.2981	1.08	0.3599	0.1401
0.54	0.2054	0.2946	1.09	0.3621	0.1379
0.55	0.2088	0.2912	1.10	0.3643	0.1357
0.56	0.2123	0.2877	1.11	0.3665	0.1335
0.57	0.2157	0.2843	1.12	0.3686	0.1314
0.58	0.2190	0.2810	1.13	0.3708	0.1292
0.59	0.2224	0.2776	1.14	0.3729	0.1271
0.60	0.2257	0.2743	1.15	0.3749	0.1251
0.61	0.2291	0.2709	1.16	0.3770	0.1230
0.62	0.2324	0.2676	1.17	0.3790	0.1210
0.63	0.2357	0.2643	1.18	0.3810	0.1190
0.64	0.2389	0.2611	1.19	0.3830	0.1170
0.65	0.2422	0.2578	1.20	0.3849	0.1151
0.66	0.2454	0.2546	1.21	0.3869	0.1131
0.67	0.2486	0.2514	1.22	0.3888	0.1112
0.68	0.2517	0.2483	1.23	0.3907	0.1093
0.69	0.2549	0.2451	1.24	0.3925	0.1075
0.70	0.2580	0.2420	1.25	0.3944	0.1056
0.71	0.2611	0.2389	1.26	0.3962	0.1038
0.72	0.2642	0.2358	1.27	0.3980	0.1020
0.73	0.2673	0.2327	1.28	0.3997	0.1003
0.74	0.2703	0.2297	1.29	0.4015	0.0985
0.75	0.2734	0.2266	1.30	0.4032	0.0968
0.76	0.2764	0.2236	1.31	0.4049	0.0951
0.77	0.2794	0.2206	1.32	0.4066	0.0934
0.78	0.2823	0.2177	1.33	0.4082	0.0918
0.79	0.2852	0.2148	1.34	0.4099	0.0901
0.80	0.2881	0.2119	1.35	0.4115	0.0885
0.81	0.2910	0.2090	1.36	0.4131	0.0869
0.82	0.2939	0.2061	1.37	0.4147	0.0853
0.83	0.2967	0.2033	1.38	0.4162	0.0838
0.84	0.2995	0.2005	1.39	0.4177	0.0823
0.85	0.3023	0.1977	1.40	0.4192	0.0808
0.86	0.3051	0.1949	1.41	0.4207	0.0793
0.87	0.3078	0.1922	1.42	0.4222	0.0778
0.88	0.3106	0.1894	1.43	0.4236	0.0764
0.89	0.3133	0.1867	1.44	0.4251	0.0749
0.90	0.3159	0.1841	1.45	0.4265	0.0735
0.91	0.3186	0.1814	1.46	0.4279	0.0721
0.92	0.3212	0.1788	1.47	0.4292	0.0708
0.93	0.3238	0.1762	1.48	0.4306	0.0694
0.94	0.3264	0.1736	1.49	0.4319	0.0681
0.95	0.3289	0.1711	1.50	0.4332	0.0668

(a) Z	(b) Area Between Mean and Z	(c) Area Beyond Z	(a) Z	(b) Area Between Mean and Z	(c) Area Beyond Z
1.51	0.4345	0.0655	2.06	0.4803	0.0197
1.52	0.4357	0.0643	2.07	0.4808	0.0192
1.53	0.4370	0.0630	2.08	0.4812	0.0188
1.54	0.4382	0.0618	2.09	0.4817	0.0183
1.55	0.4394	0.0606	2.10	0.4821	0.0179
1.56	0.4406	0.0594	2.11	0.4826	0.0174
1.57	0.4418	0.0582	2.12	0.4830	0.0170
1.58	0.4429	0.0571	2.13	0.4834	0.0166
1.59	0.4441	0.0559	2.14	0.4838	0.0162
1.60	0.4452	0.0548	2.15	0.4842	0.0158
1.61	0.4463	0.0537	2.16	0.4846	0.0154
1.62	0.4474	0.0526	2.17	0.4850	0.0150
1.63	0.4484	0.0516	2.18	0.4854	0.0146
1.64	0.4495	0.0505	2.19	0.4857	0.0143
1.65	0.4505	0.0495	2.20	0.4861	0.0139
1.66	0.4515	0.0485	2.21	0.4864	0.0136
1.67	0.4525	0.0475	2.22	0.4868	0.0132
1.68	0.4535	0.0465	2.23	0.4871	0.0129
1.69	0.4545	0.0455	2.24	0.4875	0.0125
1.70	0.4554	0.0446	2.25	0.4878	0.0122
1.71	0.4564	0.0436	2.26	0.4881	0.0119
1.72	0.4573	0.0427	2.27	0.4884	0.0116
1.73	0.4582	0.0418	2.28	0.4887	0.0113
1.74	0.4591	0.0409	2.29	0.4890	0.0110
1.75	0.4599	0.0401	2.30	0.4893	0.0107
1.76	0.4608	0.0392	2.31	0.4896	0.0104
1.77	0.4616	0.0384	2.32	0.4898	0.0102
1.78	0.4625	0.0375	2.33	0.4901	0.0099
1.79	0.4633	0.0367	2.34	0.4904	0.0096
1.80	0.4641	0.0359	2.35	0.4906	0.0094
1.81	0.4649	0.0351	2.36	0.4909	0.0091
1.82	0.4656	0.0344	2.37	0.4911	0.0089
1.83	0.4664	0.0336	2.38	0.4913	0.0087
1.84	0.4671	0.0329	2.39	0.4916	0.0084
1.85	0.4678	0.0322	2.40	0.4918	0.0082
1.86	0.4686	0.0314	2.41	0.4920	0.0080
1.87	0.4693	0.0307	2.42	0.4922	0.0078
1.88	0.4699	0.0301	2.43	0.4925	0.0075
1.89	0.4706	0.0294	2.44	0.4927	0.0073
1.90	0.4713	0.0287	2.45	0.4929	0.0071
1.91	0.4719	0.0281	2.46	0.4931	0.0069
1.92	0.4726	0.0274	2.47	0.4932	0.0068
1.93	0.4732	0.0268	2.48	0.4934	0.0066
1.94	0.4738	0.0262	2.49	0.4936	0.0064
1.95	0.4744	0.0256	2.50	0.4938	0.0062
1.96	0.4750	0.0250	2.51	0.4940	0.0060
1.97	0.4756	0.0244	2.52	0.4941	0.0059
1.98	0.4761	0.0239	2.53	0.4943	0.0057
1.99	0.4767	0.0233	2.54	0.4945	0.0055
2.00	0.4772	0.0228	2.55	0.4946	0.0054
2.01	0.4778	0.0222	2.56	0.4948	0.0052
2.02	0.4783	0.0217	2.57	0.4949	0.0051
2.03	0.4788	0.0212	2.58	0.4951	0.0049
2.04	0.4793	0.0207	2.59	0.4952	0.0048
2.05	0.4798	0.0202	2.60	0.4953	0.0047

APPENDIX A

(a) Z	(b) Area Between Mean and Z	(c) Area Beyond Z	(a) Z	(b) Area Between Mean and Z	(c) Area Beyond Z
2.61	0.4955	0.0045	3.11	0.4991	0.0009
2.62	0.4956	0.0044	3.12	0.4991	0.0009
2.63	0.4957	0.0043	3.13	0.4991	0.0009
2.64	0.4959	0.0041	3.14	0.4992	0.0008
2.65	0.4960	0.0040	3.15	0.4992	0.0008
2.66	0.4961	0.0039	3.16	0.4992	0.0008
2.67	0.4962	0.0038	3.17	0.4992	0.0008
2.68	0.4963	0.0037	3.18	0.4993	0.0007
2.69	0.4964	0.0036	3.19	0.4993	0.0007
2.70	0.4965	0.0035	3.20	0.4993	0.0007
2.71	0.4966	0.0034	3.21	0.4993	0.0007
2.72	0.4967	0.0033	3.22	0.4994	0.0006
2.73	0.4968	0.0032	3.23	0.4994	0.0006
2.74	0.4969	0.0031	3.24	0.4994	0.0006
2.75	0.4970	0.0030	3.25	0.4994	0.0006
2.76	0.4971	0.0029	3.26	0.4994	0.0006
2.77	0.4972	0.0028	3.27	0.4995	0.0005
2.78	0.4973	0.0027	3.28	0.4995	0.0005
2.79	0.4974	0.0026	3.29	0.4995	0.0005
2.80	0.4974	0.0026	3.30	0.4995	0.0005
2.81	0.4975	0.0025	3.31	0.4995	0.0005
2.82	0.4976	0.0024	3.32	0.4995	0.0005
2.83	0.4977	0.0023	3.33	0.4996	0.0004
2.84	0.4977	0.0023	3.34	0.4996	0.0004
2.85	0.4978	0.0022	3.35	0.4996	0.0004
2.86	0.4979	0.0021	3.36	0.4996	0.0004
2.87	0.4979	0.0021	3.37	0.4996	0.0004
2.88	0.4980	0.0020	3.38	0.4996	0.0004
2.89	0.4981	0.0019	3.39	0.4997	0.0003
2.90	0.4981	0.0019	3.40	0.4997	0.0003
2.91	0.4982	0.0018	3.41	0.4997	0.0003
2.92	0.4982	0.0018	3.42	0.4997	0.0003
2.93	0.4983	0.0017	3.43	0.4997	0.0003
2.94	0.4984	0.0016	3.44	0.4997	0.0003
2.95	0.4984	0.0016	3.45	0.4997	0.0003
2.96	0.4985	0.0015	3.46	0.4997	0.0003
2.97	0.4985	0.0015	3.47	0.4997	0.0003
2.98	0.4986	0.0014	3.48	0.4997	0.0003
2.99	0.4986	0.0014	3.49	0.4998	0.0002
3.00	0.4986	0.0014	3.50	0.4998	0.0002
3.01	0.4987	0.0013	3.60	0.4998	0.0002
3.02	0.4987	0.0013	3.70	0.4999	0.0001
3.03	0.4988	0.0012	3.80	0.4999	0.0001
3.04	0.4988	0.0012	3.90	0.4999	<0.0001
3.05	0.4989	0.0011	4.00	0.4999	<0.0001
3.06	0.4989	0.0011			
3.07	0.4989	0.0011			
3.08	0.4990	0.0010			
3.09	0.4990	0.0010			
3.10	0.4990	0.0010			

Distribution of t

Use this table to find the critical region (step 3 of the five-step model) for tests of significance with sample means when sample size (N) is small. First, choose an alpha level and a one- or two-tailed test. Then find degrees of freedom to find the t score that marks the beginning of the critical region.

Degrees of Freedom (df)	Level of Significance for One-Tailed Test					
	.10	.05	.025	.01	.005	.0005
	Level of Significance for Two-Tailed Test					
	.20	.10	.05	.02	.01	.001
1	3.078	6.314	12.706	31.821	63.657	636.619
2	1.886	2.920	4.303	6.965	9.925	31.598
3	1.638	2.353	3.182	4.541	5.841	12.941
4	1.533	2.132	2.776	3.747	4.604	8.610
5	1.476	2.015	2.571	3.365	4.032	6.859
6	1.440	1.943	2.447	3.143	3.707	5.959
7	1.415	1.895	2.365	2.998	3.499	5.405
8	1.397	1.860	2.306	2.896	3.355	5.041
9	1.383	1.833	2.262	2.821	3.250	4.781
10	1.372	1.812	2.228	2.764	3.169	4.587
11	1.363	1.796	2.201	2.718	3.106	4.437
12	1.356	1.782	2.179	2.681	3.055	4.318
13	1.350	1.771	2.160	2.650	3.012	4.221
14	1.345	1.761	2.145	2.624	2.977	4.140
15	1.341	1.753	2.131	2.602	2.947	4.073
16	1.337	1.746	2.120	2.583	2.921	4.015
17	1.333	1.740	2.110	2.567	2.898	3.965
18	1.330	1.734	2.101	2.552	2.878	3.922
19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850
21	1.323	1.721	2.080	2.518	2.831	3.819
22	1.321	1.717	2.074	2.508	2.819	3.792
23	1.319	1.714	2.069	2.500	2.807	3.767
24	1.318	1.711	2.064	2.492	2.797	3.745
25	1.316	1.708	2.060	2.485	2.787	3.725
26	1.315	1.706	2.056	2.479	2.779	3.707
27	1.314	1.703	2.052	2.473	2.771	3.690
28	1.313	1.701	2.048	2.467	2.763	3.674
29	1.311	1.699	2.045	2.462	2.756	3.659
30	1.310	1.697	2.042	2.457	2.750	3.646
40	1.303	1.684	2.021	2.423	2.704	3.551
60	1.296	1.671	2.000	2.390	2.660	3.460
120	1.289	1.658	1.980	2.358	2.617	3.373
∞	1.282	1.645	1.960	2.326	2.576	3.291

Distribution of Chi Square

Use this table to find the critical region (step 3 of the five-step model) for tests of significance with chi square. Choose an alpha level and find the degrees of freedom to find the chi square score that marks the beginning of the critical region.

df	.99	.98	.95	.90	.80	.70	.50	.30	.20	.10	.05	.02	.01	.001
1	.0¹157	.0⁴628	.00393	.0158	.0642	.148	.455	1.074	1.642	2.706	3.841	5.412	6.635	10.827
2	.0201	.0404	.103	.211	.446	.713	1.386	2.408	3.219	4.605	5.991	7.824	9.210	13.815
3	.115	.185	.352	.584	1.005	1.424	2.366	3.665	4.642	6.251	7.815	9.837	11.341	16.268
4	.297	.429	.711	1.064	1.649	2.195	3.357	4.878	5.989	7.779	9.488	11.668	13.277	18.465
5	.554	.752	1.145	1.610	2.343	3.000	4.351	6.064	7.289	9.236	11.070	13.388	15.086	20.517
6	.872	1.134	1.635	2.204	3.070	3.828	5.348	7.231	8.558	10.645	12.592	15.033	16.812	22.457
7	1.239	1.564	2.167	2.833	3.822	4.671	6.346	8.383	9.803	12.017	14.067	16.622	18.475	24.322
8	1.646	2.032	2.733	3.490	4.594	5.527	7.344	9.524	11.030	13.362	15.507	18.168	20.090	26.125
9	2.088	2.532	3.325	4.168	5.380	6.393	8.343	10.656	12.242	14.684	16.919	19.679	21.666	27.877
10	2.558	3.059	3.940	4.865	6.179	7.267	9.342	11.781	13.442	15.987	18.307	21.161	23.209	29.588
11	3.053	3.609	4.575	5.578	6.989	8.148	10.341	12.899	14.631	17.275	19.675	22.618	24.725	31.264
12	3.571	4.178	5.226	6.304	7.807	9.034	11.340	14.011	15.812	18.549	21.026	24.054	26.217	32.909
13	4.107	4.765	5.892	7.042	8.634	9.926	12.340	15.119	16.985	19.812	22.362	25.472	27.688	34.528
14	4.660	5.368	6.571	7.790	9.467	10.821	13.339	16.222	18.151	21.064	23.685	26.873	29.141	36.123
15	5.229	5.985	7.261	8.547	10.307	11.721	14.339	17.322	19.311	22.307	24.996	28.259	30.578	37.697
16	5.812	6.614	7.962	9.312	11.152	12.624	15.338	18.418	20.465	23.542	26.296	29.633	32.000	39.252
17	6.408	7.255	8.672	10.085	12.002	13.531	16.338	19.511	21.615	24.769	27.587	30.995	33.409	40.790
18	7.015	7.906	9.390	10.865	12.857	14.440	17.338	20.601	22.760	25.989	28.869	32.346	34.805	42.312
19	7.633	8.567	10.117	11.651	13.716	15.352	18.338	21.689	23.900	27.204	30.144	33.687	36.191	43.820
20	8.260	9.237	10.851	12.443	14.578	16.266	19.337	22.775	25.038	28.412	31.410	35.020	37.566	45.315
21	8.897	9.915	11.591	13.240	15.445	17.182	20.337	23.858	26.171	29.615	32.671	36.343	38.932	46.797
22	9.542	10.600	12.338	14.041	16.314	18.101	21.337	24.939	27.301	30.813	33.924	37.659	40.289	48.268
23	10.196	11.293	13.091	14.848	17.187	19.021	22.337	26.018	28.429	32.007	35.172	38.968	41.638	49.728
24	10.856	11.992	13.848	15.659	18.062	19.943	23.337	27.096	29.553	33.196	36.415	40.270	42.980	51.179
25	11.524	12.697	14.611	16.473	18.940	20.867	24.337	28.172	30.675	34.382	37.652	41.566	44.314	52.620
26	12.198	13.409	15.379	17.292	19.820	21.792	25.336	29.246	31.795	35.563	38.885	42.856	45.642	54.052
27	12.879	14.125	16.151	18.114	20.703	22.719	26.336	30.319	32.912	36.741	40.113	44.140	46.963	55.476
28	13.565	14.847	16.928	18.939	21.588	23.647	27.336	31.391	34.027	37.916	41.337	45.419	48.278	56.893
29	14.256	15.574	17.708	19.768	22.475	24.577	28.336	32.461	35.139	39.087	42.557	46.693	49.588	58.302
30	14.953	16.306	18.493	20.599	23.364	25.508	29.336	33.530	36.250	40.256	43.773	47.962	50.892	59.703

Distribution of F

Use this table to find the critical region (step 3 of the five-step model) for analysis of variance tests. Choose an alpha level of either 0.05 or 0.01 and then find the degrees of freedom to find the F ratio that marks the beginning of the critical region.

$p = .05$

n_2 \ n_1	1	2	3	4	5	6	8	12	24	∞
1	161.4	199.5	215.7	224.6	230.2	234.0	238.9	243.9	249.0	254.3
2	18.51	19.00	19.16	19.25	19.30	19.33	19.37	19.41	19.45	19.50
3	10.13	9.55	9.28	9.12	9.01	8.94	8.84	8.74	8.64	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.04	5.91	5.77	5.63
5	6.61	5.79	5.41	5.19	5.05	4.95	4.82	4.68	4.53	4.36
6	5.99	5.14	4.76	4.53	4.39	4.28	4.15	4.00	3.84	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.73	3.57	3.41	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.44	3.28	3.12	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.23	3.07	2.90	2.71
10	4.96	4.10	3.71	3.48	3.33	3.22	3.07	2.91	2.74	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	2.95	2.79	2.61	2.40
12	4.75	3.88	3.49	3.26	3.11	3.00	2.85	2.69	2.50	2.30
13	4.67	3.80	3.41	3.18	3.02	2.92	2.77	2.60	2.42	2.21
14	4.60	3.74	3.34	3.11	2.96	2.85	2.70	2.53	2.35	2.13
15	4.54	3.68	3.29	3.06	2.90	2.79	2.64	2.48	2.29	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.59	2.42	2.24	2.01
17	4.45	3.59	3.20	2.96	2.81	2.70	2.55	2.38	2.19	1.96
18	4.41	3.55	3.16	2.93	2.77	2.66	2.51	2.34	2.15	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.48	2.31	2.11	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.45	2.28	2.08	1.84
21	4.32	3.47	3.07	2.84	2.68	2.57	2.42	2.25	2.05	1.81
22	4.30	3.44	3.05	2.82	2.66	2.55	2.40	2.23	2.03	1.78
23	4.28	3.42	3.03	2.80	2.64	2.53	2.38	2.20	2.00	1.76
24	4.26	3.40	3.01	2.78	2.62	2.51	2.36	2.18	1.98	1.73
25	4.24	3.38	2.99	2.76	2.60	2.49	2.34	2.16	1.96	1.71
26	4.22	3.37	2.98	2.74	2.59	2.47	2.32	2.15	1.95	1.69
27	4.21	3.35	2.96	2.73	2.57	2.46	2.30	2.13	1.93	1.67
28	4.20	3.34	2.95	2.71	2.56	2.44	2.29	2.12	1.91	1.65
29	4.18	3.33	2.93	2.70	2.54	2.43	2.28	2.10	1.90	1.64
30	4.17	3.32	2.92	2.69	2.53	2.42	2.27	2.09	1.89	1.62
40	4.08	3.23	2.84	2.61	2.45	2.34	2.18	2.00	1.79	1.51
60	4.00	3.15	2.76	2.52	2.37	2.25	2.10	1.92	1.70	1.39
120	3.92	3.07	2.68	2.45	2.29	2.17	2.02	1.83	1.61	1.25
∞	3.84	2.99	2.60	2.37	2.21	2.09	1.94	1.75	1.52	1.00

Values of n_1 and n_2 represent the degrees of freedom associated with the between and within estimates of variance, respectively.

$p = .01$

n_1 / n_2	1	2	3	4	5	6	8	12	24	∞
1	4052	4999	5403	5625	5764	5859	5981	6106	6234	666
2	98.49	99.01	99.17	99.25	99.30	99.33	99.36	99.42	99.46	99.50
3	34.12	30.81	29.46	28.71	28.24	27.91	27.49	27.05	26.60	26.12
4	21.20	18.00	16.69	15.98	15.52	15.21	14.80	14.37	13.93	13.46
5	16.26	13.27	12.06	11.39	10.97	10.67	10.27	9.89	9.47	9.02
6	13.74	10.92	9.78	9.15	8.75	8.47	8.10	7.72	7.31	6.88
7	12.25	9.55	8.45	7.85	7.46	7.19	6.84	6.47	6.07	5.65
8	11.26	8.65	7.59	7.01	6.63	6.37	6.03	5.67	5.28	4.86
9	10.56	8.02	6.99	6.42	6.06	5.80	5.47	5.11	4.73	4.31
10	10.04	7.56	6.55	5.99	5.64	5.39	5.06	4.71	4.33	3.91
11	9.65	7.20	6.22	5.67	5.32	5.07	4.74	4.40	4.02	3.60
12	9.33	6.93	5.95	5.41	5.06	4.82	4.50	4.16	3.78	3.36
13	9.07	6.70	5.74	5.20	4.86	4.62	4.30	3.96	3.59	3.16
14	8.86	6.51	5.56	5.03	4.69	4.46	4.14	3.80	3.43	3.00
15	8.68	6.36	5.42	4.89	4.56	4.32	4.00	3.67	3.29	2.87
16	8.53	6.23	5.29	4.77	4.44	4.20	3.89	3.55	3.18	2.75
17	8.40	6.11	5.18	4.67	4.34	4.10	3.79	3.45	3.08	2.65
18	8.28	6.01	5.09	4.58	4.25	4.01	3.71	3.37	3.00	2.57
19	8.18	5.93	5.01	4.50	4.17	3.94	3.63	3.30	2.92	2.49
20	8.10	5.85	4.94	4.43	4.10	3.87	3.56	3.23	2.86	2.42
21	8.02	5.78	4.87	4.37	4.04	3.81	3.51	3.17	2.80	2.36
22	7.94	5.72	4.82	4.31	3.99	3.76	3.45	3.12	2.75	2.31
23	7.88	5.66	4.76	4.26	3.94	3.71	3.41	3.07	2.70	2.26
24	7.82	5.61	4.72	4.22	3.90	3.67	3.36	3.03	2.66	2.21
25	7.77	5.57	4.68	4.18	3.86	3.63	3.32	2.99	2.62	2.17
26	7.72	5.53	4.64	4.14	3.82	3.59	3.29	2.96	2.58	2.13
27	7.68	5.49	4.60	4.11	3.78	3.56	3.26	2.93	2.55	2.10
28	7.64	5.45	4.57	4.07	3.75	3.53	3.23	2.90	2.52	2.06
29	7.60	5.42	4.54	4.04	3.73	3.50	3.20	2.87	2.49	2.03
30	7.56	5.39	4.51	4.02	3.70	3.47	3.17	2.84	2.47	2.01
40	7.31	5.18	4.31	3.83	3.51	3.29	2.99	2.66	2.29	1.80
60	7.08	4.98	4.13	3.65	3.34	3.12	2.82	2.50	2.12	1.60
120	6.85	4.79	3.95	3.48	3.17	2.96	2.66	2.34	1.95	1.38
∞	6.64	4.60	3.78	3.32	3.02	2.80	2.51	2.18	1.79	1.00

Values of n_1 and n_2 represent the degrees of freedom associated with the between and within estimates of variance, respectively.