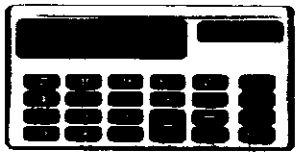
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

IOP2601 (482775) October/November 2012
Oktober/November 2012

ORGANISATIONAL RESEARCH METHODOLOGY
ORGANISASIE NAVORSINGSMETODOLOGIE

Duration 2 Hours | 70 Marks
Tydsduur 2 Uur | 70 Punte

EXAMINERS / EKSAMINATORE
FIRST / EERSTE MS/ME NN BEKWA PROF SC VAN DER WESTHUIZEN
SECOND / TWEEDE PROF FVN CILLIERS

Use of a non-programmable pocket calculator is permissible
Gebruik van 'n nie-programmeerbare sakrekenaar is toelaatbaar

Closed book examination
Toeboek eksamen

This paper consists of 27 pages plus instructions for the completion of a mark-reading sheet
Hierdie vraestel beslaan 27 bladsye plus instruksies vir die voltooiing van 'n merkleesblad.

ENGLISH QUESTIONS START ON PAGE 12
AFRIKAANSE VRAE BEGIN OP BLADSY 20.

ANSWER ALL THE QUESTIONS
BEANTWOORD AL DIE VRAE.

LIST OF FORMULAS / LYS VAN FORMULES

$$midpoint\ of\ class\ interval = RLL + \frac{(RUL - RLL)}{2}$$

$$middelpunt\ van\ klasinterval = WOG + \frac{(WBG - WOG)}{2}$$

$$percentile\ rank = \%below + \frac{score - RLL}{class\ int.width}\ (interval\ \%)$$

$$persentielrang = \%onder + \frac{telling - WOG}{klasintervalwydte}\ (interval\ \%)$$

$$score\ of\ p = RLL + \frac{PR - \%below}{interval\ \%}\ (interval\ width)$$

$$telling\ van\ p = WOG + \frac{PR - \%onder}{interval\ \%}\ (intervalwydte)$$

$Mo = Most\ frequently\ occurring\ score$

$$Median\ location\ = \frac{N+1}{2}$$

$$\overline{X} = \frac{\Sigma X}{N} \qquad \overline{Y} = \frac{\Sigma Y}{N}$$

$Range = Highest\ score\ minus\ lowest\ score$

$$s_x^2 = \frac{\Sigma X^2 - \frac{(\Sigma X)^2}{N}}{N-1} \qquad s_x = \sqrt{s_x^2}$$

$$s_y^2 = \frac{\Sigma Y^2 - \frac{(\Sigma Y)^2}{N}}{N-1} \qquad s_y = \sqrt{s_y^2}$$

$$r = \frac{N\Sigma XY - \Sigma X\Sigma Y}{\sqrt{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2]}}$$

$$b = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{N\Sigma X^2 - (\Sigma X)^2} \qquad a = \overline{Y} - b\overline{X}$$

$$\hat{Y} = bX + a$$

$$z = \frac{X - \mu}{\sigma}$$

$$t = \frac{\overline{D} - 0}{\frac{S_D}{\sqrt{N}}} \qquad df = N - 1$$

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}} \qquad df = N_1 + N_2 - 2$$

$$S_p^2 = \frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2} \qquad t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{s_p^2}{N_1} + \frac{s_p^2}{N_2}}}$$

$$SS_{total} = \Sigma X^2 - \frac{(\Sigma X)^2}{N} \qquad df_{total} = N - 1$$

$$SS_{group} = n\Sigma(\overline{X}_J - \overline{X}\,..)^2 \qquad df_{group} = k - 1$$

$$SS_{error} = SS_{total} - SS_{group} \qquad df_{error} = k(n - 1)$$

$$MS_{group} = \frac{SS_{group}}{df_{group}} \qquad MS_{error} = \frac{SS_{error}}{df_{error}}$$

$$F = \frac{MS_{group}}{MS_{error}}$$

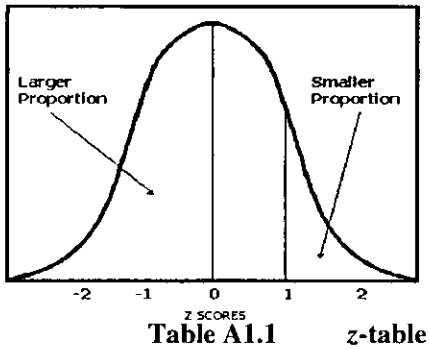
$$\chi^2 = \Sigma \frac{(O-E)^2}{E}$$

$$E_{ij} = \frac{R_i C_j}{N}$$

$$df = k - 1$$

$$df = (R - 1)(C - 1)$$

LIST OF TABLES / LYS VAN TABELLE



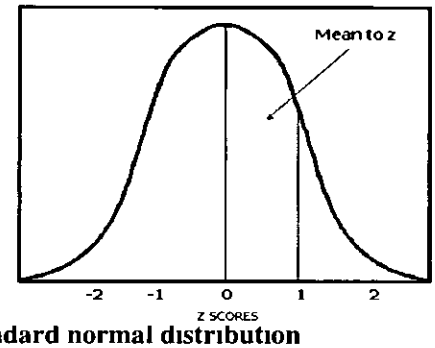


Table A1.1 *z*-table – the standard normal distribution

z	Smaller *p*	Larger *p*	Mean to *z*	z	Smaller *p*	Larger *p*	Mean to *z*	z	Smaller *p*	Larger *p*	Mean to *z*
0	0 50000	0 50000	0 00000	0 65	0 25785	0 74215	0 24215	1.3	0 09680	0 90320	0 40320
0 01	0 49601	0 50399	0 00399	0 66	0 25463	0 74537	0 24537	1.31	0 09510	0 90490	0 40490
0 02	0 49202	0 50798	0 00798	0 67	0 25143	0 74857	0 24857	1.32	0 09342	0 90658	0 40658
0.03	0 48803	0 51197	0 01197	0 68	0 24825	0 75175	0 25175	1.33	0 09176	0 90824	0 40824
0 04	0 48405	0 51595	0 01595	0 69	0 24510	0 75490	0 25490	1.34	0 09012	0 90988	0 40988
0 05	0 48006	0 51994	0 01994	0 7	0 24196	0 75804	0 25804	1.35	0 08851	0 91149	0 41149
0 06	0 47608	0 52392	0 02392	0 71	0 23885	0 76115	0 26115	1.36	0 08692	0 91308	0 41308
0 07	0 47210	0 52790	0 02790	0 72	0 23576	0 76424	0 26424	1.37	0 08534	0 91466	0 41466
0 08	0 46812	0 53188	0 03188	0 73	0 23270	0 76730	0 26730	1.38	0 08379	0 91621	0 41621
0 09	0 46414	0 53586	0 03586	0 74	0 22965	0 77035	0 27035	1.39	0 08226	0 91774	0 41774
0 1	0 46017	0 53983	0 03983	0 75	0 22663	0 77337	0 27337	1 4	0 08076	0 91924	0 41924
0 11	0 45620	0 54380	0 04380	0 76	0 22363	0 77637	0 27637	1 41	0 07927	0 92073	0 42073
0 12	0 45224	0 54776	0 04776	0 77	0 22065	0 77935	0 27935	1.42	0 07780	0 92220	0 42220
0 13	0 44828	0 55172	0 05172	0 78	0 21770	0 78230	0 28230	1 43	0 07636	0 92364	0 42364
0 14	0 44433	0 55567	0 05567	0 79	0 21476	0 78524	0 28524	1 44	0 07493	0 92507	0 42507
0 15	0 44038	0 55962	0 05962	0 8	0 21186	0 78814	0 28814	1.45	0 07353	0 92647	0 42647
0 16	0 43644	0 56356	0 06356	0 81	0 20897	0 79103	0 29103	1 46	0 07215	0 92785	0 42785
0 17	0 43251	0 56749	0 06749	0 82	0 20611	0 79289	0 29289	1 47	0 07078	0 92922	0 42922
0 18	0 42858	0 57142	0 07142	0 83	0 20327	0 79673	0 29673	1.48	0 06944	0 93056	0 43056
0 19	0 42465	0 57535	0 07535	0 84	0 20045	0 79955	0 29955	1.49	0 06811	0 93189	0 43189
0 2	0 42074	0 57926	0 07926	0 85	0 19766	0 80234	0 30234	1.5	0 06681	0 93319	0 43319
0 21	0 41683	0 58317	0 08317	0 86	0 19489	0 80511	0 30511	1.51	0 06552	0 93448	0 43448
0 22	0 41294	0 58706	0 08706	0 87	0 19215	0 80785	0 30785	1.52	0 06426	0 93574	0 43574
0 23	0 40905	0 59095	0 09095	0 88	0 18943	0 81057	0 31057	1.53	0 06301	0 93699	0 43699
0 24	0 40517	0 59483	0 09483	0 89	0 18673	0 81327	0 31327	1.54	0 06178	0 93822	0 43822
0 25	0 40129	0 59871	0 09871	0 9	0 18406	0 81594	0 31594	1.55	0 06057	0 93943	0 43943
0 26	0 39743	0 60257	0 10257	0 91	0 18141	0 81859	0 31859	1.56	0 05938	0 94062	0 44062
0 27	0 39358	0 60642	0 10642	0 92	0 17879	0 82121	0 32121	1.57	0 05821	0 94179	0 44179
0 28	0 38974	0 61026	0 11026	0 93	0 17619	0 82381	0 32381	1.58	0 05705	0 94295	0 44295
0 29	0 38591	0 61409	0 11409	0 94	0 17361	0 82639	0 32639	1.59	0 55920	0 94408	0 44408
0.3	0 38209	0 61791	0 11791	0 95	0 17106	0 82894	0 32894	1 6	0 05480	0 94520	0 44520
0.31	0 37828	0 62172	0 12172	0 96	0 16853	0 83147	0 33147	1 61	0 05370	0 94630	0 44630
0.32	0 37448	0 62552	0 12552	0 97	0 16602	0 83398	0 33398	1 62	0 05262	0 94738	0 44738
0.33	0 37070	0 62930	0 12930	0 98	0 16354	0 83646	0 33646	1 63	0 05155	0 94845	0 44845
0.34	0 36693	0 63307	0 13307	0 99	0 16109	0 83891	0 33891	1 64	0 05050	0 94950	0 44950
0.35	0 36317	0 63683	0 13683	1	0 15866	0 84134	0 34134	1 65	0 04947	0 95053	0 45053
0.36	0 35942	0 64058	0 14058	1 01	0 15625	0 84375	0 34375	1 66	0 04846	0 95154	0 45154
0.37	0 35569	0 64431	0 14431	1 02	0 15386	0 84614	0 34614	1 67	0 04746	0 95254	0 45254
0.38	0 35197	0 64803	0 14803	1 03	0 15151	0 84849	0 34849	1 68	0 04648	0 95352	0 45352
0.39	0 34827	0 65173	0 15173	1 04	0 14917	0 85083	0 35083	1 69	0 04551	0 95449	0 45449
0 4	0 34458	0 65542	0 15542	1 05	0 14686	0 85314	0 35314	1 7	0 04457	0 95543	0 45543
0 41	0 34090	0 65910	0 15910	1 06	0 14457	0 85543	0 35543	1 71	0 04363	0 95637	0 45637
0 42	0 33724	0 66276	0 16276	1 07	0 14231	0 85769	0 35769	1 72	0 04272	0 95728	0 45728
0 43	0 33360	0 66640	0 16640	1 08	0 14007	0 85993	0 35993	1 73	0 04182	0 95818	0 45818
0 44	0 32991	0 67003	0 17003	1 09	0 13786	0 86214	0 36214	1 74	0 04093	0 95907	0 45907
0 45	0 32636	0 67364	0 17364	1 1	0 13567	0 86433	0 36433	1 75	0 04006	0 95994	0 45994
0 46	0 32276	0 67724	0 17724	1 11	0 13350	0 86650	0 36650	1 76	0 03920	0 96080	0 46080
0 47	0 31918	0 68082	0 18082	1 12	0 13136	0 86864	0 36864	1 77	0 03836	0 96164	0 46164
0 48	0 31561	0 68439	0 18439	1 13	0 12924	0 87076	0 37076	1 78	0 03754	0 96246	0 46246
0 49	0 31207	0 68793	0 18793	1 14	0 12714	0 87286	0 37286	1 79	0 03673	0 96327	0 46327
0.5	0 30854	0 69146	0 19146	1 15	0 12507	0 87493	0 37493	1 8	0 03593	0 96407	0 46407
0.51	0 30503	0 69497	0 19497	1 16	0 12302	0 87698	0 37698	1 81	0 03515	0 96485	0 46485
0.52	0 30153	0 69847	0 19847	1 17	0 12100	0 87900	0 37900	1 82	0 03438	0 96562	0 46562
0.53	0 29806	0 70194	0 20194	1 18	0 11900	0 88100	0 38100	1 83	0 03362	0 96638	0 46638
0.54	0 29460	0 70540	0 20540	1 19	0 11702	0 88289	0 38289	1 84	0 03288	0 96712	0 46712
0.55	0 29116	0 70884	0 20884	1 2	0 11507	0 88493	0 38493	1 85	0 03216	0 96784	0 46784
0.56	0 28774	0 71226	0 21226	1 21	0 11314	0 88686	0 38686	1 86	0 03144	0 96856	0 46856
0.57	0 28434	0 71566	0 21566	1 22	0 11123	0 88877	0 38877	1.87	0 03074	0 96926	0 46926
0.58	0 28096	0 71904	0 21904	1 23	0 10935	0 89065	0 39065	1 88	0 03005	0 96995	0 46995
0.59	0 27760	0 72240	0 22240	1 24	0 10416	0 89251	0 39251	1 89	0 02938	0 97062	0 47062
0 6	0 27425	0 72575	0 22575	1 25	0 10565	0 89435	0 39435	1 9	0 02872	0 97128	0 47128
0 61	0 27093	0 72907	0 22907	1 26	0 10383	0 89617	0 39617	1 91	0 02807	0 97193	0 47193
0 62	0 26763	0 73237	0 23237	1 27	0 10204	0 89796	0 39796	1 92	0 02743	0 97257	0 47257
0 63	0 26435	0 73565	0 23565	1 28	0 10027	0 89973	0 39973	1 93	0 02680	0 97320	0 47320
0 64	0 26109	0 73891	0 23891	1 29	0 09853	0 90147	0 40147	1 94	0 02619	0 97381	0 47381

Table A1.1 z-table – the standard normal distribution – *continued*

Z	Smaller *p*	Larger *p*	Mean to z
1.95	0 02559	0 97441	0 47441
1 96	0 02500	0 97500	0 47500
1 97	0 02442	0 97558	0 47558
1.98	0 02385	0 97615	0 47615
1 99	0 02330	0 97670	0 47670
2	0 02275	0 97725	0 47725
2.01	0 02222	0 97778	0 47778
2 02	0 02169	0 97831	0 47831
2 03	0 02118	0 97882	0 47882
2.04	0 02068	0 97932	0 47932
2.05	0 02018	0 97982	0 47982
2.06	0 01970	0 98030	0 48030
2.07	0 01923	0 98077	0 48077
2.08	0 01876	0 98124	0 48124
2 09	0 01831	0 98169	0 48169
2 1	0 01786	0 98214	0 48214
2 11	0 01743	0 98251	0 48251
2 12	0 01700	0 98300	0 48300
2 13	0 06590	0 98341	0 48341
2 14	0 01618	0 98382	0 48382
2 15	0 01780	0 98422	0 48422
2 16	0 01539	0 98461	0 48461
2 17	0 01500	0 98500	0 48500
2 18	0 01463	0 98537	0 48537
2 19	0 01426	0 98574	0 48574
2 2	0 01390	0 98610	0 48610
2.21	0 01355	0 98645	0 48645
2.22	0 01321	0 98679	0 48679
2.23	0 01287	0 98713	0 48713
2.24	0 01255	0 98745	0 48745
2 25	0 01222	0 98778	0 48778
2.26	0 01191	0 98809	0 48809
2.27	0 01160	0 98840	0 48840
2.28	0 01130	0 98870	0 48870
2.29	0 01101	0 98899	0 48899
2.3	0 01072	0 98928	0 48928
2.31	0 01044	0 98956	0 48956
2.32	0 01017	0 98983	0 48983
2.33	0 00990	0 99010	0 49010
2.34	0 00964	0 99036	0 49036
2.35	0 00939	0 99061	0 49061
2.36	0 00914	0 99086	0 49086
2.37	0 00889	0 99111	0 49111
2.38	0 00866	0 99134	0 49134
2.39	0 00842	0 99158	0 49158
2 4	0 00820	0 99180	0 49180
2.41	0 00798	0 99202	0 49202
2.42	0 00776	0 99224	0 49224
2 43	0 00755	0 99245	0 49245
2 44	0 00734	0 99266	0 49266
2 45	0 00714	0 99286	0 49286
2.46	0 00695	0 99305	0 49305
2 47	0 00676	0 99324	0 49324
2.48	0 00657	0 99343	0 49343
2 49	0 00639	0 99361	0 49361
2.5	0 00621	0 99379	0 49379
2.51	0 00604	0 99396	0 49396
2.52	0 00587	0 99413	0 49413
2.53	0 00570	0 99430	0 49430
2.54	0 00554	0 99446	0 49446
2.55	0 00539	0 99461	0 49461
2.56	0 00523	0 99477	0 49477
2.57	0 00508	0 99492	0 49492
2.58	0 00494	0 99506	0 49506
2.59	0 00480	0 99520	0 49520
2.6	0 00466	0 99534	0 49534
2.61	0 00453	0 99547	0 49547
2 62	0 00440	0 99560	0 49560
2.63	0 00427	0 99573	0 49573
2 64	0 00415	0 99585	0 49585
2 65	0 00402	0 99598	0 49598
2 66	0 00391	0 99609	0 49609
2 67	0 00379	0 99621	0 49621
2 68	0 00368	0 99632	0 49632
2 69	0 00357	0 99643	0 49643
2 7	0 00347	0 99653	0 49653
2 71	0 00336	0 99664	0 49664
2 72	0 00324	0 99674	0 49674
2 73	0 00317	0 99683	0 49683
2 74	0 00307	0 99693	0 49693
2 75	0 00298	0 99702	0 49702
2 76	0 00289	0 99711	0 49711
2 77	0 00280	0 99720	0 49720
2 78	0 00272	0 99728	0 49728
2 79	0 00264	0 99736	0 49736
2 8	0 00256	0 99744	0 49744
2 81	0 00248	0 99752	0 49752
2 82	0 00240	0 99760	0 49760
2 83	0 00233	0 99767	0 49767
2 84	0 00226	0 99774	0 49774
2 85	0 00219	0 99781	0 49781
2 86	0 00212	0 99788	0 49788
2 87	0 00205	0 99795	0 49795
2 88	0 00199	0 99801	0 49801
2 89	0 00193	0 99807	0 49807
2 9	0 00187	0 99813	0 49813
2 91	0 00181	0 99819	0 49819
2 92	0 00175	0 99825	0 49825
2 93	0 00169	0 99831	0 49831
2 94	0 00164	0 99836	0 49836
2 95	0 00159	0 99841	0 49841
2 96	0 00154	0 99846	0 49846
2 97	0 00149	0 99851	0 49851
2 98	0 00144	0 99856	0 49856
2 99	0 00139	0 99861	0 49861
3	0 00135	0 99865	0 49865
3 01	0 00131	0 99869	0 49869
3 02	0 00126	0 99874	0 49874
3 03	0 00122	0 99878	0 49878
3 04	0 00118	0 99882	0 49882
3 05	0 00114	0 99886	0 49886
3 06	0 00111	0 99889	0 49889
3 07	0 00107	0 99893	0 49893
3 08	0 00104	0 99896	0 49896
3 09	0 00100	0 99900	0 49900
3 1	0 00097	0 99903	0 49903
3 11	0 00094	0 99906	0 49906
3 12	0 00090	0 99910	0 49910
3 13	0 00087	0 99913	0 49913
3 14	0 00084	0 99916	0 49916
3 15	0 00082	0 99918	0 49918
3 16	0 00079	0 99921	0 49921
3 17	0 00076	0 99924	0 49924
3 18	0 00074	0 99926	0 49926
3 19	0 00071	0 99929	0 49929
3 2	0 00069	0 99931	0 49931
3 21	0 00066	0 99934	0 49934
3 22	0 00064	0 99936	0 49936
3 23	0 00062	0 99938	0 49938
3 24	0 00060	0 99940	0 49940
3.3	0 00048	0 99952	0 49952
3 4	0 00034	0 99966	0 49966
3.5	0 00023	0 99977	0 49977
3 6	0 00016	0 99984	0 49984
3 7	0 00011	0 99989	0 49989
3 8	0 00007	0 99993	0 49993
3 9	0 00005	0 99995	0 49995
4	0 00003	0 99997	0 49997
4 1	0 00002	0 99998	0 49998
4.2	0 00001	0 99999	0 49999

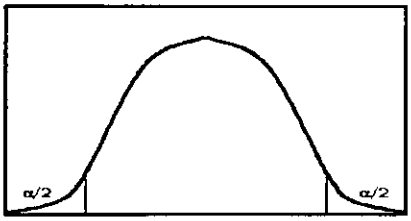
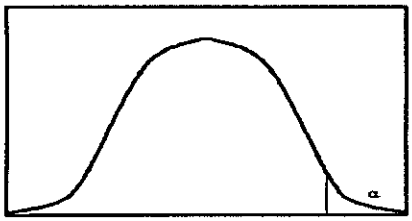


Table A1.2: *t*-table – values of the *t* distribution for varying degrees of freedom (*df*) and α

α for two-tailed test	0 001	0 01	0.02	0 05	0 1	0 2	0 3
α for one-tailed test	0 0005	0 005	0 01	0.025	0 05	0 1	0.15
1	636 5776	63 6559	31 8210	12 7062	6 3137	3 0777	1 9626
2	31 5998	9 9250	6 9645	4 3027	2 9200	1 8856	1 3862
3	12 9244	5 8408	4 5407	3 1824	2 3534	1 6377	1 2498
4	8 6101	4 6041	3 7469	2 7765	2 1318	1 5332	1 1896
5	6 8685	4 0321	3 3649	2 5706	2 0150	1 4759	1 1558
6	5 9587	3 7074	3 1427	2 4469	1 9432	1 4398	1 1342
7	5 4081	3 4995	2 9979	2 3646	1 8946	1 4149	1 1192
8	5 0414	3 3554	2 8965	2 3060	1 8595	1 3968	1 1081
9	4 7809	3 2498	2 8214	2 2622	1 8331	1 3830	1 0997
10	4 5868	3 1693	2 7638	2 2281	1 8125	1 3722	1 0931
11	4 4369	3 1058	2 7181	2 2010	1 7959	1 3634	1 0877
12	4 3178	3 0545	2 6810	2 1788	1 7823	1 3562	1 0832
13	4 2209	3 0123	2 6503	2 1604	1 7709	1 3502	1 0795
14	4 1403	2 9768	2 6245	2 1448	1 7613	1 3450	1 0763
15	4 0728	2 9467	2 6025	2 1315	1 7531	1 3406	1 0735
16	4 0149	2 9208	2 5835	2 1199	1 7459	1 3368	1 0711
17	3 9651	2 8982	2 5669	2 1098	1 7396	1 3334	1 0690
18	3 9217	2 8784	2 5524	2 1009	1 7341	1 3304	1 0672
19	3 8833	2 8609	2 5395	2 0930	1 7291	1 3277	1 0655
20	3 8496	2 8453	2 5280	2 0860	1 7247	1 3253	1 0640
21	3 8193	2 8314	2 5176	2 0796	1 7207	1 3232	1 0627
22	3 7922	2 8188	2 5083	2 0739	1 7171	1 3212	1 0614
23	3 7676	2 8073	2 4999	2 0687	1 7139	1 3195	1 0603
24	3 7454	2 7970	2 4922	2 0639	1 7109	1 3178	1 0593
25	3 7251	2 7874	2 4851	2 0595	1 7081	1 3163	1 0584
26	3 7067	2 7787	2 4786	2 0555	1 7056	1 3150	1 0575
27	3 6895	2 7707	2 4727	2 0518	1 7033	1 3137	1 0567
28	3 6739	2 7633	2 4671	2 0484	1 7011	1 3125	1 0560
29	3 6595	2 7564	2 4620	2 0452	1 6991	1 3114	1 0553
30	3 6460	2 7500	2 4573	2 0423	1 6973	1 3104	1 0547
31	3 6335	2 7440	2 4528	2 0395	1 6955	1 3095	1 0541
32	3 6218	2 7385	2 4487	2 0369	1 6939	1 3086	1 0535
33	3 6109	2 7333	2 4448	2 0345	1 6924	1 3077	1 0530
34	3 6007	2 7284	2 4411	2 0322	1 6909	1 3070	1 0525
35	3 5911	2 7238	2 4377	2 0301	1 6896	1 3062	1 0520
36	3 5821	2 7195	2 4345	2 0281	1 6883	1 3055	1 0516
37	3 5737	2 7154	2 4314	2 0262	1 6871	1 3049	1 0512
38	3 5657	2 7116	2 4286	2 0244	1 6860	1 3042	1 0508
39	3 5581	2 7079	2 4258	2 0227	1 6849	1 3036	1 0504
40	3 5510	2 7045	2 4233	2 0211	1 6839	1 3031	1 0500
45	3 5203	2 6896	2 4121	2 0141	1 6794	1 3007	1 0485
50	3 4960	2 6778	2 4033	2 0086	1 6759	1 2987	1 0473
55	3 4765	2 6682	2 3961	2 0040	1 6730	1 2971	1 0463
60	3 4602	2 6603	2 3901	2 0003	1 6706	1 2958	1 0455
100	3 3905	2 6259	2 3642	1 9840	1 6602	1 2901	1 0418
1000	3 3002	2 5807	2 3301	1 9623	1 6464	1 2824	1 0370



DEGREES OF FREEDOM (df)

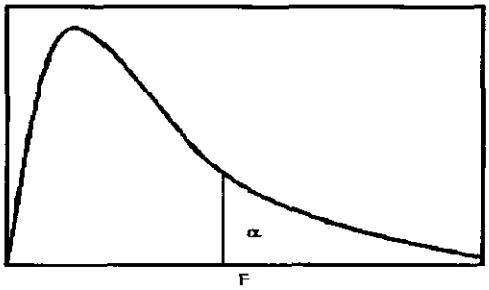


Table A1.4: Table of the F-distribution: $\alpha = 0.05$

Numerator degrees of freedom (df)

Denominator degrees of freedom (df)	1	2	3	4	5	6	7	8	9	10	15	20	25	30	40	50	100
1	161 45	199 50	215 71	224 58	230 16	233 99	236 77	238 88	240 54	241 88	245 95	248 01	249 26	250 10	251 14	251 77	253 04
2	18 51	19 00	19 16	19 25	19 30	19 33	19 35	19 37	19 38	19 40	19 43	19 45	19 46	19 46	19 47	19 48	19 49
3	10 13	9 55	9 28	9 12	9 01	8 94	8 89	8 85	8 81	8 79	8 70	8 66	8 63	8 62	8 59	8 58	8 55
4	7 71	6 94	6 59	6 39	6 26	6 16	6 09	6 04	6 00	5 96	5 86	5 80	5 77	5 75	5 72	5 70	5 66
5	6 61	5 79	5 41	5 19	5 05	4 95	4 88	4 82	4 77	4 74	4 62	4 56	4 52	4 50	4 46	4 44	4 41
6	5 99	5 14	4 76	4 53	4 39	4 28	4 21	4 15	4 10	4 06	3 94	3 87	3 83	3 81	3 77	3 75	3 71
7	5 59	4 74	4 35	4 12	3 97	3 87	3 79	3 73	3 68	3 64	3 51	3 44	3 40	3 38	3 34	3 32	3 27
8	5 32	4 46	4 07	3 84	3 69	3 58	3 50	3 44	3 39	3 35	3 22	3 15	3 11	3 08	3 04	3 02	2 97
9	5 12	4 26	3 86	3 63	3 48	3 37	3 29	3 23	3 18	3 14	3 01	2 94	2 89	2 86	2 83	2 80	2 76
10	4 96	4 10	3 71	3 48	3 33	3 22	3 14	3 07	3 02	2 98	2 85	2 77	2 73	2 70	2 66	2 64	2 59
11	4 84	3 98	3 59	3 36	3 20	3 09	3 01	2 95	2 90	2 85	2 72	2 65	2 60	2 57	2 53	2 51	2 46
12	4 75	3 89	3 49	3 26	3 11	3 00	2 91	2 85	2 80	2 75	2 62	2 54	2 50	2 47	2 43	2 40	2 35
13	4 67	3 81	3 41	3 18	3 03	2 92	2 83	2 77	2 71	2 67	2 53	2 46	2 41	2 38	2 34	2 31	2 26
14	4 60	3 74	3 34	3 11	2 96	2 85	2 76	2 70	2 65	2 60	2 46	2 39	2 34	2 31	2 27	2 24	2 19
15	4 54	3 68	3 29	3 06	2 90	2 79	2 71	2 64	2 59	2 54	2 40	2 33	2 28	2 25	2 20	2 18	2 12
16	4 49	3 63	3 24	3 01	2 85	2 74	2 66	2 59	2 54	2 49	2 35	2 28	2 23	2 19	2 15	2 12	2 07
17	4 45	3 59	3 20	2 96	2 81	2 70	2 61	2 55	2 49	2 45	2 31	2 23	2 18	2 15	2 10	2 08	2 02
18	4 41	3 55	3 16	2 93	2 77	2 66	2 58	2 51	2 46	2 41	2 27	2 19	2 14	2 11	2 06	2 04	1 98
19	4 38	3 52	3 13	2 90	2 74	2 63	2 54	2 48	2 42	2 38	2 23	2 16	2 11	2 07	2 03	2 00	1 94
20	4 35	3 49	3 10	2 87	2 71	2 60	2 51	2 45	2 39	2 35	2 20	2 12	2 07	2 04	1 99	1 97	1 91
21	4 32	3 47	3 07	2 84	2 68	2 57	2 49	2 42	2 37	2 32	2 18	2 10	2 05	2 01	1 96	1 94	1 88
22	4 30	3 44	3 05	2 82	2 66	2 55	2 46	2 40	2 34	2 30	2 15	2 07	2 02	1 98	1 94	1 91	1 85
23	4 28	3 42	3 03	2 80	2 64	2 53	2 44	2 37	2 32	2 27	2 13	2 05	2 00	1 96	1 91	1 88	1 82
24	4 26	3 40	3 01	2 78	2 62	2 51	2 42	2 36	2 30	2 25	2 11	2 03	1 97	1 94	1 89	1 86	1 80
25	4 24	3 39	2 99	2 76	2 60	2 49	2 40	2 34	2 28	2 24	2 09	2 01	1 96	1 92	1 87	1 84	1 78
26	4 23	3 37	2 98	2 74	2 59	2 47	2 39	2 32	2 27	2 22	2 07	1 99	1 94	1 90	1 85	1 82	1 76
27	4 21	3 35	2 96	2 73	2 57	2 46	2 37	2 31	2 25	2 20	2 06	1 97	1 92	1 88	1 84	1 81	1 74
28	4 20	3 34	2 95	2 71	2 56	2 45	2 36	2 29	2 24	2 19	2 04	1 96	1 91	1 87	1 82	1 79	1 73
29	4 18	3 33	2 93	2 70	2 55	2 43	2 35	2 28	2 22	2 18	2 03	1 94	1 89	1 85	1 81	1 77	1 71
30	4 17	3 32	2 92	2 69	2 53	2 42	2 33	2 27	2 21	2 16	2 01	1 93	1 88	1 84	1 79	1 76	1 70
35	4 12	3 27	2 87	2 64	2 49	2 37	2 29	2 22	2 16	2 11	1 96	1 88	1 82	1 79	1 74	1 70	1 63
40	4 08	3 23	2 84	2 61	2 45	2 34	2 25	2 18	2 12	2 08	1 92	1 84	1 78	1 74	1 69	1 66	1 59
45	4 06	3 20	2 81	2 58	2 42	2 31	2 22	2 15	2 10	2 05	1 89	1 81	1 75	1 71	1 66	1 63	1 55
50	4 03	3 18	2 79	2 56	2 40	2 29	2 20	2 13	2 07	2 03	1 87	1 78	1 73	1 69	1 63	1 60	1 52
60	4 00	3 15	2 76	2 53	2 37	2 25	2 17	2 10	2 04	1 99	1 84	1 75	1 69	1 65	1 59	1 56	1 48
70	3 98	3 13	2 74	2 50	2 35	2 23	2 14	2 07	2 02	1 97	1 81	1 72	1 66	1 62	1 57	1 53	1 45
80	3 96	3 11	2 72	2 49	2 33	2 21	2 13	2 06	2 00	1 95	1 79	1 70	1 64	1 60	1 54	1 51	1 43
90	3 95	3 10	2 71	2 47	2 32	2 20	2 11	2 04	1 99	1 94	1 78	1 69	1 63	1 59	1 53	1 49	1 41
100	3 94	3 09	2 70	2 46	2 31	2 19	2 10	2 03	1 97	1 93	1 77	1 68	1 62	1 57	1 52	1 47	1 39
200	3 89	3 04	2 65	2 42	2 26	2 14	2 06	1 98	1 93	1 88	1 72	1 62	1 56	1 52	1 46	1 41	1 32
300	3 87	3 03	2 63	2 40	2 24	2 13	2 04	1 97	1 91	1 86	1 70	1 61	1 54	1 50	1 43	1 39	1 30
400	3 86	3 02	2 63	2 39	2 24	2 12	2 03	1 96	1 90	1 85	1 69	1 60	1 53	1 49	1 42	1 38	1 28
500	3 86	3 01	2 62	2 39	2 23	2 12	2 03	1 96	1 90	1 85	1 69	1 59	1 53	1 48	1 42	1 38	1 28
1000	3 85	3 00	2 61	2 38	2 22	2 11	2 02	1 95	1 89	1 84	1 68	1 58	1 52	1 47	1 41	1 36	1 26
10000	3 84	3 00	2 61	2 37	2 21	2 10	2 01	1 94	1 88	1 83	1 67	1 57	1 51	1 46	1 40	1 35	1 25

Table A1.5 Table of the F-distribution: $\alpha = 0.01$

Numerator degrees of freedom (df)

Denominator degrees of freedom (df)	1	2	3	4	5	6	7	8	9	10	15	20	25	30	40	50	100
1	4052 18	4999 50	5403 35	5624 58	5763 65	5858 99	5928 36	5981 07	6022 47	6055 85	6157 29	6208 73	6239 86	6260 65	6286 78	6286 40	6333 90
2	98 50	99 00	99 17	99 25	99 30	99 33	99 36	99 37	99 39	99 40	99 43	99 45	99 46	99 47	99 47	99 48	99 49
3	34 12	30 82	29 46	28 71	28 24	27 91	27 67	27 49	27 35	27 23	26 87	26 69	26 58	26 51	26 41	26 41	26 24
4	21 20	18 00	16 69	15 98	15 52	15 21	14 98	14 80	14 66	14 55	14 20	14 02	13 91	13 84	13 75	13 75	13 58
5	16 26	13 27	12 06	11 39	10 97	10 67	10 46	10 29	10 16	10 05	9 72	9 55	9 45	9 38	9 29	9 29	9 13
6	13 75	10 93	9 78	9 15	8 75	8 47	8 26	8 10	7 98	7 87	7 56	7 40	7 30	7 23	7 14	7 14	6 99
7	12 25	9 55	8 45	7 85	7 46	7 19	6 99	6 84	6 72	6 62	6 31	6 16	6 06	5 99	5 91	5 91	5 75
8	11 26	8 65	7 59	7 01	6 63	6 37	6 18	6 03	5 91	5 81	5 52	5 36	5 26	5 20	5 12	5 12	4 96
9	10 56	8 02	6 99	6 42	6 06	5 80	5 61	5 47	5 35	5 26	4 96	4 81	4 71	4 65	4 57	4 57	4 41
10	10 04	7 56	6 55	5 99	5 64	5 39	5 20	5 06	4 94	4 85	4 56	4 41	4 31	4 25	4 17	4 17	4 01
11	9 65	7 21	6 22	5 67	5 32	5 07	4 89	4 74	4 63	4 54	4 25	4 10	4 01	3 94	3 86	3 86	3 71
12	9 33	6 93	5 95	5 41	5 06	4 82	4 64	4 50	4 39	4 30	4 01	3 86	3 76	3 70	3 62	3 62	3 47
13	9 07	6 70	5 74	5 21	4 86	4 62	4 44	4 30	4 19	4 10	3 82	3 67	3 57	3 51	3 43	3 43	3 27
14	8 86	6 52	5 56	5 04	4 70	4 46	4 28	4 14	4 03	3 94	3 66	3 51	3 41	3 35	3 27	3 27	3 11
15	8 68	6 36	5 42	4 89	4 56	4 32	4 14	4 00	3 90	3 81	3 52	3 37	3 28	3 21	3 13	3 13	2 98
16	8 53	6 23	5 29	4 77	4 44	4 20	4 03	3 89	3 78	3 69	3 41	3 26	3 16	3 10	3 02	3 02	2 86
17	8 40	6 11	5 19	4 67	4 34	4 10	3 93	3 79	3 68	3 59	3 31	3 16	3 07	3 00	2 92	2 92	2 76
18	8 29	6 01	5 09	4 58	4 25	4 02	3 84	3 71	3 60	3 51	3 23	3 08	2 98	2 92	2 84	2 84	2 68
19	8 19	5 93	5 01	4 50	4 17	3 94	3 77	3 63	3 52	3 43	3 15	3 00	2 91	2 84	2 76	2 76	2 60
20	8 10	5 85	4 94	4 43	4 10	3 87	3 70	3 56	3 46	3 37	3 09	2 94	2 84	2 78	2 70	2 69	2 54
21	8 02	5 78	4 87	4 37	4 04	3 81	3 64	3 51	3 40	3 31	3 03	2 88	2 79	2 72	2 64	2 64	2 48
22	7 95	5 72	4 82	4 31	3 99	3 76	3 59	3 45	3 35	3 26	2 98	2 83	2 73	2 67	2 58	2 58	2 42
23	7 88	5 66	4 77	4 26	3 94	3 71	3 54	3 41	3 30	3 21	2 93	2 78	2 69	2 62	2 54	2 54	2 37
24	7 82	5 61	4 72	4 22	3 90	3 67	3 50	3 36	3 26	3 17	2 89	2 74	2 64	2 58	2 49	2 49	2 33
25	7 77	5 57	4 68	4 18	3 86	3 63	3 46	3 32	3 22	3 13	2 85	2 70	2 60	2 54	2 45	2 45	2 29
26	7 72	5 53	4 64	4 14	3 82	3 59	3 42	3 29	3 18	3 09	2 82	2 66	2 57	2 50	2 42	2 42	2 25
27	7 68	5 49	4 60	4 11	3 79	3 56	3 39	3 26	3 15	3 06	2 78	2 63	2 54	2 47	2 38	2 38	2 22
28	7 64	5 45	4 57	4 07	3 75	3 53	3 36	3 23	3 12	3 03	2 75	2 60	2 51	2 44	2 35	2 35	2 19
29	7 60	5 42	4 54	4 05	3 73	3 50	3 33	3 20	3 09	3 01	2 73	2 57	2 48	2 41	2 33	2 33	2 16
30	7 56	5 39	4 51	4 02	3 70	3 47	3 30	3 17	3 07	2 98	2 70	2 55	2 45	2 39	2 30	2 30	2 13
35	7 42	5 27	4 40	3 91	3 59	3 37	3 20	3 07	2 96	2 88	2 60	2 44	2 35	2 28	2 19	2 19	2 02
40	7 31	5 18	4 31	3 83	3 51	3 29	3 12	2 99	2 89	2 80	2 52	2 37	2 27	2 20	2 11	2 11	1 94
45	7 23	5 11	4 25	3 77	3 45	3 23	3 07	2 94	2 83	2 74	2 46	2 31	2 21	2 14	2 05	2 05	1 88
50	7 17	5 06	4 20	3 72	3 41	3 19	3 02	2 89	2 78	2 70	2 42	2 27	2 17	2 10	2 01	2 01	1 82
60	7 08	4 98	4 13	3 65	3 34	3 12	2 95	2 82	2 72	2 63	2 35	2 20	2 10	2 03	1 94	1 94	1 75
70	7 01	4 92	4 07	3 60	3 29	3 07	2 91	2 78	2 67	2 59	2 31	2 15	2 05	1 98	1 89	1 83	1 70
80	6 96	4 88	4 04	3 56	3 26	3 04	2 87	2 74	2 64	2 55	2 27	2 12	2 01	1 94	1 85	1 79	1 65
90	6 93	4 85	4 01	3 53	3 23	3 01	2 84	2 72	2 61	2 52	2 24	2 09	1 99	1 92	1 82	1 76	1 62
100	6 90	4 82	3 98	3 51	3 21	2 99	2 82	2 69	2 59	2 50	2 22	2 07	1 97	1 89	1 80	1 74	1 60
200	6 76	4 71	3 88	3 41	3 11	2 89	2 73	2 60	2 50	2 41	2 13	1 97	1 87	1 79	1 69	1 63	1 48
300	6 72	4 68	3 85	3 38	3 08	2 86	2 70	2 57	2 47	2 38	2 10	1 94	1 84	1 76	1 66	1 59	1 44
400	6 70	4 66	3 83	3 37	3 06	2 85	2 68	2 56	2 45	2 37	2 08	1 92	1 82	1 75	1 64	1 58	1 42
500	6 69	4 65	3 82	3 36	3 05	2 84	2 68	2 55	2 44	2 36	2 70	1 92	1 81	1 74	1 63	1 57	1 41
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10^3	6 64	4 61	3 78	3 32	3 02	2 80	2 64	2 51	2 41	2 32	2 04	1 88	1 77	1 70	1 59	1 53	1 36

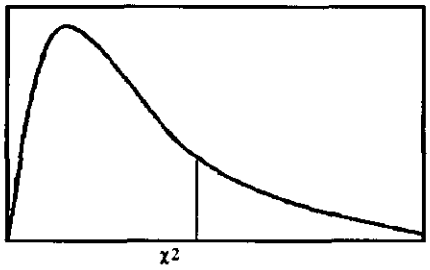

Table A1.7 Values of the χ^2 distribution for varying degrees of freedom (*df*) and α

	α										
	0.0005	**0.001**	**0.005**	**0.01**	**0.025**	**0.05**	**0.1**	**0.15**	**0.2**	**0.25**	**0.3**
1	12 1153	10 8274	7 8794	6 6349	5 0239	3 8415	2 7055	2 0722	1 6424	1 3233	1 0742
2	15 2014	13 8150	10 5965	9 2104	7 3778	5 9915	4 6052	3 7942	3 2189	2 7726	2 4079
3	17 7311	16 2660	12 8381	11 3449	9 3484	7 8147	6 2514	5 3170	4 6416	4 1083	3 6649
4	19 9977	18 4662	14 8602	13 2767	11 1433	9 4877	7 7794	6 7449	5 9886	5 3853	4 8784
5	22 1057	20 5147	16 7496	15 0863	12 8325	11 0705	9 2363	8 1152	7 2893	6 6257	6 0644
6	24 1016	22 4575	18 5475	16 8119	14 4494	12 5916	10 6446	9 4461	8 5581	7 8408	7 2311
7	26 0179	24 3213	20 2777	18 4753	16 0128	14 0671	12 0170	10 7479	9 8032	9 0371	8 3834
8	27 8674	26 1239	21 9549	20 0902	17 5345	15 5073	13 3616	12 0271	11 0301	10 2189	9 5245
9	29 6669	27 8767	23 5893	21 6660	19 0228	16 9190	14 6837	13 2880	12 2421	11 3887	10 6564
10	31 4195	29 5879	25 1881	23 2093	20 4832	18 3070	15 9872	14 5339	13 4420	12 5489	11 7807
11	33 1382	31 2635	26 7569	24 7250	21 9200	19 6752	17 2750	15 7671	14 6314	13 7007	12 8987
12	34 8211	32 9092	28 2997	26 2170	23 3367	21 0261	18 5493	16 9893	15 8120	14 8454	14 0111
13	36 4768	34 5274	29 8193	27 6882	24 7356	22 3620	19 8119	18 2020	16 9848	15 9839	15 1187
14	38 1085	36 1239	31 3194	29 1412	26 1189	23 6848	21 0641	19 4062	18 1508	17 1169	16 2221
15	39 7173	37 6978	32 8015	30 5780	27 4884	24 9958	22 3071	20 6030	19 3107	18 2451	17 3217
16	41 3077	39 2518	34 2671	31 9999	28 8453	26 2962	23 5418	21 7931	20 4651	19 3689	18 4179
17	42 8808	40 7911	35 7184	33 4087	30 1910	27 5871	24 7690	22 9770	21 6146	20 4887	19 5110
18	44 4337	42 3119	37 1564	34 8052	31 5264	28 8693	25 9894	24 1555	22 7595	21 6049	20 6014
19	45 9738	43 8194	38 5821	36 1908	32 8523	30 1435	27 2036	25 3289	23 9004	22 7178	21 6891
20	47 4977	45 3142	39 9969	37 5663	34 1696	31 4104	27 4120	26 4976	25 0375	23 8277	22 7745
21	49 0096	46 7963	41 4009	38 9322	35 4789	32 6706	29 6151	27 6620	26 1711	24 9348	23 8578
22	50 5105	48 2676	42 7957	40 2894	36 7807	33 9245	30 8133	28 8224	27 3015	26 0393	24 9390
23	51 9995	49 7276	44 1814	41 6383	38 0756	35 1725	32 0069	29 9792	24 4288	27 1413	26 0184
24	53 4776	51 1790	45 5584	42 9798	39 3641	36 4150	33 1962	31 1325	29 5533	28 2412	27 0960
25	54 9475	52 6187	49 9280	44 3140	40 6465	37 6525	34 3816	32 2825	30 6752	29 3388	28 1719
26	56 4068	54 0511	48 2898	45 6416	41 9231	38 8851	35 5632	33 4295	31 7946	30 4346	29 2463
27	57 8556	55 4751	49 6450	46 9628	43 1945	40 1133	36 7412	34 5736	32 9117	31 5284	30 3193
28	59 2990	56 8918	50 9936	48 2782	44 4608	41 3372	37 9159	35 7150	34 0266	32 6205	31 3909
29	60 7342	58 3006	52 3355	49 5878	45 7223	42 5569	39 0875	36 8538	35 1394	33 7109	32 4612
30	62 1600	59 1022	53 6719	50 8922	46 9792	43 7730	40 2560	37 9902	36 2502	34 7997	33 5302
31	63 5813	61 0980	55 0025	52 1914	48 2319	44 3853	41 4217	39 1244	37 3591	35 3373	34 5981
32	84 9935	62 4873	56 3280	53 4857	49 4804	48 1942	42 5847	40 2563	38 4663	35 3730	35 6649
33	66 4013	63 8694	57 6423	54 7754	50 7251	47 3999	43 7452	41 3861	39 5718	38 0575	36 7307
34	57 8042	65 2471	58 9637	56 0609	51 9660	48 6024	44 9032	42 5140	40 6756	39 1408	37 7954
35	99 1975	66 6192	60 2748	57 3420	53 2033	49 8018	48 0580	43 6399	41 7780	40 2228	38 8591
36	10 5882	67 3850	61 5811	58 6192	54 4373	50 9985	47 2122	44 7641	42 8788	41 3036	39 9220
37	71 9713	69 3476	62 9832	59 9926	55 6680	52 1923	48 3634	45 8864	43 9782	42 3833	40 9839
38	73 3580	70 7039	64 1812	61 1620	56 8955	53 2835	49 5126	47 0072	45 0763	43 4619	42 0450
39	74 7237	72 0550	65 4753	62 4281	58 1201	54 5722	50 6598	48 1263	46 1730	44 5395	43 1053
40	76 0953	73 4029	66 7660	63 6908	59 3417	55 7585	51 8050	49 2438	47 2685	45 6150	44 1649
45	82 0734	80 0776	73 1660	69 9569	65 4101	61 6562	57 5053	54 8105	52 7288	50 9849	49 4517
50	89 5597	86 6603	79 4898	75 1538	71 4202	57 5048	63 1671	60 3460	58 1638	56 3336	54 7228
55	96 1607	93 1671	85 7491	82 2920	77 3804	73 3115	68 7962	65 8550	53 5772	61 6650	59 9804
60	102 6971	99 6078	91 9518	88 3794	83 2977	79 0820	74 3970	71 3411	68 3721	66 9815	65 2265
100	153 1538	149 4488	140 1697	135 8069	129 5613	124 3421	118 4980	114 6538	111 6567	109 1412	105 9058
1000	1153 7344	1143 9196	1118 9475	1106 3690	1089 5307	1074 6794	1057 7240	1046 2849	1037 8381	1030 1157	1023 2140

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SECTION 1

Please read and follow the instructions for completing the mark-reading sheet. The unique number is 482775.

(1) There are typical steps that researchers use when conducting research The sequence of the research process is based on a five-step procedure

1 Design the study, collect the data, identify the problem, analyse the data, and draw conclusions
2 Identify the design of the study, clarify the problem, and collect and analyse the data
3 Identify the problem, design the study, collect the data, analyse the data, and draw conclusions
4. Identify the problem, collect the data, design the study, analyse the data, and draw conclusions

(2) Which of the following questions is NOT an example of a descriptive research question?

1. What is the age distribution of all the employees in managerial positions?
2 Is there a relationship between the degree to which employees find themselves employable and their intention to leave the organisation?
3 Is there a difference between the male and female students' attitudes towards IOP2601?
4 What is the work experience distribution of all the students who are active on the myUnisa discussion forum for IOP2601?

(3) If you want to determine whether the gender of the IOP2601 students influence their attitude towards statistics, the gender of the IOP2601 students would be the independent variable because .

1 attitudes towards statistics are controlled and can also be continuous
2 the influence of gender on attitudes towards statistics is discrete
3 gender is a non-manipulated variable that can be used to influence attitudes towards statistics
4 as a continuous variable gender is under the control of the researcher

(4) What is the median of the data set [12,12,13,15,12,9,14,11]?

1 12
2. 4,5
3 14
4 27

(5) Which of the following statements is true about the mean?

1 The mean is the 50^{th} percentile because it divides a distribution into two halves.
2 The mean is often used as a measure of central tendency for very skewed data
3 The mean can be misleading when there are extreme values in the data set
4 The mean is the average that highlights the most frequently occurring scores

(6) Which of the following statements is NOT true about the mode?

1 A distribution is not limited to one mode
2 The abbreviation that is usually used for the mode is Md
3 The mode is most suitable for use with nominal data
4 The mode represents the score that occurs most in a distribution

(7) The letters P, Q, R and S were given to different course codes with no ulterior meaning other than they are labels The type of measurement scale that will be used in this case is the scale

1 ratio
2 ordinal
3 interval
4 nominal

(8) You are working in an organisation with a total number of 168 members You select 100 of these members for your research project and send questionnaires to them Only 68 of the selected members respond to the questionnaires The population for the study is therefore

1 100
2 68
3 168
4 68%

(9) It is always necessary to have the total number of scores to enable the calculation of the mean

1 True, because N is the important ordinal scale of the formula for the mean
2 False, because N of the population is not known for the research project
3 True, only when the average of scores is already given for the distribution
4 True, because the sum of scores is divided by the number of scores

(10) The following are the work experience scores for part-time IOP2601 students [9, 1, 7, 12, 12, 8, 3, 5, 12, 17] The range is

1 17
2 16
3 9
4 12

Use the data from the table below to answer questions (11) and (12)

Employee	X	Y
A	9	10
B	4	8
C	5	7
N=3	**$\sum X=18$**	**$\sum Y=25$**

(11) What is $\sum X^2$?

1 $81 + 16 + 5$
2 $9^2 + 4^2 + 5$
3 $(9 + 4 + 5) \times 2$
4 $9^2 + 4^2 + 5^2$

(12) Calculate $\sum XY$

1 18 x 25
2 (9 + 4 + 5)(10 + 8 + 7)
3 90 + 32 + 35
4 123

(13) What is the median location of the data set [12,12,13,15,12,9,14,11]?

1 12
2 4,5
3 14
4 27

(14) If the distribution of the results of Assignment 02 for IOP2601 were negatively skewed, which of the following statements is most likely correct?

1 The students failed Assignment 02 as the graph is said to be negative in its positioning
2 The assignment may have been too easy since most of the students did well in the assignment
3 Assignment 02 may have been too difficult since most of the students got negative scores
4 Negatively skewed distribution does not provide the necessary information for deductions

Use the data from the table below to answer questions (15) to (18)

Class interval	Real limits	Frequency	Cumulative frequency	% Frequency	Cumulative % frequency
75 - 79	74,5 - 79,5	6	85	7	100
70 - 74	69,5 - 74,5	10	79	12	93
65 - 69	64,5 - 69,5	15	?	18	81
60 - 64	59,5 - 64,5	17	54	?	63
55 - 59	54,5 - 59,5	25	37	29	?
50 - 54	49,5 - 54,5	12	12	14	14

(15) The interval size for this distribution is

1 5
2 5,5
3 4
4 6

(16) The cumulative frequency for the class interval [65 – 69] is

1. 15/85 x 100
2 69 – 65 x 15
3 12+25+17+ interval size
4 12+25+17+15

(17) The percentage frequency for the class interval [60 – 64] is

1 31
2 41
3 20
4 49

(18) The percentage cumulative frequency for the class interval [55 – 59] is

1 0,29
2 43
3. 49
4 37

You and your friend had been watching a television programme on nature conservation They launched a competition and at the end of the programme, they asked a content-related question The viewer who submitted the first correct answer drawn would win a tent and the viewer who sent in the second correct answer drawn would win some sleeping bags from a local outdoor store They received 330 entries in total You and your friend had recorded the programme and you are therefore confident about the answer You sent in 30 entries and your friend sent in 20 entries Use this information to answer the two questions that follow

(19) What is the probability that your friend will win first prize?

1 0,09
2 0,06
3 0,03
4 0,15

(20) What is the probability that the two of you will win first and second prize (the winner's entry is not put back in the hopper)?

1 0,05
2 0,01
3 0,15
4 0,09

TOTAL SECTION 1: [20]

SECTION 2

QUESTION 1 **[18]**

Your organisation recently embarked on a talent management drive As a starting point to the project, the human resources department wanted to know if there is a relationship between the degree to which employees found themselves employable and their intention to leave the organisation. They asked you to help in this investigation You gathered the appropriate data and after analysing it, you found the following

- The relationship between the degree to which employees found themselves employable and their intention to leave the organisation was **0,24**
- The mean of X (employability) was **6,53** and the mean of Y (intention to leave) was **6,87**
- The slope was **0,21**

Use the results above to respond to the following questions

(a) Interpret the correlation coefficient (2)

(b) What deduction can be made about the nature of the relationship? (1)

(c) Calculate the percentage of common variance between the two sets of scores and then illustrate this percentage diagrammatically (2)

When you presented the results of the calculations to the human resources department, you mentioned that you could use a certain formula to predict the employees' intention to leave the organisation, based on their employability score

(d) What is the value of the intercept? (2)

(e) Calculate the intention to leave of an employee with an employability score of 10 (1)

(f) Provide a graphic representation of the regression line by indicating the intercept and predicted value for an employee with an employability score of 10 (5)

The employees completed a questionnaire to measure their intention to leave the organisation The minimum score that could be obtained was 45 (indicating no intention to leave) and the maximum score was 75 (indication a strong intention to leave) Use the frequency table below to do the following calculations

Class interval	Frequency	Cumulative frequency	% Frequency	Cumulative % frequency
70 - 74	7	110	6	100
65 - 69	11	103	10	94
60 - 64	23	92	21	84
55 - 59	25	69	23	63
50 - 54	30	44	27	40
45 - 49	14	14	13	13

(g) What is the percentage of employees who fall below a high risk score? In other words, determine the percentile rank of a score of 68 (3)

(h) What is the score at which 55% of all the employees scored? In other words, what score is found at the 55^{th} percentile? (2)

QUESTION 2 **[6]**

You collected information from your fellow students on how much they enjoyed learning about statistics in this module by asking them for a rating on a 5-point scale on five different questions Given a normally distributed population with a mean (μ) of 15, a standard deviation (σ) of 5, and 50 as the number of cases (N), answer the following questions

(a) What is the **proportion** of students with a raw score of less than 5? (2)

(b) What is the **percentage** of students with a raw score of less than 20? (2)

(c) What is the **number** of students with raw scores between 5 and 20? (2)

QUESTION 3 **[10]**

The IOP2601 lecturers are interested to know if students' attitude towards statistics is different at the end of the course in comparison with their attitude toward statistics before the course They randomly select a group of 10 students from the class and present them with a questionnaire to assess their attitude toward statistics before they start with the course They again ask the same group of students to complete the questionnaire at the end of the course The following scores are obtained:

Before the course	After the course
10	6
8	5
7	6
9	4
6	3
8	4
8	3
5	4
9	5
7	5

They ask your help with the data analysis and request you to determine if there is a difference in students' attitude toward statistics after the course in comparison to their attitude before the course

You decide on a level of significance of $\alpha = 0{,}01$

(a) Formulate an appropriate null hypothesis (H_0) in symbols (1)

(b) Formulate an appropriate alternative hypothesis (H_1) in symbols (1)

(c) Assuming that your data are normally distributed, select an appropriate statistical test and calculate the test statistic Show ALL calculations (3)

$\overline{D} = 3{,}2$	$S_D = 1{,}48$

(d) Determine the degrees of freedom (1)

(e) Determine the critical value for a two-tailed test for a significance level of 1% (0,01) (1)

(f) Interpret the results in terms of the rejection or non-rejection of the null hypothesis (1)

(g) Interpret your rejection or non-rejection of the null hypothesis in plain language, in terms of the original problem statement (2)

QUESTION 4 **[12]**

Mr Ramoung is the newly appointed Managing Director (MD) of JCC Occupational Health Inc Mr Ramoung is an industrial psychologist by profession and understands the impact of disengaged workers As part of his M Com dissertation, he developed a short questionnaire to measure work engagement The survey measures one's level of engagement on a 6-point Likert scale He administered the survey to the entire population (nurses, support staff and senior management) and determined that the employees experienced very low levels of engagement He requested that you determine if there is a difference between the engagement levels of the nurses, the support staff and senior management The following table represents the engagement scores of each sub-group in the population

Nurses	Support Staff	Senior Management
1	4	6
2	3	6
1	4	5
2	4	4
1	5	5

The MD has requested you to answer the following research question Are there significant differences in the engagement levels of the three different sub-groups in JCC Occupational Health Inc? Stated differently, you test the following null hypothesis

$$H_0 \quad \mu_{\text{Nurses}} = \mu_{\text{Support staff}} = \mu_{\text{Senior management}} \text{ with } \alpha = 0{,}05$$

(a) Choose an appropriate test statistic to test this hypothesis and calculate the test statistic Present your answers in a summary table (8)

(b) Determine the critical value that will help you decide whether you should reject the null hypothesis at **a significance level of 0,05,** or not (1)

(c) Do you reject the null hypothesis? (1)

(d) Interpret your findings in terms of the original problem statement (2)

QUESTION 5 **[4]**

You want to find out if there is a difference between historical first-year, second-year and third-year students regarding their level of satisfaction relating to the teaching method used for this module

In the table below, the responses of the various groups to the following question are captured

Are you satisfied with the way in which IOP2601 (Organisational Research Methodology) was presented?
A) Yes
B) No

	A	B
First year	6	8
Second year	19	12
Third year	7	11

The chi-square value is 2,74.

(a) Determine the critical value **for a significance level of 0,05** (1)

(b) Do you reject the null hypothesis? (1)

(c) Is there a difference between the student groups and their answer to the question? With how much certainty can you conclude this? (2)

TOTAL SECTION 2: [50]

GRAND TOTAL: [70]

AFDELING 1

Lees en volg asseblief die instruksies oor hoe om die aangehegte merkleesblad te voltooi. Die unieke nommer is 482775.

(1) Daar is tipiese stappe wat navorsers volg wanneer hulle navorsing doen Die volgorde van die navorsingsproses is gegrond op 'n proses met vyf stappe

1 Ontwerp die studie, samel die data in, identifiseer die probleem, ontleed die data, en maak gevolgtrekkings
2 Identifiseer die ontwerp van die studie, verduidelik die probleem en samel die data in en ontleed dit
3 Identifiseer die probleem, ontwerp die studie, samel die data in, ontleed die data, en maak gevolgtrekkings
4 Identifiseer die probleem, samel die data in, ontwerp die studie, ontleed die data, en maak gevolgtrekkings

(2) Watter van die volgende is NIE 'n voorbeeld van 'n beskrywende navorsingsprobleem nie?

1 Wat is die ouderdomsverspreiding van al die werknemers in bestuursposisies?
2 Is daar 'n verband tussen die mate waarin werknemers hulself as indiensneembaar beskou en hul voorneme om die organisasie te verlaat?
3. Is daar 'n verskil tussen die manlike en vroulike studente se houding teenoor IOP2601?
4 Wat is die verspreiding van die werkservaring van al die studente wat aktief is op die myUnisa gespreksforum vir IOP2601?

(3) As jy wil bepaal of die geslag van die IOP2601-studente hul houding teenoor statistiek beinvloed, sal die geslag van die IOP2601-studente die onafhanklike veranderlike wees, want

1 houdings teenoor statistiek word beheer en kan ook deurlopend wees
2 die invloed van geslag op die houdings teenoor statistiek is diskreet
3. geslag kan deur die navorser gemanipuleer word om die houdings teenoor statistiek te beinvloed
4 as 'n kontinue veranderlike is geslag onder die beheer van die navorser

(4) Wat is die mediaan van die datastel [12,12,13,15,12,9,14,11]?

1 12
2 4,5
3. 14
4 27

(5) Watter van die volgende stellings is waar oor die gemiddelde?

1 Die gemiddelde is die 50ste persentiel omdat dit 'n verdeling in twee helftes verdeel
2 Die gemiddelde word dikwels as 'n maatstaf van die sentrale neiging vir baie skewe data gebruik
3. Die gemiddelde kan misleidend wees wanneer uiterste waardes in die datastel voorkom
4 Dit is die gemiddelde wat die tellings wat die meeste voorkom uitlig

(6) Watter van die volgende stellings is NIE waar oor die modus nie?

1 'n Verspreiding is nie beperk tot een modus nie
2 Die afkorting wat gewoonlik vir die modus gebruik word is Md
3 Die modus is die geskikste vir gebruik met nominale data
4 Die modus verteenwoordig die telling wat die meeste in 'n verspreiding voorkom

(7) Die letters P, Q, R en S is aan verskillende kursuskodes toegeken as etikette met geen versteekte betekenis daaragter nie Die tipe metingskaal wat in hierdie geval gebruik word, is die

1 verhouding- /ratioskaal
2 ordinale skaal
3 intervalskaal
4 nominale skaal

(8) Jy werk in 'n organisasie met 'n totale aantal lede van 168 Jy kies 100 van die lede vir jou navorsing en stuur vraelyste aan hulle Slegs 68 van die gekose lede reageer op die vraelyste Die populasie vir hierdie studie is dus

1 100
2 68
3 168
4 68%

(9) Dit is altyd nodig om die totale aantal tellings te hê om die gemiddelde te bereken

1 Waar, want N is die belangrike ordinale skaal van die formule vir die gemiddelde
2 Onwaar, want N van die populasie is nie bekend vir die navorsingsprojek nie
3 Waar, slegs wanneer die gemiddelde tellings reeds vir die verspreiding gegee is
4 Waar, omdat die som van die tellings deur die aantal tellings verdeel word

10) Die volgende is die werkservaring tellings vir deeltydse IOP2601-studente [9, 1, 7, 12, 12, 8, 3, 5, 12, 17] Die omvang is

1 17
2 16
3 9
4 12

Gebruik die data in die tabel hieronder om vrae (11) en (12) te beantwoord

Werknemer	X	Y
A	9	10
B	4	8
C	5	7
N=3	**$\sum X=18$**	**$\sum Y=25$**

(11) Wat is $\sum X^2$?

1. $81 + 16 + 5$
2 $9^2 + 4^2 + 5$
3 $(9 + 4 + 5) \times 2$
4 $9^2 + 4^2 + 5^2$

(12) Bereken $\sum XY$.

1 18×25
2 $(9 + 4 + 5)(10 + 8 + 7)$
3 $90 + 32 + 35$
4 123

(13) Wat is die mediaanposisie van die datastel [12,12,13,15,12,9,14,11]?

1 12
2 4,5
3 14
4 27

(14) Indien die verspreiding van die resultate vir Werkopdrag 02 vir IOP2601 negatief skeef is, watter van die volgende stellings is waarskynlik korrek?

1 Die studente het Werkopdrag 02 gedruip want die grafiek toon 'n negatiewe posisie
2 Die werkopdrag kon te maklik gewees het, want die meeste studente het goed gedoen
3 Werkopdrag 02 kon te moeilik gewees het, want die meeste studente het negatiewe punte gekry
4 'n Negatiewe verspreiding verskaf nie die nodige inligting vir die gevolgtrekkings nie

Gebruik die data in die tabel hieronder om vrae (15) tot (18) te beantwoord

Klas-interval	Werklike Grense	Frekwensie	Kumulatiewe frekwensie	% Frekwensie	Kumulatiewe % frekwensie
75 - 79	74,5 - 79,5	6	85	7	100
70 - 74	69,5 - 74,5	10	79	12	93
65 - 69	64,5 - 69,5	15	?	18	81
60 - 64	59,5 - 64,5	17	54	?	63
55 - 59	54,5 - 59,5	25	37	29	?
50 - 54	49,5 - 54,5	12	12	14	14

(15) Die intervalgrootte vir hierdie verspreiding is

1 5
2 5,5
3 4
4 6

(16) Die kumulatiewe frekwensie vir die klasinterval [65 - 69] is

1 15/85 x 100
2 69 – 65 x 15
3 12+25+17+ intervalgrootte
4. 12+25+17+15

(17) Die persentasie frekwensie vir die klasinterval [60 - 64] is

1 31
2. 41
3 20
4 49

(18) Die persentasie kumulatiewe frekwensie vir die klasinterval [55 - 59] is

1 0,29
2 43
3 49
4 37

Jou vriend en jy het na 'n televisieprogram oor natuurbewaring gekyk Hulle het 'n kompetisie geloods en teen die einde van die program het hulle 'n inhoudsverwante vraag gevra Die kyker wat die eerste korrekte antwoord wat getrek is ingestuur het, sou 'n tent wen en die kyker wat die tweede korrekte antwoord wat getrek is ingestuur het, sou 'n paar slaapsakke van 'n plaaslike buitelewewinkel wen Hulle het altesaam 330 inskrywings ontvang Jou vriend en jy het die program opgeneem en is dus vol vertroue dat julle antwoord korrek is Jy het 30 inskrywings ingestuur en jou vriend het 20 inskrywings ingestuur Gebruik hierdie inligting om die volgende twee vrae te beantwoord

(19) Wat is die waarskynlikheid dat jou vriend die eerste prys sal wen?

1 0,09
2. 0,06
3 0,03
4 0,15

(20) Wat is die waarskynlikheid dat die twee van julle eerste en tweede pryse sal wen (die wenner se inskrywing is nie terug in die houer geplaas nie)?

1 0,05
2 0,01
3 0,15
4 0,09

TOTAAL AFDELING 1: [20]

AFDELING 2

VRAAG 1 **[18]**

Jou organisasie het onlangs 'n talentbestuursprogram begin As 'n vertrekpunt vir die projek wou die menslikehulpbronnedepartement weet of daar 'n verband is tussen die mate waartoe werknemers hulself as indiensneembaar ag en hul voorneme om die organisasie te verlaat Hulle het jou gevra om met die ondersoek te help Jy het die toepaslike data ingesamel en nadat jy dit ontleed het, het jy die volgende uitgevind

- Die verband tussen die mate waartoe werknemers hulself as indiensneembaar ag en hulle voorneme om die organisasie te verlaat was **0,24**
- Die gemiddelde van X (indiensneembaarheid) was **6,53** en die gemiddelde van Y (voorneme om die organisasie te verlaat) was **6,87**
- Die helling was **0,21**

Gebruik bogenoemde resultate om die volgende vrae te beantwoord

(a) Interpreteer die korrelasiekoeffisient (2)

(b) Watter afleiding kan gemaak word oor die aard van die verband? (1)

(c) Bereken die persentasie gemeenskaplike variansie tussen die twee stelle tellings en illustreer dit diagrammaties (2)

Toe jy die resultate van die berekenings aan die menslikehulpbronnedepartement voorlê, het jy genoem dat jy 'n sekere formule kon gebruik om die werknemers se voorneme om die organisasie te verlaat op grond van hul indiensneembaarheidstelling te voorspel

(d) Wat is die waarde van die afsnit? (2)

(e) Bereken 'n werknemer met 'n indiensneembaarheidstelling van 10 se voorneme om die organisasie te verlaat (1)

(f) Gee 'n grafiese voorstelling van die regressielyn deur onderskeidelik die afsnit en die voorspelde waarde van die werknemer met 'n indiensneembaarheidstelling van 10 daarop aan te dui (5)

Die werknemers het 'n vraelys voltooi om hul voorneme om die organisasie te verlaat, te meet Die minimum telling wat hulle kon kry, was 45 (wat geen voorneme om die organisasie te verlaat nie aandui) en die maksimum telling was 75 (wat 'n sterk voorneme om die organisasie te verlaat aandui) Gebruik die frekwensieverspreidingstabel hieronder om die volgende berekenings te doen

Klasinterval	Frekwensie	Kumulatiewe frekwensie	% Frekwensie	Kumulatiewe % frekwensie
70 - 74	7	110	6	100
65 - 69	11	103	10	94
60 - 64	23	92	21	84
55 - 59	25	69	23	63
50 - 54	30	44	27	40
45 - 49	14	14	13	13

(g) Wat is die persentasie van die werknemers met 'n hoe risikotelling? Met ander woorde, bepaal die persentielrang van 'n telling van 68 (3)

(h) Wat is die telling wat 55% van al die werknemers behaal het? Met ander woorde, watter telling kom by die 55ste persentiel voor? (2)

VRAAG 2 **[6]**

Jy het inligting ingesamel oor hoeveel jou medestudente dit geniet het om in hierdie module meer van statistiek te leer Hulle moes vyf vrae volgens 'n vyfpuntskaal beantwoord Jy werk met 'n normaal verspreide populasie met 'n gemiddeld (μ) van 15, 'n standaardafwyking (σ) van 5 en 'n aantal gevalle (N) van 50 Beantwoord die volgende vrae

(a) Wat is die **proporsie** van studente met 'n roetelling van kleiner as 5? (2)

(b) Wat is die **persentasie** van studente met 'n routelling van kleiner as 20? (2)

(c) Wat is die **aantal** studente met routellings tussen 5 en 20? (2)

VRAAG 3 **[10]**

Die IOP2601-dosente stel belang daarin om te weet of daar 'n verskil is tussen studente se houding teenoor statistiek aan die einde van die kursus in vergelyking met hul houding teenoor statistiek voor die kursus Hulle selekteer 'n groep van 10 studente uit die klas en vra hulle om 'n vraelys te voltooi aangaande hul houding teenoor statistiek voordat hulle met die kursus begin Hulle vra weer dieselfde groep studente om die vraelys aan die einde van die kursus te voltooi Hulle bevind die volgende

Voor die kursus	Na die kursus
10	6
8	5
7	6
9	4
6	3
8	4
8	3
5	4
9	5
7	5

Hulle vra jou om met die dataontleding te help en om vas te stel of daar 'n verskil is tussen studente se houding teenoor statistiek voor die kursus in vergelyking met hul houding teenoor statistiek na die kursus

Jy besluit op 'n beduidendheidsvlak van $\alpha = 0{,}01$

(a) Formuleer 'n gepaste nulhipotese (H_0) in simbole (1)

(b) Formuleer 'n gepaste alternatiewe hipotese (H_1) in simbole (1)

(c) Aanvaar dat jou data normaal versprei is Kies 'n gepaste statistiese toets en bereken die toetsstatistiek Toon ALLE berekeninge (3)

$\overline{D} = 3{,}2$	$S_D = 1{,}48$

(d) Bepaal die grade van vryheid (1)

(e) Bepaal die kritieke waarde vir 'n tweekantige toets vir 'n beduidendheidsvlak van 1% (0,01) (1)

(f) Interpreteer die resultate na gelang van die verwerping of nieverwerping van die nulhipotese (1)

(g) Interpreteer jou verwerping of nieverwerping van die nulhipotese in leketaal aan die hand van die oorspronklike probleemstelling (2)

VRAAG 4 **[12]**

Mnr Ramoung is die nuwe Besturende Direkteur vir JCC Occupational Health Geink Mnr Ramoung is 'n geregistreerde bedryfsielkundige en verstaan die impak van onbegeesterde werknemers Hy het as deel van sy M Com skripsie 'n kort vraelys ontwikkel om werksbegeestering te meet Die vraelys meet die vlakke van begeestering op 'n 6-punt Likert skaal Mnr Ramoung het die vraelys aan al die personeel uitgedeel (verpleegsters, bystandspersoneel en senior bestuur) Sy bevindinge was dat die werknemers lae vlakke van begeestering ervaar Hy het jou gevra om die verskille in begeesteringsvlakke tussen die verpleegsters, bystandspersoneel en senior bestuur vas te stel Die volgende tabel verteenwoordig die begeesteringsvlakke van elk van die verskillende sub-groepe in die populasie

Verpleegsters	Bystands-personeel	Senior Bestuur
1	4	6
2	3	6
1	4	5
2	4	4
1	5	5

Die Besturende Direkteur het versoek dat jy die volgende navorsingsvraag beantwoord Is daar betekenisvolle verskille in die begeesteringsvlakke van die verskillende sub-groepe in JCC Occupational Health Geink? Of anders gestel jy toets die volgende hulhipotese

$$H_0 \quad \mu_{\text{Verpleegsters}} = \mu_{\text{Bystandspersoneel}} = \mu_{\text{Senior bestuur}} \text{ met} \alpha = 0{,}05$$

(a) Kies 'n gepaste statistiese toets om hierdie hipotese te toets en bereken die toetsstatistiek Gee jou antwoorde in 'n opsommingstabel weer (8)

(b) Bepaal die kritiese waarde wat jou gaan help om te besluit of jy die nulhipotese op 'n **beduidendheidsvlak van 0,05** moet verwerp of nie (1)

(c) Verwerp jy die nulhipotese? (1)

(d) Interpreteer jou bevindinge in die lig van die oorspronklike probleemstelling (2)

VRAAG 5 **[4]**

Jy wil vasstel of daar 'n verskil is in die tevredenheidspeil van historiese eerstejaar-, tweedejaar- en derdejaarstudente betreffende die aanbiedingsmetode van die module

Die antwoorde van die verskeie groepe op die volgende vraag word hierna in die tabel weergegee

Is jy tevrede met die manier waarop IOP2601 (Organisasie Navorsingsmetodologie) aangebied is?
A) Ja
B) Nee

	A	B
Eerstejaarstudente	6	8
Tweedejaarstudente	19	12
Derdejaarstudente	7	11

Die chi-kwadraatwaarde is 2,74.

(a) Bepaal die kritiese waarde **vir 'n beduidendheidsvlak van 0,05** (1)

(b) Verwerp jy die nulhipotese? (1)

(c) Is daar 'n verskil tussen die studentegroepe en hul antwoord op die vraag? Met hoeveel sekerheid kan jy hierdie gevolgtrekking maak? (2)

TOTAAL AFDELING 2: [50]

GROOTTOTAAL: [70]

UNIVERSITY OF SOUTH AFRICA UNISA university of south africa UNIVERSITEIT VAN SUID-AFRIKA

EXAMINATION MARK READING SHEET EKSAMEN-MERKLEESBLAD

PART 1 (GENERAL/ALGEMEEN) DEEL 1

STUDY UNIT e g PSY100-X
STUDIE EENHEID bv PSY100 X

1

PAPER NUMBER
VRAESTELNOMMER

2

INITIALS AND SURNAME
VOORLETTERS EN VAN

3

DATE OF EXAMINATION
DATUM VAN EKSAMEN

4

EXAMINATION CENTRE (E G PRETORIA)
EKSAMENSENTRUM (BV PRETORIA)

5

STUDENT NUMBER
STUDENTENOMMER

6

7

UNIQUE PAPER NO
UNIEKE VRAESTEL NR

8

9

For use by examination invigilator

Vir gebruik deur eksamenopsiener

IMPORTANT

1 USE ONLY AN HB PENCIL TO COMPLETE THIS SHEET
2 MARK LIKE THIS
3 CHECK THAT YOUR INITIALS AND SURNAME HAS BEEN FILLED IN CORRECTLY
4 ENTER YOUR STUDENT NUMBER FROM LEFT TO RIGHT
5 CHECK THAT YOUR STUDENT NUMBER HAS BEEN FILLED IN CORRECTLY
6 CHECK THAT THE UNIQUE NUMBER HAS BEEN FILLED IN CORRECTLY
7 CHECK THAT ONLY ONE ANSWER PER QUESTION HAS BEEN MARKED
8 DO NOT FOLD

BELANGRIK

1 GEBRUIK SLEGS N HB POTLOOD OM HIERDIE BLAD TE VOLTOOI
2 MERK AS VOLG
3 KONTROLEER DAT U VOORLETTERS EN VAN REG INGEVUL IS
4 VUL U STUDENTENOMMER VAN LINKS NA REGS IN
5 KONTROLEER DAT U DIE KORREKTE STUDENTENOMMER VERSTREK HET
6 KONTROLEER DAT DIE UNIEKE NOMMER REG INGEVUL IS
7 MAAK SEKER DAT NET EEN ALTERNATIEF PER VRAAG GEMERK IS
8 MOENIE VOU NIE

PART 2 (ANSWERS/ANTWOORDE) DEEL 2

10

1	2	3	4	5	36	37	38	39	40	71	72	73	74	75	106	107	108	109	110
6	7	8	9	10	41	42	43	44	45	76	77	78	79	80	111	112	113	114	115
11	12	13	14	15	46	47	48	49	50	81	82	83	84	85	116	117	118	119	120
16	17	18	19	20	51	52	53	54							121	122	123	124	125
21	22	23	24	25	56	57	58	59	60	91	92	93	94	95	126	127	128	129	130
26	27	28	29	30	61	62	63	64	65	96	97	98	99	100	131	132	133	134	135
31	32	33	34	35	66	67	68	69	70	101	102	103	104	105	136	137	138	139	140