

國立體育學院九十一學年度研究所碩士班入學考試試題
體育統計 (本試題共 二 頁)

※ 注意:答案一律寫在答案卷上, 否則不予計分

請在答案紙上用「橫寫」的方式作答, 並清楚的標示每題的題號。

一、改正與補充(下列各個敘述如果是錯誤的, 請你指出正確的說法; 如果此敘述是正確的, 則請你再加以補充。20%)

1. 我們可由一個人的 z 分數得知其百分等級。
2. 當眾數大於平均數時, 該分配為正偏態。
3. $r_{xy} = 0.8$ 比 $r_{xy} = -0.8$ 要來得大。
4. 組內設計比組間設計較節省受試者。

二、比較題(請比較將兩個名詞的差異。20%)

1. 描述統計 — 推論統計
2. 點估計 — 區間估計
3. 統計考驗力 — 第二類型錯誤
4. 獨立樣本 t 考驗 — 相依樣本 t 考驗

三、計算題(請依序將各題的答案寫在答案紙上, 並加上題號。60%)

1. 某運動教練認為優秀選手的體能應該高於一般選手(顯著水準定為 $\alpha = .05$), 現在他從優秀選手中隨機選取 25 名, 測得其體能的平均數為 80, 現已知選手的體能常模為 $\mu = 76$, $\sigma = 10$ 。此題的對立假設為 (1); 優秀選手體能平均得分的 95% 信賴區間是 (2); 經統計考驗後, 此題計算的 z 值是 (3), 查表的 z 值是 (4); 此題的統計考驗力為 (5)。
2. 某班體育統計成績呈常態分配, 其平均數為 80, 標準差 10。甲生成績的 z 分數是 -0.5, 甲生的成績是 (6) 分? 他的成績的百分等級是 (7)。乙

生的成績比甲生多 10 分，乙生成績的 z 分數是 (8)，他的成績可贏過多少 (9) % 的人？

3. 在一個 $\mu=100$, $\sigma=20$ 的標準化智力測驗裡，假如將資優生的定義界定為「智力在 140 以上」。問在常態分配之下，資優生約佔多少 (10) %？某生在此測驗的得分是 110，將其分數轉換為 T 分數，他應可得 (11)。若要將他的成績轉換為 $\mu=80$, $\sigma=10$ 測驗裡，他應可得 (12) 分。

相關參考公式：1. $T=50+10z$ 2. $z = \frac{X - \bar{X}}{SD}$ 3. $z = \frac{X - \mu}{\sigma_x}$ 4. $z = \frac{\bar{X} - \mu}{\frac{\sigma_x}{\sqrt{N}}}$

常態分配表

z	概率	y	z	概率	y	z	概率	y	z	概率	y	z	概率	y	z	概率	y
.00	.0000	.3989	.50	.1915	.3521	1.00	.3413	.2420	1.50	.4332	.1295	2.00	.4772	.0540	2.50	.4938	.0175
.01	.0040	.3989	.51	.1950	.3503	1.01	.3438	.2396	1.51	.4345	.1276	2.01	.4778	.0529	2.51	.4940	.0171
.02	.0080	.3989	.52	.1985	.3485	1.02	.3461	.2371	1.52	.4357	.1257	2.02	.4783	.0519	2.52	.4941	.0167
.03	.0120	.3988	.53	.2019	.3467	1.03	.3485	.2347	1.53	.4370	.1238	2.03	.4788	.0508	2.53	.4943	.0163
.04	.0160	.3986	.54	.2054	.3448	1.04	.3508	.2323	1.54	.4382	.1219	2.04	.4793	.0498	2.54	.4945	.0158
.05	.0199	.3984	.55	.2088	.3429	1.05	.3531	.2299	1.55	.4394	.1200	2.05	.4798	.0488	2.55	.4946	.0154
.06	.0239	.3982	.56	.2123	.3410	1.06	.3554	.2275	1.56	.4406	.1182	2.06	.4803	.0478	2.56	.4948	.0151
.07	.0279	.3980	.57	.2157	.3391	1.07	.3577	.2251	1.57	.4418	.1163	2.07	.4808	.0468	2.57	.4949	.0147
.08	.0319	.3977	.58	.2190	.3372	1.08	.3599	.2227	1.58	.4429	.1145	2.08	.4812	.0459	2.58	.4951	.0143
.09	.0359	.3973	.59	.2224	.3352	1.09	.3621	.2203	1.59	.4441	.1127	2.09	.4817	.0449	2.59	.4952	.0139
.10	.0398	.3970	.60	.2257	.3332	1.10	.3643	.2179	1.60	.4452	.1109	2.10	.4821	.0440	2.60	.4953	.0136
.11	.0438	.3965	.61	.2291	.3312	1.11	.3665	.2155	1.61	.4463	.1092	2.11	.4826	.0431	2.61	.4955	.0132
.12	.0478	.3961	.62	.2324	.3292	1.12	.3686	.2131	1.62	.4474	.1074	2.12	.4830	.0422	2.62	.4956	.0129
.13	.0517	.3956	.63	.2357	.3271	1.13	.3708	.2107	1.63	.4484	.1057	2.13	.4834	.0413	2.63	.4957	.0126
.14	.0557	.3951	.64	.2389	.3251	1.14	.3729	.2083	1.64	.4495	.1040	2.14	.4838	.0404	2.64	.4959	.0122
.15	.0596	.3945	.65	.2422	.3230	1.15	.3749	.2059	1.65	.4505	.1023	2.15	.4842	.0396	2.65	.4960	.0119
.16	.0635	.3939	.66	.2454	.3209	1.16	.3770	.2036	1.66	.4515	.1006	2.16	.4846	.0387	2.66	.4961	.0116
.17	.0675	.3932	.67	.2486	.3187	1.17	.3790	.2012	1.67	.4525	.0989	2.17	.4850	.0379	2.67	.4962	.0113
.18	.0714	.3925	.68	.2517	.3166	1.18	.3810	.1989	1.68	.4535	.0973	2.18	.4854	.0371	2.68	.4963	.0110
.19	.0753	.3918	.69	.2549	.3144	1.19	.3830	.1965	1.69	.4545	.0957	2.19	.4857	.0363	2.69	.4964	.0107
.20	.0793	.3910	.70	.2580	.3123	1.20	.3849	.1942	1.70	.4554	.0940	2.20	.4861	.0355	2.70	.4965	.0104
.21	.0832	.3902	.71	.2611	.3101	1.21	.3869	.1919	1.71	.4564	.0925	2.21	.4864	.0347	2.71	.4966	.0101
.22	.0871	.3894	.72	.2642	.3079	1.22	.3888	.1895	1.72	.4573	.0909	2.22	.4868	.0339	2.72	.4967	.0099
.23	.0910	.3885	.73	.2673	.3056	1.23	.3907	.1872	1.73	.4582	.0893	2.23	.4871	.0332	2.73	.4968	.0096
.24	.0948	.3876	.74	.2704	.3034	1.24	.3925	.1849	1.74	.4591	.0878	2.24	.4875	.0325	2.74	.4969	.0093
.25	.0987	.3867	.75	.2734	.3011	1.25	.3944	.1826	1.75	.4599	.0863	2.25	.4878	.0317	2.75	.4970	.0091
.26	.1026	.3857	.76	.2764	.2989	1.26	.3962	.1804	1.76	.4608	.0848	2.26	.4881	.0310	2.76	.4971	.0088
.27	.1064	.3847	.77	.2794	.2966	1.27	.3980	.1781	1.77	.4616	.0833	2.27	.4884	.0303	2.77	.4972	.0086
.28	.1103	.3836	.78	.2823	.2943	1.28	.3997	.1758	1.78	.4625	.0818	2.28	.4887	.0297	2.78	.4973	.0084
.29	.1141	.3825	.79	.2852	.2920	1.29	.4015	.1736	1.79	.4633	.0804	2.29	.4890	.0290	2.79	.4974	.0081
.30	.1179	.3814	.80	.2881	.2897	1.30	.4032	.1714	1.80	.4641	.0790	2.30	.4893	.0283	2.80	.4974	.0079
.31	.1217	.3802	.81	.2910	.2874	1.31	.4049	.1691	1.81	.4649	.0775	2.31	.4896	.0277	2.81	.4975	.0077
.32	.1255	.3790	.82	.2939	.2850	1.32	.4066	.1669	1.82	.4656	.0761	2.32	.4898	.0270	2.82	.4976	.0075
.33	.1293	.3778	.83	.2967	.2827	1.33	.4082	.1647	1.83	.4664	.0748	2.33	.4901	.0264	2.83	.4977	.0073
.34	.1331	.3765	.84	.2995	.2803	1.34	.4099	.1626	1.84	.4671	.0734	2.34	.4904	.0258	2.84	.4977	.0071
.35	.1368	.3752	.85	.3023	.2780	1.35	.4115	.1604	1.85	.4678	.0721	2.35	.4906	.0252	2.85	.4978	.0069
.36	.1406	.3739	.86	.3051	.2756	1.36	.4131	.1582	1.86	.4686	.0707	2.36	.4909	.0246	2.86	.4979	.0067
.37	.1443	.3725	.87	.3078	.2732	1.37	.4147	.1561	1.87	.4693	.0694	2.37	.4911	.0241	2.87	.4979	.0065
.38	.1480	.3712	.88	.3106	.2709	1.38	.4162	.1539	1.88	.4699	.0681	2.38	.4913	.0235	2.88	.4980	.0063
.39	.1517	.3697	.89	.3133	.2685	1.39	.4177	.1518	1.89	.4706	.0669	2.39	.4916	.0229	2.89	.4981	.0061
.40	.1555	.3683	.90	.3159	.2661	1.40	.4192	.1497	1.90	.4713	.0656	2.40	.4918	.0224	2.90	.4981	.0060
.41	.1591	.3668	.91	.3186	.2637	1.41	.4207	.1476	1.91	.4719	.0644	2.41	.4920	.0219	2.91	.4982	.0058
.42	.1628	.3653	.92	.3212	.2613	1.42	.4222	.1456	1.92	.4726	.0632	2.42	.4922	.0213	2.92	.4982	.0056
.43	.1664	.3637	.93	.3238	.2589	1.43	.4236	.1435	1.93	.4732	.0620	2.43	.4925	.0208	2.93	.4983	.0055
.44	.1700	.3621	.94	.3264	.2565	1.44	.4251	.1415	1.94	.4738	.0608	2.44	.4927	.0203	2.94	.4984	.0053
.45	.1736	.3605	.95	.3289	.2541	1.45	.4265	.1394	1.95	.4744	.0596	2.45	.4929	.0198	2.95	.4984	.0051
.46	.1772	.3589	.96	.3315	.2516	1.46	.4279	.1374	1.96	.4750	.0584	2.46	.4931	.0194	2.96	.4985	.0050
.47	.1808	.3572	.97	.3340	.2492	1.47	.4292	.1354	1.97	.4756	.0573	2.47	.4932	.0189	2.97	.4985	.0048
.48	.1844	.3555	.98	.3365	.2468	1.48	.4306	.1334	1.98	.4761	.0562	2.48	.4934	.0184	2.98	.4986	.0047
.49	.1879	.3538	.99	.3389	.2444	1.49	.4319	.1315	1.99	.4767	.0551	2.49	.4936	.0180	2.99	.4986	.0046
.50	.1915	.3521	1.00	.3413	.2420	1.50	.4332	.1295	2.00	.4772	.0540	2.50	.4938	.0175	3.00	.4987	.0044