

類 科：教育行政

科 目：教育測驗與統計概要

考試時間：1 小時 30 分

座號：_____

※注意：(一)可以使用電子計算器。

(二)不必抄題，作答時請將試題題號及答案依照順序寫在試卷上，於本試題上作答者，不予計分。

(三)附常態分配表。

一、解釋並比較下列各對名詞：（每小題 5 分，共 25 分）

(一)性向測驗 (aptitude test) 與成就測驗 (achievement test)

(二)常模參照測驗 (norm-referenced test) 與效標參照測驗 (criterion-referenced test)

(三)難度 (difficulty) 與鑑別度 (discrimination)

(四)比率智商 (ratio IQ) 與離差智商 (deviation IQ)

(五)再測信度 (test-retest reliability) 與複本信度 (alternate form reliability)

二、(一)試從信度的意義說明為何教育人員應該重視測驗工具的信度？（5 分）(二)測驗的測量標準誤 (standard error of measurement) 與信度的關係為何？（5 分）(三)某學生應考某一標準化智力測驗得 95 分，該測驗標準差 15 分，信度 0.91，則計算該智力測驗的測量標準誤 $SE_m = ?$ （5 分）(四)並計算該生在該測驗的真正分數 95% 信賴區間為多少？（10 分）（附常態分配表）

三、解釋並比較下列各對名詞：（每小題 5 分，共 25 分）

(一)連續變數 (continuous variable) 與間斷變數 (discrete variable)

(二)z 分數與 T 分數

(三)描述統計 (descriptive statistics) 與推論統計 (inferential statistics)

(四)第一類型錯誤 (Type I error) 與第二類型錯誤 (Type II error)

(五)離均差平方和與變異數

四、假設某校學生的課後補習程度 (X 變項) 與學業成就 (Y 變項) 皆為常態分配，自其中隨機抽樣 10 名學生的課後補習與學業成就資料如下，並計算一些統計基本數量如方格內所示，試計算下列各題：

X	Y
8	9
12	10
6	4
8	5
9	6
8	8
10	9
7	7
5	5
5	7

$\Sigma X = 78, \Sigma X^2 = 652$ $\Sigma Y = 70, \Sigma Y^2 = 526$ $\Sigma XY = 573$

(一) X 與 Y 之共變數？（5 分）積差相關係數？（5 分）

(二) Y 變項的變異量不能由 X 變項解釋的變異量為多少百分比？（5 分）

(三)算出以 X 變項預測 Y 變項的迴歸方程式。（10 分）（註：須列式才給分）

（請接第二頁）

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常態分配表

z	概 率	y	z	概 率	y	z	概 率	y
.00	.0000	.3989	.50	.1915	.3521	1.00	.3413	.2420
.01	.0040	.3989	.51	.1950	.3503	1.01	.3438	.2396
.02	.0080	.3989	.52	.1985	.3485	1.02	.3461	.2371
.03	.0120	.3988	.53	.2019	.3467	1.03	.3485	.2347
.04	.0160	.3986	.54	.2054	.3448	1.04	.3508	.2323
.05	.0199	.3984	.55	.2088	.3429	1.05	.3531	.2299
.06	.0239	.3982	.56	.2123	.3410	1.06	.3554	.2275
.07	.0279	.3980	.57	.2157	.3391	1.07	.3577	.2251
.08	.0319	.3977	.58	.2190	.3372	1.08	.3599	.2227
.09	.0359	.3973	.59	.2224	.3352	1.09	.3621	.2203
.10	.0398	.3970	.60	.2257	.3332	1.10	.3643	.2179
.11	.0438	.3965	.61	.2291	.3312	1.11	.3665	.2155
.12	.0478	.3961	.62	.2324	.3292	1.12	.3686	.2131
.13	.0517	.3856	.63	.2357	.3271	1.13	.3708	.2107
.14	.0557	.3951	.64	.2389	.3251	1.14	.3729	.2083
.15	.0596	.3945	.65	.2422	.3230	1.15	.3749	.2059
.16	.0636	.3939	.66	.2454	.3209	1.16	.3770	.2036
.17	.0675	.3932	.67	.2486	.3187	1.17	.3790	.2012
.18	.0714	.3925	.68	.2517	.3166	1.18	.3810	.1989
.19	.0753	.3918	.69	.2549	.3144	1.19	.3830	.1965
.20	.0793	.3910	.70	.2580	.3123	1.20	.3849	.1942
.21	.0832	.3902	.71	.2611	.3101	1.21	.3869	.1919
.22	.0871	.3894	.72	.2642	.3079	1.22	.3888	.1895
.23	.0910	.3885	.73	.2673	.3056	1.23	.3907	.1872
.24	.0948	.3876	.74	.2704	.3034	1.24	.3925	.1849
.25	.0987	.3867	.75	.2734	.3011	1.25	.3944	.1826
.26	.1026	.3857	.76	.2764	.2989	1.26	.3962	.1804
.27	.1064	.3847	.77	.2794	.2966	1.27	.3980	.1781
.28	.1103	.3836	.78	.2823	.2943	1.28	.3997	.1758
.29	.1141	.3825	.79	.2852	.2920	1.29	.4015	.1736
.30	.1179	.3814	.80	.2881	.2897	1.30	.4032	.1714
.31	.1217	.3802	.81	.2910	.2874	1.31	.4049	.1691
.32	.1255	.3790	.82	.2939	.2850	1.32	.4066	.1669
.33	.1293	.3778	.83	.2967	.2827	1.33	.4082	.1647
.34	.1331	.3765	.84	.2995	.2803	1.34	.4099	.1626
.35	.1368	.3752	.85	.3023	.2780	1.35	.4115	.1604
.36	.1406	.3739	.86	.3051	.2756	1.36	.4131	.1582
.37	.1443	.3725	.87	.3078	.2732	1.37	.4147	.1561
.38	.1480	.3712	.88	.3106	.2709	1.38	.4162	.1539
.39	.1517	.3697	.89	.3133	.2685	1.39	.4177	.1518
.40	.1555	.3683	.90	.3159	.2661	1.40	.4192	.1497
.41	.1591	.3668	.91	.3186	.2637	1.41	.4207	.1476
.42	.1628	.3653	.92	.3212	.2613	1.42	.4222	.1456
.43	.1664	.3637	.93	.3238	.2589	1.43	.4236	.1435
.44	.1700	.3621	.94	.3264	.2565	1.44	.4251	.1415
.45	.1736	.3605	.95	.3289	.2541	1.45	.4265	.1394
.46	.1772	.3589	.96	.3315	.2516	1.46	.4279	.1374
.47	.1808	.3572	.97	.3340	.2492	1.47	.4292	.1354
.48	.1844	.3555	.98	.3365	.2468	1.48	.4306	.1334
.49	.1879	.3538	.99	.3389	.2444	1.49	.4319	.1315
.50	.1915	.3521	1.00	.3413	.2420	1.50	.4332	.1295

(請接第三頁)

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(續)

z	概 率	y	z	概 率	y	z	概 率	y
1.50	.4332	.1295	2.00	.4772	.0540	2.50	.4938	.0175
1.51	.4345	.1276	2.01	.4778	.0529	2.51	.4940	.0171
1.52	.4357	.1257	2.02	.4783	.0519	2.52	.4941	.0167
1.53	.4370	.1238	2.03	.4788	.0508	2.53	.4943	.0163
1.54	.4382	.1219	2.04	.4793	.0498	2.54	.4945	.0158
1.55	.4394	.1200	2.05	.4798	.0488	2.55	.4946	.0154
1.56	.4406	.1182	2.06	.4803	.0478	2.56	.4948	.0151
1.57	.4418	.1163	2.07	.4808	.0468	2.57	.4949	.0147
1.58	.4429	.1145	2.08	.4812	.0459	2.58	.4951	.0143
1.59	.4441	.1127	2.09	.4817	.0449	2.59	.4952	.0139
1.60	.4452	.1109	2.10	.4821	.0440	2.60	.4953	.0136
1.61	.4463	.1092	2.11	.4826	.0431	2.61	.4955	.0132
1.62	.4474	.1074	2.12	.4830	.0422	2.62	.4956	.0129
1.63	.4484	.1057	2.13	.4834	.0413	2.63	.4957	.0126
1.64	.4495	.1040	2.14	.4838	.0404	2.64	.4959	.0122
1.65	.4505	.1023	2.15	.4842	.0396	2.65	.4960	.0119
1.66	.4515	.1006	2.16	.4846	.0387	2.66	.4961	.0116
1.67	.4525	.0989	2.17	.4850	.0379	2.67	.4962	.0113
1.68	.4535	.0973	2.18	.4854	.0371	2.68	.4963	.0110
1.69	.4545	.0957	2.19	.4857	.0363	2.69	.4964	.0107
1.70	.4554	.0940	2.20	.4861	.0355	2.70	.4965	.0104
1.71	.4564	.0925	2.21	.4864	.0347	2.71	.4966	.0101
1.72	.4573	.0909	2.22	.4868	.0339	2.72	.4967	.0099
1.73	.4582	.0893	2.23	.4871	.0332	2.73	.4968	.0096
1.74	.4591	.0878	2.24	.4875	.0325	2.74	.4969	.0093
1.75	.4599	.0863	2.25	.4878	.0317	2.75	.4970	.0091
1.76	.4608	.0848	2.26	.4881	.0310	2.76	.4971	.0088
1.77	.4616	.0833	2.27	.4884	.0303	2.77	.4972	.0086
1.78	.4625	.0818	2.28	.4887	.0297	2.78	.4973	.0084
1.79	.4633	.0804	2.29	.4890	.0290	2.79	.4974	.0081
1.80	.4641	.0790	2.30	.4893	.0283	2.80	.4974	.0079
1.81	.4649	.0775	2.31	.4896	.0277	2.81	.4975	.0077
1.82	.4656	.0761	2.32	.4898	.0270	2.82	.4976	.0075
1.83	.4664	.0748	2.33	.4901	.0264	2.83	.4977	.0073
1.84	.4671	.0734	2.34	.4904	.0258	2.84	.4977	.0071
1.85	.4678	.0721	2.35	.4906	.0252	2.85	.4978	.0069
1.86	.4686	.0707	2.36	.4909	.0246	2.86	.4979	.0067
1.87	.4693	.0694	2.37	.4911	.0241	2.87	.4979	.0065
1.88	.4699	.0681	2.38	.4913	.0235	2.88	.4980	.0063
1.89	.4706	.0669	2.39	.4916	.0229	2.89	.4981	.0061
1.90	.4713	.0656	2.40	.4918	.0224	2.90	.4981	.0060
1.91	.4719	.0644	2.41	.4920	.0219	2.91	.4982	.0058
1.92	.4726	.0632	2.42	.4922	.0213	2.92	.4982	.0056
1.93	.4732	.0620	2.43	.4925	.0208	2.93	.4983	.0055
1.94	.4738	.0608	2.44	.4927	.0203	2.94	.4984	.0053
1.95	.4744	.0596	2.45	.4929	.0198	2.95	.4984	.0051
1.96	.4750	.0584	2.46	.4931	.0194	2.96	.4985	.0050
1.97	.4756	.0573	2.47	.4932	.0189	2.97	.4985	.0048
1.98	.4761	.0562	2.48	.4934	.0184	2.98	.4986	.0047
1.99	.4767	.0551	2.49	.4936	.0180	2.99	.4986	.0046
2.00	.4772	.0540	2.50	.4938	.0175	3.00	.4987	.0044

(請接第四頁)

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(續)

z	概 率	y	z	概 率	y	z	概 率	y
3.00	.4987	.0044	3.40	.4997	.0012	3.80	.49993	.0003
3.01	.4987	.0043	3.41	.4997	.0012	3.81	.49993	.0003
3.02	.4987	.0042	3.42	.4997	.0012	3.82	.49993	.0003
3.03	.4988	.0040	3.43	.4997	.0011	3.83	.49994	.0003
3.04	.4988	.0039	3.44	.4997	.0011	3.84	.49994	.0003
3.05	.4989	.0038	3.45	.4997	.0010	3.85	.49994	.0002
3.06	.4989	.0037	3.46	.4997	.0010	3.86	.49994	.0002
3.07	.4989	.0036	3.47	.4997	.0010	3.87	.49995	.0002
3.08	.4990	.0035	3.48	.4997	.0009	3.88	.49995	.0002
3.09	.4990	.0034	3.49	.4998	.0009	3.89	.49995	.0002
3.10	.4990	.0033	3.50	.4998	.0009	3.90	.49995	.0002
3.11	.4991	.0032	3.51	.4998	.0008	3.91	.49995	.0002
3.12	.4991	.0031	3.52	.4998	.0008	3.92	.49996	.0002
3.13	.4991	.0030	3.53	.4998	.0008	3.93	.49996	.0002
3.14	.4992	.0029	3.54	.4998	.0008	3.94	.49996	.0002
3.15	.4992	.0028	3.55	.4998	.0007	3.95	.49996	.0002
3.16	.4992	.0027	3.56	.4998	.0007	3.96	.49996	.0002
3.17	.4992	.0026	3.57	.4998	.0007	3.97	.49996	.0002
3.18	.4993	.0025	3.58	.4998	.0007	3.98	.49997	.0001
3.19	.4993	.0025	3.59	.4998	.0006	3.99	.49997	.0001
3.20	.4993	.0024	3.60	.4998	.0006	4.00	.49997	.0001
3.21	.4993	.0023	3.61	.4998	.0006	4.05	.49997	.0001
3.22	.4994	.0022	3.62	.4999	.0006	4.10	.49998	.00009
3.23	.4994	.0022	3.63	.4999	.0005	4.20	.49999	.00006
3.24	.4994	.0021	3.64	.4999	.0005	4.30	.49999	.00004
3.25	.4994	.0020	3.65	.4999	.0005	4.40	.49999	.00002
3.26	.4994	.0020	3.66	.4999	.0005	4.50	.499997	.00002
3.27	.4995	.0019	3.67	.4999	.0005	4.60	.499998	.00001
3.28	.4995	.0018	3.68	.4999	.0005	4.70	.499999	.000006
3.29	.4995	.0018	3.69	.4999	.0004	4.80	.499999	.000004
3.30	.4995	.0017	3.70	.4999	.0004	4.90	.4999995	.000002
3.31	.4995	.0017	3.71	.4999	.0004	5.00	.4999997	.000001
3.32	.4995	.0016	3.72	.4999	.0004			
3.33	.4996	.0016	3.73	.4999	.0004			
3.34	.4996	.0015	3.74	.49991	.0004			
3.35	.4996	.0015	3.75	.49991	.0004			
3.36	.4996	.0014	3.76	.49992	.0003			
3.37	.4996	.0014	3.77	.49992	.0003			
3.38	.4996	.0013	3.78	.49992	.0003			
3.39	.4997	.0013	3.79	.49992	.0003			

