

FINAL EXAM (form 1)

PSYCHOLOGY 3000-090

U-ONLINE

Thursday, July 27, 2000 — Saturday, July 29, 2000

Tracey Smith and Melissa Hawkins

DATE: _____

STUDENT NAME: _____

U OF U ID. #: _____

SIGNATURE _____

TIME LIMIT: 2 HOURS

START TIME: _____ END TIME: _____

PROCTOR SIGNATURE: _____

THE FOLLOWING CONDITIONS APPLY:

Check all that apply:

Calculators O.K.

Open Book (any book)

Dictionaries O.K.

Notes O.K.

Other: Homework and
Assignments

Write exam answers on:

Blue Book or Sheets of Paper

Scantron

Exam

PLEASE show all your work so we have the option of giving you partial credit for your work. Please circle your final answers. Make a copy of your calculations and answers so you will be able to check your answers when they are posted on the class web site after the testing period is over.

An organization believes that its Math Skill Improvement Training (MSIT) can significantly raise the algebra test scores of junior high school kids. They take 8 junior high students and have them complete the MSIT program. Each student takes a standardized algebra test before and after completing the program. Here are their scores.

Student	A	B	C	D	E	F	G	H
Before	64	89	139	70	62	144	98	84
After	67	91	142	77	66	150	105	89

- 1A. (5 points) State the scientific hypothesis and the PCH (plausible competing hypothesis) of chance.
- 1B. (2 points) Is the scientific hypothesis directional or non-directional? Why?
- 1C. (5 points) Name the test statistic you will use to decide between the statistical hypotheses.
- 1D. (2 points) Translate the scientific hypothesis and the PCH of chance into statistical hypotheses – that is state H_0 and H_1 .
- 1E. (2 points) What is the alpha level (level of significance or p -value) that you will use?
- 1F. (2 points) In your own words what does this *alpha level* mean?
- 1G. (2 points) Calculate your df (degrees of freedom).
- 1H. (2 points) Is H_1 one- or two- tailed? Why?
- 1I. (2 points) Look up the critical value (or values) in your table. Write the value(s) down.
- 1J. (6 points) Draw a line representing the range of your test statistic. What is the value predicted by H_0 ? Draw it on the line. Also draw in the critical value (or values) on the line. Label the “Reject H_0 ” region or (regions). Label the “Do Not Reject H_0 ” region.

Now for the data:

- 1K. (2 points) Does the pattern of data favor the scientific hypothesis?
- 1L. (10 points) Now calculate the value of your test statistic from the data. Take this calculated value of your test statistic and put it on the number line made in (j.) Does it fall in a rejection region(s)?
- 1M. (3 points) Do you reject H_0 or not?

1N. (7 points) Verbally summarize the issue of statistical conclusion validity (PCH of chance) in this case. That is, do you think this study has statistical conclusion validity or not?

2. An undergraduate psychology student is conducting a senior thesis research study on pets and their owners. He finds out from the National Pet Association that nationally when pet dogs are classified by size, 30% of all dogs are small, 50% are medium and 20% are large.

He thinks that a mountain community would have less small dogs and more big dogs than the national average. He does a survey of 200 dog owners in Park City, Utah and finds the following data.

	<i>Size of Dog</i>		
	Large	Medium	Small
Frequency	70	90	40

2A. (4 points) Does the data pattern fit the scientific hypothesis?

2B. (4 points) Choose and name an appropriate test statistic to evaluate the statistical conclusion validity.

2C. (4 points) State the null and alternative hypotheses.

2D. (10 points) Choose and clearly state the alpha level. Draw a line with the appropriate critical value(s) and rejection region(s).

2E. (20 points) Calculate the test statistic.

2F. (6 points) Finally, clearly state whether you reject or do not reject the null hypothesis.

END OF EXAM (written 7/00)

t-table

df	one-tailed	0.05	0.025	0.01	0.005	0.001
	two-tailed	0.1	0.05	0.02	0.01	0.002
1		6.314	12.706	31.821	63.657	318.310
2		2.920	4.303	6.965	9.925	22.326
3		2.353	3.182	4.541	5.841	10.213
4		2.132	2.776	3.747	4.604	7.173
5		2.015	2.571	3.365	4.032	5.893
6		1.943	2.447	3.143	3.707	5.208
7		1.895	2.365	2.998	3.499	4.785
8		1.86	2.306	2.896	3.355	4.501
9		1.833	2.262	2.821	3.250	4.297
10		1.812	2.228	2.764	3.169	4.144
11		1.796	2.201	2.718	3.106	4.025
12		1.782	2.179	2.681	3.055	3.930
13		1.771	2.160	2.650	3.012	3.852
14		1.761	2.145	2.624	2.977	3.787
15		1.753	2.131	2.602	2.947	3.733
16		1.746	2.120	2.583	2.921	3.686
17		1.74	2.110	2.567	2.898	3.646
18		1.734	2.101	2.552	2.878	3.610
19		1.729	2.093	2.539	2.861	3.579
20		1.725	2.086	2.528	2.845	3.552
21		1.721	2.080	2.518	2.831	3.527
22		1.717	2.074	2.508	2.819	3.505
23		1.714	2.069	2.500	2.807	3.485
24		1.711	2.064	2.492	2.797	3.467
25		1.708	2.060	2.485	2.787	3.450
26		1.706	2.056	2.479	2.779	3.435
27		1.703	2.052	2.473	2.771	3.421
28		1.701	2.048	2.467	2.763	3.408
29		1.699	2.045	2.462	2.756	3.396
30		1.697	2.042	2.457	2.750	3.385
40		1.684	2.021	2.423	2.704	3.307
60		1.671	2.000	2.390	2.660	3.232
120		1.658	1.980	2.358	2.617	3.160
inf		1.645	1.960	2.326	2.576	3.090

Chi-Square Table

df	one-tailed	0.050	0.010	0.001
	1		3.84146	6.63490
2		5.99147	9.21034	13.816
3		7.81473	11.3449	16.266
4		9.48773	13.2767	18.467
5		11.0705	15.0863	20.515
6		12.5916	16.8119	22.458
7		14.0671	18.4753	24.322
8		15.5073	20.0902	26.125
9		16.9190	21.6660	27.877
10		18.3070	23.2093	29.588
11		19.6751	24.7250	31.264
12		21.0261	26.2170	32.909
13		22.3621	27.6883	34.528
14		23.6848	29.1413	36.123
15		24.9958	30.5779	37.697
16		26.2962	31.9999	39.252
17		27.5871	33.4087	40.790
18		28.8693	34.8053	42.312
19		30.1435	36.1908	43.820
20		31.4104	37.5662	45.315
21		32.6705	38.9321	46.797
22		33.9244	40.2894	48.268
23		35.1725	41.6384	49.728
24		36.4151	42.9798	51.179
25		37.6525	44.3141	52.620
26		38.8852	45.6417	54.052
27		40.1133	46.9630	55.476
28		41.3372	48.2782	56.892
29		42.5569	49.5879	58.302
30		43.7729	50.8922	59.703
40		55.7585	63.6907	73.402
50		67.5048	76.1539	86.661
60		79.0819	88.3794	99.607
70		90.5312	100.425	112.317
80		101.879	112.329	124.839
90		113.145	124.116	137.208
100		124.342	135.807	149.449

F Table for Alpha=0.5

alpha=.05		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	inf	
df lower	df upper																				
	1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5	241.9	243.9	245.9	248.0	249.1	250.1	251.1	252.2	253.3	254.3	
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50	
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53	
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63	
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.36	
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67	
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23	
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93	
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71	
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54	
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40	
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30	
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21	
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13	
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07	
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01	
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96	
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92	
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88	
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84	
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81	
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78	
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76	
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73	
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71	
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69	
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.20	2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67	
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.19	2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65	
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.18	2.10	2.03	1.94	1.90	1.85	1.81	1.75	1.70	1.64	
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62	
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51	
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39	
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96	1.91	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25	
inf	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00	