Elementary Statistics	**Name:** _____
Study Guide 33	**Class:** _____
Due Date: _____	**Score:** _____

Your solutions must be consistent with class notes & resources.

Be Neat, Organized, and No Work ⇔ No Points

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1. **(2 points)** Explain when to use the ANOVA method.

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2. **(2 points)** What does ANOVA stand for?

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3. A math test was given to three randomly selected schools. The result of exams are given in the following table.

School 1:	72 83 92 97 82 75 68 93
School 2:	75 81 95 92 88 70 70 90 97 84 76
School 3:	82 73 99 90 66 77

Table 1:
High School Math Contest

At $\alpha = 0.02$ level of significance, test the claim that at least one of the population means is different from other schools using the data in table 1. Use non-statistical terminology to state your final conclusion.

(a) **(2 points)** Clearly state H_0 and H_1.

$H_0:$ _____

$H_1:$ _____

(b) **(2 points)** Find the computed test statistic, and the P-value.

C.T.S. : _____   **P-Value :** _____

(c) **(2 points)** Use the <u>P–Value method</u> to discuss the validity of H_0 and H_1.

(c) _____

(d) **(2 points)** Use non-statistical terminology to state your final conclusion.

(d) _____

4. **Suppose we are testing multiple population means with $k = 5$, $n = 30$, and C.T.S. $F = 2.789$,**

   (a) **(2 points)** Find **Ndf** and **Ddf**.

   (a) _____

   (b) **(4 points)** Using distribution function **Fcdf** with your TI Calculator, find the corresponding p-value. Drawing required.

   (b) _____

   (c) **(3 points)** Choose values for the level of significance α from this list $\{0.01, 0.02, 0.05, 0.08, 0.09, 0.1\}$ that supports all population means are equal. Explain your reasoning.

   (c) _____

   (d) **(3 points)** Choose values for the level of significance α from this list $\{0.01, 0.02, 0.05, 0.08, 0.09, 0.1\}$ that supports at least one of the population means is different from the rest.
   Explain your reasoning.

   (d) _____

5. The head injury data are shown in the following table.

Subcompact:	681	428	917	898	420
Compact:	643	655	442	514	525
Midsize:	469	727	525	454	259
Full-size:	384	656	602	687	360

Table 2:
Head Injury & Car Crash

Test the claim that different weight categories have the same mean by using the data in table 2.

(a) **(3 points)** Clearly state H_0 and H_1.

H_0 : _____

H_1 : _____

(b) **(2 points)** Find Ndf and Ddf.

(b) _____

(c) **(3 points)** Find the computed test statistic, and the P-value.

C.T.S. : _____   P-Value : _____

(d) **(2 points)** Use the <u>P–Value method</u> to discuss the validity of H_0 and H_1.

(d) _____

(e) **(2 points)** Use non-statistical terminology to state your final conclusion.

(e) _____

6. **(7 points) A study was conducted to investigate the effects of exercise on stress. The table below lists systolic blood pressure reading of subjects after certain tests.**

Female/Black	Male/Black	Female/White	Male/White
130.67	120.67	106.00	111.00
102.67	133.00	108.33	99.67
93.67	120.33	107.33	128.33
92.00	118.33	113.33	127.33

Use the <u>P–Value method</u> to test the claim that different groups of subjects have the same mean blood pressure. Full Detailed-Work required for full credit.

7. **(7 points) A study was conducted to investigate the course learning outcomes in the math department. The table below lists the results of such outcomes from randomly selected students in classes that are held in different time.**

Morning Class	Afternoon Class	Evening Class	Weekend Class	Hybrid Class
85, 75, 70,	74, 77, 59,	92, 86, 70,	80, 84, 75,	66, 72, 77,
68, 72, 95,	68, 72, 85,	85, 55, 77,	86, 80, 90,	100, 68, 84,
100, 88	100, 63, 97	73, 82, 90	65, 77	70, 74, 86, 90

At $\alpha = 0.1$ level of significance, use the <u>P–Value method</u> to test the claim that different classes have the same mean outcome. Full Detailed-Work required for full credit.

Congratulations to you for a job well done!