Math 160 — Exam 1 74/74
Professor Busken
No Cell Phones!!

Name: Key

Directions: Show all your work! Make sure you answer all 20 questions.

1. (2 points) ***Multiple Choice.*** Determine whether the given value is a statistic or a parameter. A health and fitness club surveys 40 randomly selected members and found that the average weight of those questioned is 157 lb.

   A) Parameter B) Statistic 1. B

2. (2 points) ***Multiple Choice*** Determine whether the given value is from a discrete or continuous data set. The temperature of a cup of coffee is 67.3F.

   A) Continuous B) Discrete 2. A

---

3. (4 points) ***Multiple Choice.*** Find the original data from the stemplot.

   3. D

Stem	Leaves
2	1 7
3	1 1 3 5
4	1 3 3 7 9
5	3 4

A) 3, 9, 3, 3, 5, 7, 5, 5, 7, 11, 13, 8, 9, 11
B) 23, 23, 24, 31, 31, 33, 35, 41, 41, 53, 54
C) 21, 27, 33, 33, 35, 43, 44, 47, 49, 53, 54
D) 21, 27, 31, 31, 33, 35, 41, 43, 43, 47, 49, 53, 54

---

4. (4 points) Kevin asked some of his friends how many hours they had worked during the previous week at their after-school jobs. The results are shown below.

6	5	6	4	6	6	9	7	6	3	7	5
5	7	6	5	7	6	5	7	5	7	7	4

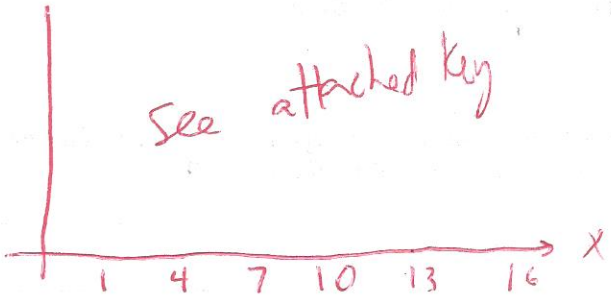
Construct a frequency distribution table. Use 4 classes, a class width of 2 hours, and a lower limit of 3 for class 1.

Hours	Frequency
3-4	3
5-6	13
7-8	7
9-10	1

5. (4 points) The frequency table (right) shows the number of days off in a given year for 30 police detectives.

Days off	Frequency
0-2	10
3-5	1
6-8	7
9-11	7
12-14	1
15-17	4

Construct a histogram. Use the class midpoints for the horizontal scale. Does the result appear to be a normal distribution? Why or why not?



---

6. (4 points) ***Multiple Choice.*** Use the empirical rule to solve the problem. The amount of Jen's monthly phone bill is normally distributed with a mean of \$74 and a standard deviation of \$8. What percentage of her phone bills are between \$50 and \$98?

A) 95% B) 99.99% C) 68% D) 99.7%

6. D

$\mu = \$74$; $\sigma = \$8$

$\mu + 3\sigma = 74 + 3 \cdot 8 = \$98$

$\mu - 3\sigma = 74 - 3 \cdot 8 = \$50$

---

7. (4 points) ***Multiple Choice.*** Determine which score corresponds to the higher relative position. Which is better: a score of 82 on a test with a mean of 70 and a standard deviation of 8, or a score of 82 on a test with a mean of 75 and a standard deviation of 4?

A) Both scores have the same relative position.

B) The second 82

C) The first 82

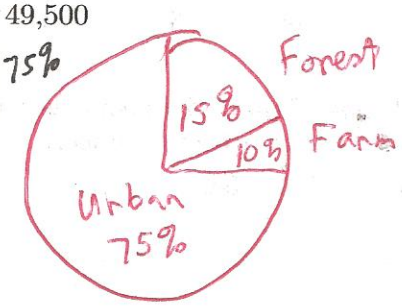
7. B

$$z = \frac{x-\mu}{\sigma} = \frac{82-70}{8} = \frac{12}{8} = \frac{3}{2} = 1.5$$

$$z = \frac{x-\mu}{\sigma} = \frac{82-75}{4} = \frac{7}{4} = 1.75$$

8. (4 points) **Construct a pie chart representing the given data set.** The following figures give the distribution of land (in acres) for a county containing 66,000 acres.

Forest	Farm	Urban
9900	6600	49,500
15%	10%	75%



---

9. (4 points) ***Multiple Choice.*** The weights (in pounds) of 30 newborn babies are listed below. Find P_{16}.

5.5	5.7	5.8	5.9	6.1	6.1	6.4	6.4	6.5	6.6
6.7	6.7	6.7	6.9	7.0	7.0	7.0	7.1	7.2	7.2
7.4	7.5	7.7	7.7	7.8	8.0	8.1	8.1	8.3	8.7

A) 4.8 lb B) 6.1 lb C) 6.0 lb D) 5.9 lb 9. B

$L = \frac{16}{100} \cdot 30 = 4.8 \overset{\uparrow}{=} 5$, so we take the 5th data value (starting from the lowest) in the sorted list as P_{16}

---

10. (4 points) ***Multiple Choice.*** A die with 12 sides is rolled. What is the probability of rolling a number less than 11?

A) $\frac{1}{12}$ B) $\frac{11}{12}$ C) $\frac{5}{6}$ D) 10 $\frac{10}{12}$

10. C

---

11. (4 points) ***Multiple Choice.*** Find the probability of correctly answering the first 2 questions on a multiple choice test if random guesses are made and each question has 5 possible answers.

A) $\frac{1}{32}$ B) $\frac{1}{25}$ C) $\frac{5}{2}$ D) $\frac{2}{5}$

11. B

The table below describes the smoking habits of a group of asthma sufferers.

	nonsmoker	Occasional smoker	Regular smoker	Heavy smoker	Total total
Men	389	36	83	37	545
Women	419	36	89	35	579
Total	808	72	172	72	1124

12. (4 points) ***Multiple Choice.*** If *one* of the **1124** people is randomly selected, find the probability that the person is a man or a heavy smoker.

A) 0.483 B) 0.516 C) 0.514 D) 0.549 12. B

$P(\text{man or } H) = P(\text{man}) + P(H) - P(M \cap H)$

$= \frac{545}{1124} + \frac{72}{1124} - \frac{37}{1124} = \frac{580}{1124} \approx 0.516$

The table below describes the smoking habits of a group of asthma sufferers.

	nonsmoker	Occasional smoker	Regular smoker	Heavy smoker	Total total
Men	351	47	70	48	516
Women	395	40	87	43	565
Total	746	87	157	91	1081

13. (4 points) ***Multiple Choice.*** If *one* of the **1081** people is randomly selected, find the probability of getting a regular or heavy smoker.

A) 0.145 B) 0.476 C) 0.109 D) 0.229 13. D

$P(R \text{ or } H) = P(R) + P(H) - P(R \cap H)$ (0)

$= \frac{157 + 91}{1081} \approx 0.229$

---

14. (4 points) ***Multiple Choice.*** A sample of 4 different calculators is randomly selected from a group containing 49 that are defective and 28 that have no defects. What is the probability that all four of the calculators selected are defective? Round to four decimal places.

A) 0.1640 B) 0.1566 C) 10.3480 D) 0.1066 14. B

$n = 4$

$N = 49 + 28 = 77$

$P(\text{one defective}) = \frac{49}{77}$

$\frac{49}{77} \cdot \frac{48}{76} \cdot \frac{47}{75} \cdot \frac{46}{74} \approx 0.1566$

15. (2 points) Did you watch any or part of the online review video? (There are two possible correct answers.)

A) yes B) no 15. _____

Use the following sample data for questions 16—20. **A gym samples 8 clients and records the number of hours each person spends exercising each week.**

6 3.5 5 4 4.5 8 10 2.5

Determine the values of the following statistics.

16. (4 points) mean = 5.4375 5.44

17. (4 points) median = 4.75

18. (4 points) range = 7.5

19. (4 points) standard deviation = 2.48 (not 2.32 pop st. d)

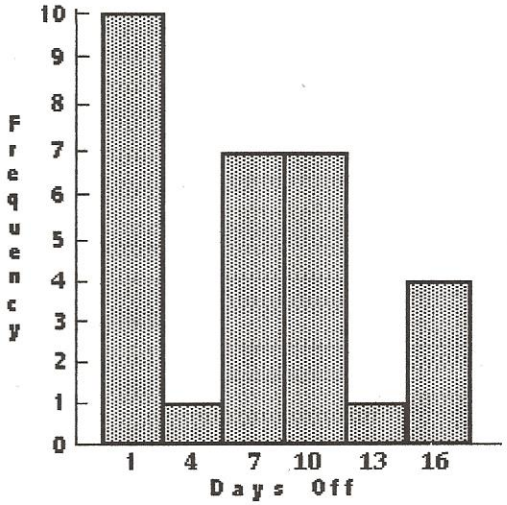
20. (4 points) variance = 6.17

Answer Key
Testname: UNTITLED1

1) B
2) A
3) C D
4)

Hours	Frequency
3–4	3
5–6	13
7–8	7
9–10	1

5) The distribution does not appear to be normal. It is not bell-shaped and it is not symmetric.



6) D
7) B
8) B
9) B
10) C
11) B
12) B
13) D
14) B