

Name: _____ ID#: _____

Midterm Exam

Elementary Statistics

October 17, 2013

PLEASE READ THE FOLLOWING INFORMATION.

- This is a **75-minute** exam. Calculators are allowed. Books, notes, formula sheets, and other aids are not allowed.
- You are required to show all your work and provide the necessary explanations everywhere to get full credit.

1. The Television Bureau of Advertising publishes information on television ownership in Trends in Television. The Table below gives the number of TV sets per household for 50 randomly selected households.

1	1	1	2	6	3	3	4	2	4
3	2	1	5	2	1	3	6	2	2
3	1	1	4	3	2	2	2	2	3
0	3	1	2	1	2	3	1	1	3
3	2	1	2	1	1	3	1	5	1

- (a) Organize these data into a frequency distribution, percentage distribution and cumulative distribution.

Number of TV's	Frequency	Percentage
0		
1		
2		
3		
4		
5		
6		

Number of TV's	Cumulative Frequency
less than 1	
less than 2	
less than 3	
less than 4	
less than 5	
less than 6	
less than 7	

- (b) Draw its frequency histogram.

2. The Table below displays the number of days to maturity for 40 short-term investments.

70	64	99	55	64	89	87	65
62	38	67	70	60	69	78	39
75	56	71	51	99	68	95	86
57	53	47	50	55	81	80	98
51	36	63	66	85	79	83	70

Construct a stem-and-leaf display with the stem labels 3, 4, 5, 6, 7, 8, 9.

3. A home appliance center advertised the following refrigerators, of which it had, respectively, 18, 12, 9, 14, and 25 in stock.

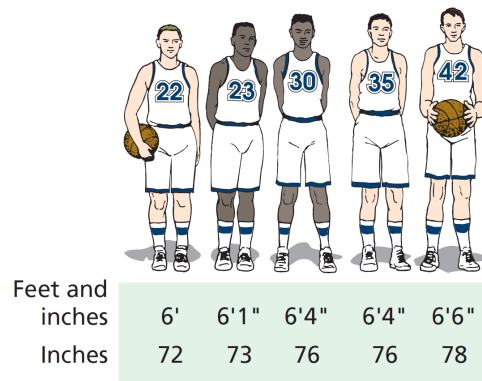
Brand	Size	Price
Company A	15 cu. ft.	\$416
Company B	21 cu. ft.	\$549
Company C	19 cu. ft.	\$649
Company D	21 cu. ft.	\$716
Company E	24 cu. ft.	\$799

(a) What is the average size of these refrigerators?

(b) What is the average price of these refrigerators?

4. Following are fourteen temperature readings taken at different locations in a large kiln: 409, 412, 439, 411, 432, 432, 405, 411, 422, 417, 440, 427, 411, and 417. Find the median, Q_1 and Q_3 .
5. Following are the numbers of blossoms on 50 cacti in a desert botanical garden: 1, 0, 3, 0, 4, 1, 0, 1, 0, 0, 1, 6, 1, 0, 0, 0, 3, 3, 0, 1, 1, 5, 0, 2, 0, 3, 1, 1, 0, 4, 0, 0, 1, 2, 1, 1, 2, 0, 1, 0, 3, 0, 0, 1, 5, 3, 0, 0, 1, and 0. Find the mode.
6. Having kept records for several months, Ms. Lewis knows that it takes her on the average 47.7 minutes with a standard deviation of 2.46 minutes to drive to work from her suburban home. If she always starts out exactly one hour before she has to arrive at work, at most what percent of the time will she arrive late?

7. The heights of the five starting players on a men's college basketball team are shown in the Figure below.



(a) Find the range.

(b) Find the mean.

(c) Find the standard deviation.

8. In how many different ways can the judges choose a winner and first runner-up from the 10 finalists in a student essay contest?
9. An insurance company has a branch in each of the six New England states (Massachusetts, Rhode Island, Connecticut, Maine, New Hampshire, and Vermont). Find the number of ways in which six branch managers can be assigned to manage an office in each of the six states.
10. A motel chain wants to inspect 5 of its 32 franchised operations. If the order of the inspections does not matter, in how many different ways can it plan this series of inspections?
11. Let $A = \{3, 4\}$, $B = \{1, 2, 3, 4, 5, 6, 7\}$, and $C = \{6, 7, 8\}$ be subsets of the sample space $S = \{1, 2, 3, 4, 5, 6, 7, 8\}$. Find
- (a) B'
 - (b) $A \cap B$
 - (c) $B \cap C'$
 - (d) $A \cup C$
 - (e) $A \cup B'$

12. A carton of 24 light bulbs includes two that are defective. If two of the bulbs are chosen at random, what are the probabilities that

(a) neither bulb will be defective;

(b) one of the bulbs will be defective;

(c) both bulbs will be defective?

13. An auction house has two appraisers of precious jewelry. The probability that the older of the two will not be available is 0.33, the probability that the other one will not be available is 0.27, and the probability that both of them will not be available is 0.19. What is the probability that either or both of them will not be available?

14. The probability that a bus from Seattle to Vancouver will leave on time is 0.80, and the probability that it will leave on time and also arrive on time is 0.72.

(a) What is the probability that a bus that leaves on time will also arrive on time?

(b) If the probability that such a bus will arrive on time is 0.75, what is the probability that a bus that arrives on time also left on time?

15. How many different 5-letter codes can be made using three a's and two b's? **Do not leave your answer in factorial, simplify as much as you can.**