

The following multiple choice questions are worth 5 points each.

1. A talent show producer needs to fit 17 acts of varying lengths into several segments. The segments will be no more than 45 minutes long, and are to be separated by intermissions.  
  
This problem could be solved by using
  - a. the list processing algorithm for independent tasks.
  - b. the worst-fit algorithm for bin packing.
  - c. the critical-path scheduling algorithm.
  - d. None of these techniques would work to find a solution.
  
2. A study gathered data on 1000 randomly selected students and showed that students who took Latin in high school had much higher scores on a test of verbal English skills than those who did not take Latin. The study cannot conclude that taking Latin improves verbal English skills because
  - a. the study was not an experiment.
  - b. the study was not double blind.
  - c. of the placebo effect.
  - d. the verbal English test was faulty.
  
3. You wish to survey the students at your college to determine their feelings about the quality of services in the Student Center. Which of the following sampling designs is best for avoiding bias?
  - a. Place an ad in the student newspaper asking all readers to mail in their opinions.
  - b. Obtain a list of student names from the registrar and select 250 names to contact.
  - c. Air an announcement on the campus radio station asking all listeners to phone in their opinions.
  - d. Survey every tenth student who enters the Student Center.
  
4. Use the random digits table, starting at line 132, to choose four people from a list numbered 001 to 500 to call for a poll.

a. 089, 008, 778, 873	c. 089, 008, 77, 88
b. 089, 008, 192, 445	d. 089, 192, 459, 256
  
5. A ten-year study of low-birth weight babies is performed to determine if birth weight affects IQ and performance in elementary school. Children are identified in hospitals at birth and their performance is tracked until they are ten years old. This type of study is a(n)

a. comparative experiment	c. prospective study
b. experiment with compounding variables	d. biased survey



Use the following information for problems 9 and 10.

It is suggested that temperature affects coffee sales. The table below contains the high temperature (in °F) and coffee sales (in hundreds of dollars) for 8 randomly selected days.

Temperature, $x$	32	39	51	60	65	72	78	81
Coffee sales, $y$	26.2	24.8	19.7	20	13.3	13.9	11.4	11.2

8. Find the equation of the "line of best fit" for this set of data (correct to 2 decimal places).

a.  $y = -2.92x + 111.04$

c.  $y = 36.85x - 0.32$

b.  $y = 111.04x - 2.92$

d.  $y = -0.32x + 36.85$

e. None of the preceding

9. Predict coffee sales on a day when the high temperature is 75 °F.

a. \$1,265

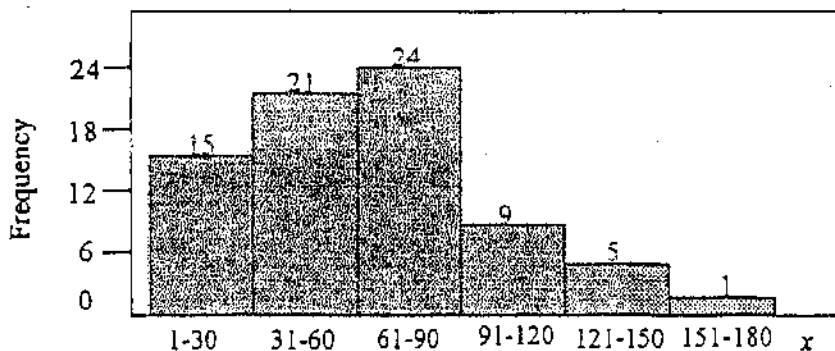
c. \$1,285

b. \$1,756

d. \$10,796

e. None of the preceding

10. Determine the class width and the number of pieces of data (sample size,  $n$ ) shown in the histogram.



- a. class width is 29, sample size,  $n = 180$   
 b. class width is 30, sample size,  $n = 180$   
 c. class width is 6, sample size,  $n = 24$   
 d. class width is 30, sample size,  $n = 75$   
 e. class width is 30, sample size,  $n = 6$

Name: \_\_\_\_\_

Section: \_\_\_\_\_

The following questions are free response. Please show all work in order to receive credit.

11. Using bins of capacity 10, apply each of the following algorithms to the following list:  
6, 9, 5, 8, 3, 2, 1, 9, 2, 7, 2, 5, 4, 3, 7. (9 points)

a. Worst-fit

b. First-fit-decreasing

12. Determine whether each of the following statements is true or false. (14 points)

a. A prospective study may be used to show cause and effect. \_\_\_\_\_

b. Random selection of subjects for surveys is used to avoid bias. \_\_\_\_\_

c. In an experiment, an observed effect is called statistically significant if the experiment will help a large number of people. \_\_\_\_\_

d. In a double-blind experiment, neither participants nor researchers know who is taking an experimental drug. \_\_\_\_\_

e. The mean is strongly affected by an outlier in the data but the median is not. \_\_\_\_\_

f. Quartiles are strongly affected by an outlier in the data but the standard deviation is not. \_\_\_\_\_

g. A response variable attempts to explain observed outcomes. \_\_\_\_\_

13. The table below shows chemical compounds which cannot be mixed without causing dangerous reactions. Draw the graph which would be useful in determining the minimum number of different containers necessary to dispose of the chemical. What is the minimum number of containers? (8 points)

	A	B	C	D	E	F	G
A		X		X	X		X
B	X		X		X	X	
C		X		X			X
D	X		X			X	
E	X	X					X
F		X		X			
G	X		X		X		

14. The forty measurements given below represent the weights, in ounces, of zucchini grown in a garden one summer. (19 points)

12	8	23	14	25	22	16	28	35	26
27	26	30	18	37	26	31	37	20	28
42	21	27	7	25	18	23	11	23	32
30	29	36	22	38	32	26	5	17	33

- a. Construct an ordered stemplot of this data.
- b. Use the stemplot to calculate the five-number summary. Be sure to indicate how you find your numbers.

c. Construct a frequency distribution with six classes.

d. Construct a frequency histogram with six classes.

**TABLE 5.1 Random Digits**

101	03918	86495	47372	21870	28522	99445	38783	83307
102	10041	35095	66357	64569	08993	20429	28569	63809
103	43537	58268	80237	17407	89680	04655	24678	61932
104	64301	47201	31905	60410	80101	33382	95255	10353
105	43857	42186	77011	93839	28380	49296	63311	49713
106	91823	39794	47046	78563	89328	39478	04123	19287
107	34017	87878	35674	39212	98246	29735	09924	27893
108	49105	00755	39242	50472	39581	44036	54518	46865
109	72479	02741	75732	99808	02382	77201	44932	88978
110	84281	45650	28016	77753	39495	41847	19634	82681
111	61589	35486	59500	20060	89769	54870	75586	07853
112	25318	01995	87789	41212	74907	90734	31946	24921
113	40113	37395	51406	98099	43023	70195	07013	72306
114	58420	43526	15539	24845	15582	16780	95286	69021
115	18075	45894	09875	42869	20618	07699	80671	54287
116	52754	73124	93276	71521	59618	44966	37502	15570
117	05255	53579	08239	99174	75548	95776	42314	13093
118	76032	35569	28738	38092	74669	00749	17832	64855
119	97050	31553	32350	51491	53659	89336	36912	05292
120	29030	43074	84602	95131	22769	44680	68492	33987
121	28124	29686	63745	12313	15745	11570	20953	17149
122	97469	41277	90524	36459	22178	63785	20466	67130
123	91754	40784	38916	12949	76104	20556	34001	59133
124	84599	29798	57707	57392	91757	76994	43827	69089
125	06490	42228	94940	10668	62072	58983	10263	08832
126	30666	02218	89355	76117	75167	69005	42479	79865
127	87228	15736	08506	29759	74257	85594	75154	48664
128	45133	49229	32502	99698	68202	44704	39191	73740
129	55713	98670	57794	64795	27102	83420	26630	95009
130	20390	38266	30138	61250	07527	02014	43972	49370
131	13400	68249	32459	41627	56194	93075	50520	96784
132	08900	87788	73717	19287	69954	45917	80026	55598
133	86757	47905	16890	99047	78249	73739	97076	00525
134	19862	54700	18777	22218	25414	13151	54954	80615
135	96282	11576	59837	27429	60015	40338	39435	94021
136	17463	26715	71680	04853	55725	87792	99907	67156
137	44880	55285	95472	57551	24602	98311	63293	58110
138	61911	78152	96341	31473	58398	61602	38143	93833
139	07769	22819	58373	88466	71341	32772	93643	92855
140	73063	63623	29388	89507	78553	62792	89343	27401
141	24187	60720	74055	36902	22047	09091	79368	35408
142	06875	53335	91274	87824	04137	77579	54266	38762
143	23393	37710	46457	03553	58275	11138	18521	59667
144	00980	73632	88008	10060	48563	31874	90785	78923
145	46611	39359	98036	25351	88031	72020	13837	03121
146	56644	79453	49072	30594	73185	81691	29225	70495
147	98350	36891	04873	71321	29929	37145	95906	41005
148	17444	61728	86112	76261	92519	61569	65672	95772
149	45785	21301	89563	23018	60423	50801	70564	45398
150	54369	08513	36838	19805	67827	74938	66946	01206

TM #29