

Name \_\_\_\_\_  
date \_\_\_\_\_ section \_\_\_\_\_

MATH 1040 FINAL EXAM

2 hours with calculator

Work problems completely, either on this paper, or on another sheet, which you include with this paper.

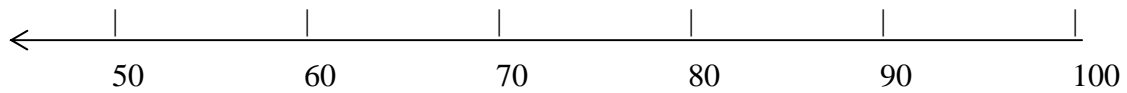
1. The number of absences per year a worker has is an example of a \_\_\_\_\_ variable.
  - a) nominal
  - b) qualitative
  - c) discrete
  - d) continuous
  - e) ratio
  - f) None of the preceding
  
2. Disregarding rounding, relative frequencies should add to \_\_\_\_\_ .
  - a) 0
  - b) 1
  - c) 50
  - d) 100
  - e) 1000
  - f) None of the preceding
  
3.  $P_{50}$  corresponds to \_\_\_\_\_ .
  - a)  $Q_2$
  - b)  $D_5$
  - c) IQR
  - d) the midrange.
  - e) All of the preceding.
  - f) None of the preceding
  
4. In a Normal bell-shaped distribution, approximately \_\_\_\_\_ % of the data values fall within one standard deviation of the mean.
  - a) 33
  - b) 50
  - c) 68
  - d) 95
  - e) 99.7
  - f) None of the preceding
  
5. A researcher divides subjects into two groups according to gender and then selects members from each group for the sample. The sampling method used is \_\_\_\_\_ .
  - a) cluster
  - b) random
  - c) systematic
  - d) stratified
  - e) convenience
  - f) None of the preceding



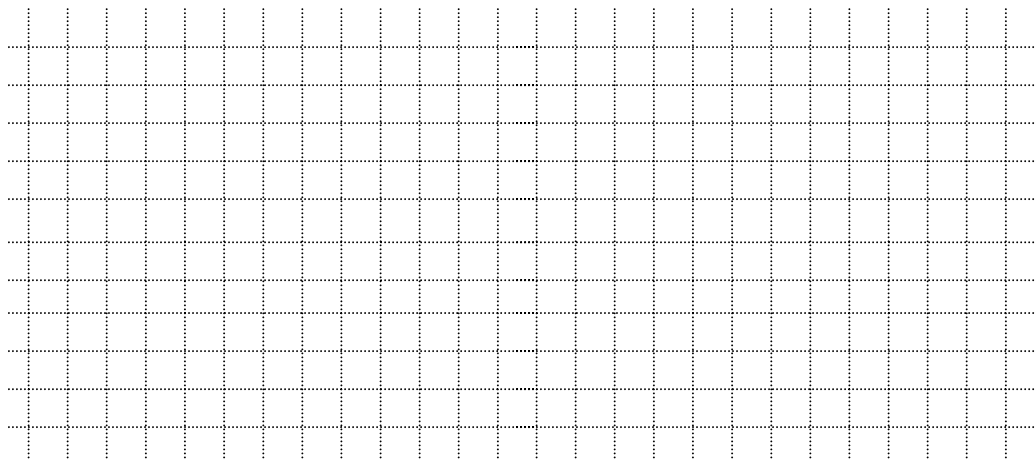
- 9. Calculate the median time my neighbors' sprinkling systems run each week.
- 10. Construct a stem and leaf plot, and analyze the results, for the following set of data from the Math 1040 final exam last semester.

79	85	88	79	93	71	80
67	90	85	96	77	74	94
96	80	71	77	63	90	87
94	78	87	80	91	85	73
68	73	62	81	81		

- 11. Use the data from last semester's Math 1040 final exam to make a box plot.



- 12. Use the data from last semester's Math 1040 final exam to determine which score corresponds to the 80<sup>th</sup> percentile.
- 13. Use the data from last semester's Math 1040 final exam to determine what percentile corresponds to a final score of 80.
- 14. Construct a frequency table with at least four and no more than eight categories and with relative frequency. Use it to make a histogram for the data from last semester's Math 1040 final exam.



15. The sum of all the probabilities of all the outcomes in a probability distribution is:
- a) 1
  - b) 10
  - c) 100
  - d) 1000
  - e) It varies
  - f) None of the preceding
16. When a weatherman says that there's a 10% chance of rain this weekend, what type of probability is he using?
- a) Classical
  - b) Empirical
  - c) Relative
  - d) Quantitative
  - e) Subjective
  - f) None of the preceding
17. What is the value of  ${}_nP_n$  ?
- a) 0
  - b) 1
  - c)  $n$
  - d)  $n!$
  - e)  $\infty$
  - f) None of the preceding
18. Employees are classified according to gender (male, female), duties (administrative, clerical, machinist, maintenance), and job record (no major problems, at least one major problem). How many different classifications are there?
- a) 3
  - b) 8
  - c) 16
  - d) 24
  - e) 96
  - f) None of the preceding
19. Twenty percent of the students attending college voted in the last general election. If three students are selected at random, the probability that none of them voted in the last general election is about:
- a) 0%
  - b) 8%
  - c) 20%
  - d) 50%
  - e) 80%
  - f) None of the preceding

20. Fill in the blanks:

- a) Two events  $A$  and  $B$  are \_\_\_\_\_ if the fact that  $A$  occurs does not affect the probability of  $B$  occurring.
- b) Two events  $A$  and  $B$  are \_\_\_\_\_ if they cannot occur at the same time.
- c) The \_\_\_\_\_ of an event  $B$  is the set of outcomes in the sample space that are not included in the outcomes of event  $B$ . It is denoted by  $\bar{B}$ , and  $P(B) + P(\bar{B}) = 1$ .
- d) A selection of distinct objects without regard to the order of the objects is called a \_\_\_\_\_.
- e) The \_\_\_\_\_ of a discrete variable of a probability distribution is the theoretical average of the variable.

21. How many different ways can five accountants be assigned to seven cubicles?

22. In Indianapolis newspapers are published as morning daily, evening daily, or weekly. Some of the papers use nationally syndicated columnists. The distribution is:

nationally syndicated columnists	Morning	Evening	Weekly
Yes	2	3	1
No	3	4	2

If a newspaper is selected at random, find the probability that:

- a) The newspaper is a weekly publication.
- b) The newspaper is morning daily or is syndicated.
- c) The newspaper is published weekly and is not syndicated.

23. Our class has 17 male and 13 female students. If three students are chosen a random to work problems on the board, what is the probability that:

1. all three will be males?
2. the first one chosen is male and the other two will be female?
3. [5 extra] at least one male will be chosen.





35. The average cost of Zoland digital cameras is on e-bay is \$395, with a standard deviation of \$185. If five cameras are selected, find the probability that the mean cost will be less than \$350. (Assume the variable is normally distributed.)
36. The average speed for bicyclists in the Tour de France is 45 km per hour. The standard deviation is 3 km per hour. Assuming the variable is normally distributed, find the probability that a cyclist is:
- faster than 50 km per hour.
  - between 48 and 50 km per hour.
37. A recent study of 12 orthodontists showed that they spent an average of \$8500 annually for liability insurance. The standard deviation for the sample was \$1055. Find the 95% confidence interval of the true mean. (Assume the variable is normally distributed.)
38. A Don Jones poll of 1000 local citizens found that 660 favored Salt Lake City giving up easement on the Main Street Plaza in exchange for land and money to expand the Glendale Community Center.
- Find the 90% confidence interval of the true proportion of citizens who favor giving up the easement.
  - Find the number of citizens that would need to be polled if Don Jones wanted to have a 95% confidence level within 5-percentage point.
39. Find the 90% confidence interval for the variance and standard deviation of the ages of senior at Oak Park College if a sample of 24 students has a standard deviation of 2.3 years. (Assume the variable is normally distributed.)