

Math 105 Exam Review Short form

1. Change $3\frac{3}{4}\%$ to a decimal number. (Do not round.)

- a. .75 b. .375 c. 3.75 d. .0375 e. .00375

2. Mr. Brown buys power saws for \$36.00 and sells them for \$43.56. What is the percent mark up?

- a. 7.56% b. 21% c. 17.4% d. 43.56% e. 36%

3. 36 is 9% of what number?

- a. 3.24 b. 400 c. 4 d. 40 e. 360

4. 36 is what percent of 120?

- a. 3% b. 30% c. 4% d. 40% e. none of these

5. If $A = \{e, f, g, h, i\}$, what is $n(A)$?

- a. 2 b. 5 c. 25 d. 32 e. 40

6. If $B = \{h, i, j, k, l, m\}$, how many subsets will B have?

- a. 6 b. 36 c. 64 d. 35 e. 63

Given $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{2, 4, 6, 8, 10\}$, $B = \{3, 4, 5, 6, 10\}$

7. What is A' ?

- a. $\{2, 4, 6, 8, 10\}$ b. $\{1, 3, 5, 7, 9\}$ c. $\{4, 6, 10\}$ d. $\{3, 5\}$
e. none of these

8. What is $A' \cap B$?

- a. $\{3, 5\}$ b. $\{1, 3, 4, 5, 6, 7, 9, 10\}$ c. $\{4, 6, 10\}$
d. $\{2, 3, 4, 5, 6, 8, 10\}$ e. $\{1, 2, 3, 5, 7, 8, 9\}$

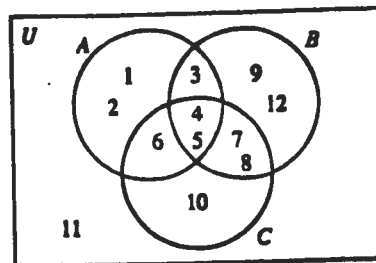
9. Express the set $P = \{x|x \in N, 4 < x \leq 8\}$ in roster form.

- a. $\{5, 6, 7, 8\}$ b. $\{4, 5, 6, 7, 8\}$ c. $\{4, 5, 6, 7, 8, 9\}$ d. $\{5, 6, 7, 8, 9\}$
e. $\{4, 5, 6, 7, 8, 9, 10\}$

10. Choose the symbol that makes the statement true. $\{3\}$ _____ $\{2, 3, 4, 5\}$

- a. \in b. \subseteq c. \notin d. $\not\subseteq$ e. none of these

Use the diagram for problems 18 and 19.



11. List the elements of A' in roster form.

- a. $\{1, 2, 3, 4, 5, 6\}$ b. $\{7, 8, 9, 10, 12\}$ c. $\{3, 4, 5, 6, 7, 8, 9, 10, 12\}$ d. $\{7, 8, 9, 10, 11, 12\}$
e. none of these

12. Use the diagram to list the set $A \cup C'$ in roster form

- a. $\{1, 2, 3, 9, 12\}$ b. $\{1, 2, 3, 9, 11, 12\}$ c. $\{1, 2, 3\}$
d. $\{1, 2, 3, 4, 5, 6, 9, 11, 12\}$ e. $\{9, 11, 12\}$

13. One evening the manager of Court Street Cafe polled his customers to determine whether they preferred diet soda or regular soda. Of the 117 customers polled 53 liked diet soda, 104 liked diet or regular and 41 like both. How many liked only regular soda?

- a. 53 b. 92 c. 51 d. 13 e. 12

At Candonia College 120 students were surveyed about the science course(s) they've taken. The results of the survey are as follows.

64 took biology

71 took chemistry

42 took physics

37 took biology and chemistry

16 took biology and physics

28 took chemistry and physics

8 took all three.

14. How many students took biology and chemistry but not physics?

- a. 29 b. 37 c. 45 d. 62 e. 93

15. How many students did not take any of the three courses?

- a. 12 b. 0 c. 16 d. 8 e. 14

16. How many students took only biology?

- a. 19 b. 40 c. 85 d. 40 e. 28

17. If $P(A) = .72$, $P(B) = .45$ and $P(A \cup B) = .81$, find $P(A \cap B)$.

- a. .36 b. 1.17 c. .324 d. .486 e. .27

18. The last 40 violent crimes committed in Tarrytown were 2 homicides, 25 robberies and 13 assaults. What is the empirical probability that the next violent crime committed in Tarrytown will be a robbery?

- a. 0.375 b. 0.475 c. 0.3 d. 0.625 e. 0.125

19. One card is selected at random from a standard 52-card deck of playing cards. Find the probability that the card selected is a red king.

- a. $1/52$ b. $1/26$ c. $1/13$ d. $2/13$ e. $1/4$

20. A box of chocolates contains 20 identically shaped chocolates. Five of them are filled with jelly, three are filled with caramel, and twelve are filled with nuts. What is the probability that one chocolate chosen at random is not filled with jelly?

- a. $\frac{1}{4}$ b. $\frac{3}{4}$ c. $\frac{3}{5}$ d. $\frac{4}{5}$ e. 1

21. A jar contains 8 blue marbles and 6 red marbles. If 2 marbles are selected without replacement, find the probability the first marble is red and the second is blue.

- a. $\frac{11}{19}$ b. $\frac{24}{91}$ c. $\frac{12}{49}$ d. $\frac{14}{49}$ e. $\frac{3}{13}$

22. Jason, Alice, Bonnie and Ellen need to buy tickets for the George Michael concert. In how many different ways can they line up at the ticket window?

- a. 12 b. 48 c. 36 d. 24 e. 4

23. If a club consists of 12 members, how many different arrangements of president, vice-president, secretary, and treasurer are possible?

- a. 11,880 b. 495 c. 48 d. 288 e. 210

24. A license plate is to consist of two letters followed by three digits. How many different license plates are possible if the first letter must be a vowel, and repetition of letters is not permitted, but repetition of digits is permitted?

- a. 130,000 b. 93,600 c. 90,000 d. 125,000 e. 250,000

25. One card is selected at random from a standard 52-card deck of playing cards. Find the probability of obtaining a face card or a club.

- a. $\frac{8}{13}$ b. $\frac{25}{52}$ c. $\frac{11}{26}$ d. $\frac{7}{13}$ e. $\frac{11}{13}$

A picnic cooler contains 36 cans of soda buried under ice. There are 10 cans of Coca Cola, 8 cans of Pepsi, and 18 cans of SunKist. If 3 different cans are selected at random from the cooler find the probability that

26. all three are SunKist

- a. $\frac{17}{162}$ b. $\frac{1}{8}$ c. $\frac{4}{35}$ d. $\frac{4}{119}$ e. none of these

27. the first is SunKist, the second Pepsi and the third SunKist

- a. $\frac{2}{35}$ b. $\frac{17}{324}$ c. $\frac{4}{119}$ d. $\frac{36}{595}$ e. none of these

28. The odds in favor of Kevin winning a chess tournament are 1:7. Find the probability that Kevin will win the tournament.

- a. $\frac{7}{8}$ b. $\frac{1}{6}$ c. $\frac{6}{7}$ d. $\frac{1}{8}$ e. $\frac{1}{7}$

29. The probability that Joe's Auto Shop will repair your car correctly the first time is .75. Find the odds against your car being repaired correctly on the first attempt at Joe's.

- a. 3:4 b. 4:3 c. 1:4 d. 1:3 e. 1:7

30. Paul is considering opening a yogurt stand at the Iowa State Fair. After some research he has determined that there is a 75% chance of making a \$2000 profit, a 10% chance of breaking even, and a 15% chance of losing \$4000. Find the expectation of this investment.

- a. \$900 b. \$1,500 c. \$2,100 d. \$600 e. \$1,200

31. In how many different ways can six books be arranged on a shelf if one of the books, a dictionary, must be at the right end?

- a. 120 b. 60 c. 480 d. 720 e. 240

32. There are 14 books on Einstein in the library. Tom need 4 books for his project. How many ways can he select 4 of the 14 books?

- a. 24,024 b. 1,001 c. 583 d. 1 e. 14

In a newspaper poll concerning violence on television, 600 people were asked, "What is your opinion of the amount of violence on prime-time television - is there too much violence on television?" Their responses are indicated in the following table.

Results of "Violence on Television" poll

	Yes	No	Don't Know	Total
Men	162	95	23	280
Women	256	45	19	320
Total	418	140	42	600

If a person is selected at random from this group find the probability the person

33. was a man.

- a. .27 b. .58 c. .39 d. .47 e. none of these

34. didn't know whether there was too much violence on TV

- a. .70 b. .07 c. .69 d. .04 e. none of these

35. was a woman given the person indicated there was not too much violence on TV

- a. .32 b. .075 c. .53 d. .14 e. none of these

36. thought there was too much violence on TV given the person was a man

- a. .46 b. .39 c. .58 d. .27 e. none of these

Use the following set of data for questions 37, 38, 39

19, 13, 22, 24, 13, 17, 13, 19

37. Find the mean.

- a. 19 b. 17.5 c. 18.5 d. 18 e. 13

38. Find the median.

- a. 17 b. 19 c. 18.5 d. 18 e. 24

39. Find the mode

- a. 19 b. 13 c. 24 d. no mode e. none of these

Find the range and standard deviation for the following set of data.

2, 7, 3, 4, 10, 6, 8, 8

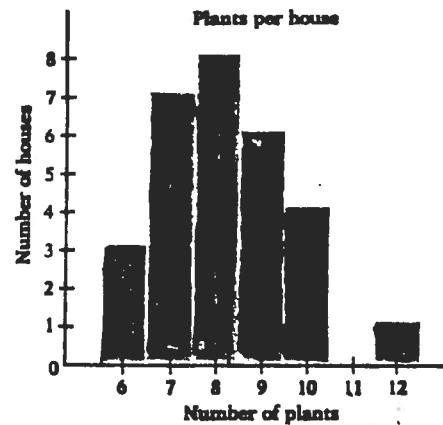
40. Range

- a. 8 b. 6 c. 10 d. 12 e. none of these

41. Standard Deviation

- a. 7.71 b. .77 c. .6 d. 2.78 e. none of these

A survey by a local garden shop collected data on how many houseplants a household owns. Use the histogram to answer questions



42. How many houses were surveyed?
- a. 29 b. 30 c. 52 d. 80 e. 237
43. How many plants were counted in the survey?
- a. 29 b. 30 c. 52 d. 80 e. 237
44. How many houses had at least 9 plants?
- a. 6 b. 11 c. 14 d. 54 e. 95
45. How many homes had no more than 7 plants?
- a. 7 b. 19 c. 10 d. 26 e. none of these

The following data was obtained from a study of the weight in pounds of a breed of large dogs.

Mean 124	First Quartile 98
Median 117	Third Quartile 146
Mode 121	84th Percentile 142
Standard deviation 14	

46. What percent of the dogs weigh less than 146 pounds?
- a. 84% b. 25% c. 75% d. 50% e. 3%

47. What percent of the dogs weighted more than 142 pounds?

- a. 255 b. 75% c. 84% d. 16% e. 34540.

48. What is the weight of the 50th percentile?

- a. 117 b. 122 c. 138 d. 152 e. 196

49. If the mean of a set of data is 14 and the standard deviation is 1.8, find the z-score for 16.

- a. -1.11 b. 1.11 c. .367 d. .133 e. 2.0

50. Use the z-table to find the area to the right of $z = -2.17$

- a. .015 b. .985 c. .485 d. .217 e. none of these

The length of useful life of a fluorescent tube used for indoor gardening is normally distributed. The useful life has a mean of 600 hours and a standard deviation of 50 hours.

51. What percent of the tubes will last between 622 and 744 hours?

- a. 1.67% b. 32.8% c. 66.8% d. 67.2% e. 44.0%

52. What percent of the tubes will last at least 502 hours?

- a. 97.5% b. 45.5% c. 52.5% d. 47.5% e. 2.5%

53. What percent can be expected to last less than 635 hours?

- a. 70.0% b. 75.8% c. 25.8% d. 24.2% e. 78.5%

Answers:

- | | |
|-------|-------|
| 1. D | 41. D |
| 2. B | 42. A |
| 3. B | 43. E |
| 4. B | 44. B |
| 5. B | 45. C |
| 6. C | 46. C |
| 7. B | 47. D |
| 8. A | 48. A |
| 9. A | 49. B |
| 10. B | 50. B |
| 11. D | 51. B |
| 12. D | 52. A |
| 13. C | 53. B |
| 14. A | |
| 15. C | |
| 16. A | |
| 17. A | |
| 18. D | |
| 19. B | |
| 20. B | |
| 21. B | |
| 22. D | |
| 23. A | |
| 24. D | |
| 25. C | |
| 26. C | |
| 27. A | |
| 28. D | |
| 29. D | |
| 30. A | |
| 31. A | |
| 32. B | |
| 33. D | |
| 34. B | |
| 35. A | |
| 36. C | |
| 37. B | |
| 38. D | |
| 39. B | |
| 40. A | |