

Name (printed) \_\_\_\_\_  
Name (signature) \_\_\_\_\_  
ZID. NO. \_\_\_\_\_

Section \_\_\_\_\_  
Assigned Seat \_\_\_\_\_

MATH 101  
March, 2004

EXAM 2

FORM A  
3:00-3:50 p.m.

INSTRUCTIONS:

1. Use a No. 2 pencil.
2. Write your last name and initials in the appropriate boxes on the answer form, and fill in the corresponding letter ovals.
3. Write your ZID number in the appropriate boxes on the answer form starting at the left end, and fill in the corresponding number ovals.
4. Write your recitation section (01, ..., 08) in the boxes marked "Section". Fill in the appropriate ovals.
5. Fill in the oval corresponding to your Form number (A or B).
6. Write your REGULAR row and set number in the space marked DEPT.
7. There are 20 questions. It is YOUR responsibility to see that you have a complete examination form.
8. There is a copy of tables at the end of the examination form and some formulas.
9. When you have finished, you are to turn in your answer form, and your signed examination copy. Have your identification card ready.

AA

1. Which of the following is not a statement?
  - (a) The source of the church fire was the organ blower system in the crawl space.
  - (b) In the 2000 census DeKalb had a population of just more than 39,000.
  - (c) The NIU gymnastics team will host a trio of teams on Sunday.
  - (d) Lord of the Rings won eleven Oscars at the February 29, 2004 Academy Award presentations.
  - (e) Practice your clarinet before the annual Clarinet Cornucopia.
2. The probability that a TNT cell phone is defective is .2. What is the probability that it is good?
  - (a) .08
  - (b) 1.2
  - (c) .8
  - (d) .04
  - (e) .4

3. Which of the following is the negation of

“Justin gets financial aid, or he cannot pay his tuition and fees.”

- (a) Justin does not get financial aid, or he can pay his tuition and fees.
- (b) Justin does not get financial aid, or he cannot pay his tuition and fees.
- (c) Justin does not get financial aid, and he can pay his tuition and fees.
- (d) Justin gets financial aid, or he can pay his tuition and fees.
- (e) Justin gets financial aid, and he can pay his tuition and fees.

4. Which of the statements below is a negation of

“All girls at the Fort School like to fly kites in March.”

- (a) If a person is a girl at the Fort School, she likes to fly kites in March.
- (b) All girls at Fort School do not like to fly kites in March.
- (c) Sarah is a little girl, and she likes to fly kites in March.
- (d) Some girls at Fort School do not like to fly kites in March.
- (e) Some girls at Fort School like to fly kites in March.

5. Consider the following argument:

P1 If Adriana prevents plaque buildup in her arteries, she will not have a heart attack.

P2 Adriana does exercises and eats good foods which prevents plaque buildup in her arteries.

Conclusion: Adriana will not have a heart attack.

This is an example of:

- (a) direct reasoning
- (b) indirect reasoning
- (c) reasoning by transitivity
- (d) reasoning by the “or” rule
- (e) an invalid argument

6. In a survey of 60 people a fitness magazine reported that 25 ride bikes, 30 lift weights, and 15 do neither. How many people both ride bikes and lift weights?
- (a) 25
  - (b) 10
  - (c) 5
  - (d) 15
  - (e) 45
7. Suppose a researcher using the chi-square statistic with  $\alpha = .01$  and  $d = 7$  determines  $\chi^2 = 18.9$ . The researcher should
- (a) increase the number of degrees of freedom
  - (b) increase the level of significance
  - (c) not reject the null hypothesis
  - (d) decrease the number of degrees of freedom
  - (e) reject the null hypothesis
8. When conducting a statistical test, which of the following is a researcher NOT able to do?
- (a) decide which statistical test to use
  - (b) prove the null hypothesis
  - (c) select a level of significance
  - (d) determine an appropriate sample size
  - (e) formulate the hypothesis

9. Consider the following argument:

P1 Julio either studies regularly or watches lots of television.

P2 Julio watches lots of television.

Conclusion: Julio does not study regularly.

This is an example of:

- (a) direct reasoning
- (b) indirect reasoning
- (c) reasoning by transitivity
- (d) reasoning by the “or” rule
- (e) an invalid argument.

10. Which of the following is logically equivalent to

“If it’s a holiday, government offices are closed”?

- (a) If it’s a holiday, government offices are open.
- (b) If government offices are closed, then it’s a holiday.
- (c) If it is not a holiday, government offices are open.
- (d) If it is not a holiday, government offices are closed.
- (e) If government offices are open, it is not a holiday.

11. Consider the premises:

P1 If you pay your bills on time, then you are not charged a penalty.

P2 If you do not pay your bills on time, you will have a poor credit rating.

P3 You are charged a penalty.

What conclusion can you make by deductive reasoning using all the premises above?

- (a) You are not charged a penalty.
- (b) You will have a poor credit rating.
- (c) You pay your bills on time.
- (d) You will not have a poor credit rating.
- (e) You do not pay your bills on time.

12. The probability that a TNT cell phone is defective is .2. If a store has 7 TNT cell phones in stock, what is the probability that exactly 5 will be good?

- (a) .2753                      (b) 21                      (c) .3277                      (d) .0131                      (e) .3408

13. Norman is going on vacation to an island where the probability it will rain on a given day is .9. If he expects to be there 6 days, what is the probability it will rain on at least 5 days?

- (a) .5905                      (b) .8857                      (c) .5314                      (d) .0006                      (e) .0590

14. According to a poll conducted by the Chicago Tribune, 53% of voters said oversight of the schools in the state should not be turned over to the governor. Suppose students in the College of Education poll 172 DeKalb voters and find 26 said oversight was okay, but 146 said such oversight should not be given to the governor. If there is no significant difference between those polled in DeKalb and those polled by the Tribune, how many of the people polled in DeKalb should have been expected to say oversight should not be turned over to the governor?

(a) 77                      (b) 91                      (c) 182                      (d) 86                      (e) 73

15. A random sample of 462 college students showed 78 had contracted the flu this winter. Using the data set which consists of a one for each student in the sample who got the flu and a zero for each student in the sample who did not, which of the following is an estimator for the population standard deviation?

(a) .1688                      (b) .8472                      (c) .375                      (d) .0394                      (e) .1403

16. Suppose Burch and Canny are running for election to Congress. It is suggested that men favor Canny over Burch, and in the primary election the electorate was evenly divided between men and women and Canny got 58% of the votes cast. A sample of 120 voters showed

	Votes for Canny	
	Yes	No
Men	80	40
Women	60	60

If there is no bias by men for Canny, the expected should be

	Votes for Canny	
	Yes	No
Men	70	50
Women	70	50

What is the  $\chi^2$  statistic based on these distributions?

(a) .6857                      (b) 7.083                      (c) 3.428                      (d) 6.857                      (e) 0

17. The data in the following table show the outcomes of guilty and not-guilty pleas in 1,028 criminal court cases.

	Guilty plea	Not guilty plea
Sent to prison	392	58
Not sent to prison	564	14

- What is the probability that a randomly selected defendant either pled guilty or was sent to prison?
- (a) .93                      (b) .4377                      (c) .3813                      (d) .41                      (e) .9864
18. If “I buy a new DVD player” is a true statement, and “I sell my old DVD player” is a false statement, which of the following statements is true?
- (a) Either I sell my old DVD player, or I do not buy a new DVD player.  
(b) I do not buy a new DVD player, but I sell my old DVD player.  
(c) If I buy a new DVD player, then I sell my old DVD player.  
(d) I buy a new DVD player, and I do not sell my old DVD player.  
(e) I do not buy a new DVD player, and I do not sell my old DVD player.
19. A company wants to know an interval at the .88 confidence level for the mean time  $\mu$  it takes a machine to produce its product. A sample of size 125 shows an average time of 28 minutes per item. Assuming  $\sigma$  is 4.5 minutes which of the following is the confidence interval?
- (a) (23.5, 32.5)  
(b) (27.6, 28.40)  
(c) (28, 28.7)  
(d) (27.38, 28.62)  
(e) (26.45, 29.55)
20. Josie polled 220 students and found 43 had gone to the men’s basketball conference tournament while 87 had gone to the women’s basketball conference tournament. How many students polled had gone to neither tournament?
- (a) 44  
(b) At most 133  
(c) At least 90  
(d) At least 130  
(e) At least 177