Test Ch 5 Probability and Counting C Name:_____

JCC Statistics Date:_____

For questions 1-9, If the statement is always true then answer "True." If the statement is not always true, replace the words shown in bold with the words that make the statement always true.

1. The **sample space** is the list of all possible outcomes for a particular event.

2. The **Law of Large Numbers** states that if the number of times an experiment is increased, the probability found using a Classical approach will tend to approximate the probability found using an Empirical approach.

3. The probabilities of complementary events always **are equal**.

4. The probability found using a Classical approach will **always be** equal to the probability found using an Empirical approach for any single event.

5. An **Empirical approach** to probability requires the use of sample spaces and probability formulas.

6. The probability of an event is a **whole number**.

7. When using **addition rule** one must always consider whether or not the events involved are independent.

8. A compound event formed by using the word "and" requires the use of the **addition rule**.

9. If two events are **mutually exclusive**, the sum of their probabilities must be exactly one.

For questions 10-14, select the best answer.

10. The probability that an event happens is 0.42. What is the probability that the event won't happen?

    A. 0 **B**. 0.58 **C**. -0.42 **D**. 0.58

11. When a meteorologist says that there is a 30% chance of showers, what type of probability is the person using?

    A. Subjective **B**. Classical **C**. Empirical **D**. Relative

12. When two dice are rolled, the sample space consists of how many events?

A. 6 **B**. 54 **C**. 36 **D**. 12

13. The complement of guessing five correct answers on a five-question true-false quiz is

A. Guessing fivecorrect answers
B. Guessing at least one incorrect answer
C. Guessing no correct answers
D. Guessing at least one correct answer

14. The sample space for tossing three coins consists of how many outcomes?

A. 4 **B**. 8 **C**. 2 **D**. 12

Questions 15 – 24 are short answer questions. **Show all work to receive full credit.**

15. When a card is drawn from a deck of cards, what is the probability of getting…

a.) a spade

b.) a 4

c.) a card less than 3 (Aces are higher than 3)

16. When a card is drawn from a deck of cards, what is the probability of getting…

a.) a queen

b.) a diamond

c.) a 5 and heart

d.) a 10 or heart

e.) a red card

17. At a men's clothing store, 8 men purchase blue sweaters, 4 purchased green sweaters, 7 purchased gray sweaters, and 12 purchased black sweaters. If a customer were randomly selected, find the probability that he purchased…

    a.) a sweater that was not black

    b.) a green or black or blue sweater

    c.) a green or gray sweater

    d.) a blue sweater

18. Five cards are drawn from a deck of cards without replacement. Find the probability of getting…

    a.) all black cards

    b.) all kings

    c.) all clubs

19. The probability that Tom is accepted by the college of his choice is 0.60. If the probability that Tom will be accepted by the college of his choice and obtain a scholarship is 0.25, find the probability that he will obtain a scholarship given that he is accepted by the college?

20. Of the members of the Allegany Foothills bowling league, 37% have a lifetime membership and bowl regularly (at least 3 times per week). If 52% of the club members bowl regularly, find the probability that a randomly selected member is a lifetime member given that he or she bowls regularly.

The following table shows the number of earned degrees conferred on college graduates in the year 2000 by a particular college. Data is organized by gender and degree obtained.

	Male	Female	**Total**
Associate	187	227	414
Bachelor	569	520	1089
Master	209	323	532
Doctor	19	27	46
Total	984	1097	2081

21. A person who earned a degree in the year 2000 is randomly selected. Find the probability of selecting someone who earned…

a.) a Bachelor's degree.

b.) a Bachelor's degree given that the person is not a female.

c.) a Bachelor's degree given that the person is a female.

d.) an associate's degree or a bachelor's degree.

e.) a doctorate given that the person is a female.

22. In a certain high-risk group, the chances of a person suffering a heart attack are 48%. If three people are chosen, find the probability that at least one will have had a heart attack.

23. A store owner receives 16 computers: twelve are Model-A, and 4 are Model-B. If two computers are sold at random, find the probability that one of each model was sold.

24. A box contains 24 red chips and 8 blue chips. If 4 chips are chosen at random, find the probability that…

a.) exactly two are red

c.) all are red

b.) none are red

d.) at least one is red