Test Ch 5 Probability and Counting (20-21)   Name:_____

JCC Statistics   Date:_____

Answer each question. Show all necessary work to receive full credit

1. In a certain high-risk group, the chances of a person suffering a heart attack are 52%. If four people are chosen, find the probability that at least one will have had a heart attack.

2. A store owner receives 15 computers: ten are Model-A, and 5 are Model-B. If two computers are sold at random, find the probability that one of each model was sold.

3. Of the members of the Allegany Foothills Bowling League, 57% have a lifetime membership and bowl regularly (at least 3 times per week). If 70% 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.

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

   a.) a blue sweater

   b.) a green or gray sweater

   c.) a green or black or blue sweater

   d.) a sweater that was not black

5. The probability that Tom will be accepted by the college of his choice and obtain a scholarship is 0.38. If the probability that he is accepted by the college is 0.65, find the probability that he will obtain a scholarship given that he is accepted by the college?

6. 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	659	502	1161
Master	209	323	532
Doctor	19	27	46
Total	1074	1079	2153

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 male.

For questions 7-11, select the best answer,

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

   A. 0   **B.** -0.42   **C.** 1   **D.** 0.58

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

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

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

     A. 2   **B**. 4   **C**. 6   **D**. 8

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

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

11. When two dice are rolled, the sample space consists of how many outcomes?

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

Show all work to receive full credit.

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

     a.) a spade

     b.) a 5 or red card

     c.) a 5 and heart

     d.) a Queen

     e.) a black card

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

    a.) all kings

    b.) all red cards

    c.) All diamonds

14. When a card is drawn from a deck of cards, what is the probability of getting…
    a.) a 4

    b.) a jack

    c.) a card less than 5 (Aces are higher than 5)

15. A store owner receives 15 computers: ten are Model-A, and 5 are Model-B. If two computers are sold at random, find the probability that one of each model was sold.

16. A box contains 24 red chips and 10 blue chips. If 5 chips are chosen at random, find the probability that…
    a.) none are blue

    b.) all are blue

    c.) exactly two are blue

d.) at least one is blue

For questions 17-25, 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.

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

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

19. 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.

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

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

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

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

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

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