Statistics 10_practice.pdf	Michael Hallstone, Ph.D. hallston@hawaii.edu

Lecture 10b: Practice Problems

Practice

Everything that appears in the lecture notes are fair game for the test. They are the best "study guide" I can provide. It is impossible to provide a "list" that is more comprehensive than the lecture notes above. However, here are a few additional practice exercises or practice concepts.

There are also other "practice problems" embedded in the body of the lecture you should do as well. Basically the answers to my examples in the lecture *can and should be used* as practice problems.

1. What is probability of rolling a six with a one throw of a six sided die? What is the sample space for this event?
2. picking a jack of hearts from a regular 52 card deck of cards = p(jack of hearts)=?
3. picking any spade from a regular 52 card deck of cards = p(any spade)
4. A researcher does a study to determine that overweight people have a 20% greater risk of heart disease. What kind of probability is this?
5. A person makes a statement "I think the Raiders have a 0% chance of winning the Superbowl this year." What kind of probability is this?
6. Games of chance in casinos with fixed odds (craps, roulette, slots, etc.) are what kind of probability?
7. Pretend a research project found out smokers have a greater chance of getting cancer. What sort of probability is this?
8. What is the sample space (or the total number of possible outcomes) for the probability experiment of rolling a FAIR SIX SIDED DIE.
9. What is the probability of rolling a 2 on a six sided fair die?
10. What is the probability of rolling an odd number on six side fair die? (Odd numbers = 1, 3, 5)
11. What is the sample space (or the total number of possible outcomes) for the probability experiment of tossing a fair coin? HINT: 1=heads 2= tails
12. What is the probability of getting a heads in a single toss of a fair coin?
13. What type of probability is a slot machine game played in casinos?
14. What type of probability is a roulette wheel played in casinos?
15. What type of probability is a bingo or keno game played in casinos?
16. What type of probability is used when a person makes a hunch or a guess?
17. Pretend a person guesses that their favorite team has a 70 chance of wining a game against their rival. What sort of probability is this?
18. What type of probability is used when a person needs to do a research project to determine the odds of something happening?
19. What is the probability of getting a heads in a single toss of a fair coin? (HINT: assume there is a zero probability of the coin landing and staying on its side.)
20. What is the probability of getting a tails in a single toss of a fair coin? (HINT: assume there is a zero probability of the coin landing and staying on its side.)

21. What is the probability of pulling an ACE OF SPADES on a single draw from a regular 52 card deck? (There is ONE ace of spades.)
22. What is the probability of getting a 1 or a 2 from a SINGLE ROLL of a fair six sided die?
23. What is the probability of pulling ANY KING on a single draw from a regular 52 card deck? (There are four kings.)
24. What is the probability of pulling ANY HEART on a single draw from a regular 52 card deck? (There are 13 hearts.)
25. What is the probability of getting a 1 or a 4 from a SINGLE ROLL of a fair six sided die?
26. What is the probability of getting an even number from a SINGLE roll of a 10 sided die?
27. What is the probability of getting a 2 or a 4 from a SINGLE ROLL of a fair six sided die?
28. rolling two 10 sided die at once and getting a 7 and a 10? p(7 and 10) =?
29. What are the implications of the expected value for ***most games of chance*** in Las Vegas? Put another way, what happens to your odds the longer you keep playing games of chance in a gambling casino?

    answers:

1. p (6)= 1/6 The sample space is 6 and there is one event (a six)

2. picking a jack of hearts from a regular 52 card deck = 1/52 (there is one jack of hearts)

3. picking a spade = 13/52 (there are four suits: spades, hearts, diamonds, clubs and 52 divided by 4 =13. So there are 13 of each "suit" in a normal 52 card deck.

4. A researcher does a study to determine that overweight people have a 20% greater risk of heart disease. What kind of probability is this? *Empirical probability.*

5. A person makes a statement "I think the Raiders have a 0% chance of winning the Superbowl this year." What kind of probability is this? *Intuitive probability*

6. Games of chance in casinos with fixed odds (craps, roulette, slots, etc.) are what kind of probability? *A priori probability*

7. Pretend a a research project and found out smokers have a greater chance of getting cancer. What sort of probability is this? *Empirical*

8. What is the sample space (or the total number of possible outcomes) for the probability experiment of rolling a FAIR SIX SIDED DIE. *{1,2,3,4,5,6}*

9. What is the probability of rolling a 2 on a six sided fair die? *1/6*

10. What is the probability of rolling an odd number on six side fair die? (Odd numbers = 1, 3, 5) *3/6 or 1/2*

11. What is the sample space (or the total number of possible outcomes) for the probability experiment of tossing a fair coin? HINT: 1=heads 2= tails *{1,2}*

12. What is the probability of getting a heads in a single toss of a fair coin? *1 /2*

13. What type of probability is a slot machine game played in casinos? *A Priori*

14. What type of probability is a roulette wheel played in casinos? *A Priori*

15. What type of probability is a bingo or keno game played in casinos? *A Priori*

16. What type of probability is used when a person makes a hunch or a guess? *Intuitive or Intuition*

17. Pretend a person guesses that their favorite team has a 70 chance of wining a game against their rival. What sort of probability is this? *Intuitive or Intuition*

18. What type of probability is used when a person needs to do a research project to determine the odds of something happening? *Empirical*

19. What is the probability of getting a heads in a single toss of a fair coin? (HINT: assume there is a zero probability of the coin landing and staying on its side.) *1/2*

20. What is the probability of getting a tails in a single toss of a fair coin? (HINT: assume there is a zero probability of the coin landing and staying on its side.) *1/2*

21. What is the probability of pulling an ACE OF SPADES on a single draw from a regular 52 card deck? (There is ONE ace of spades.) *1/52*

22. What is the probability of getting a 1 or a 2 from a SINGLE ROLL of a fair six sided die? *2/6 or 1/3*

23. What is the probability of pulling ANY KING on a single draw from a regular 52 card deck? (There are four kings.) *4/52 or 1/13*

24. What is the probability of pulling ANY HEART on a single draw from a regular 52 card deck? (There are 13 hearts.)

    13/52 or 1/4

25. What is the probability of getting a 1 or a 4 from a SINGLE ROLL of a fair six sided die? *2/6 or 1/3*

26. What is the probability of getting an even number from a SINGLE roll of a 10 sided die? *5/10 or 1/2*

27. What is the probability of getting a 2 or a 4 from a SINGLE ROLL of a fair six sided die? *2/6 or 1/3*

28. rolling two 10 sided die at once p(7 and 10) =1/10 x 1/10=1/100

29. What are the implications of the expected value for ***most games of chance*** in Las Vegas? *The house or casino has time on its side. The house will tend to win over time. The odds of the house winning increase the longer that people gamble.*