

## Ch 5

1- A survey of 34 students at the Wall College of Business showed the following majors: accounting 10, finance 5, Economics 3, management 6, marketing 10

suppose you select a student and observe his or her major.

a-what is the probability he or she is a management major?

b- Which concept of probability did you use to make this estimate?

2 - In each of the following cases, indicates whether classical, empirical, or subjective probability is used.

a - a baseball player gets hit in 30 out of 100 times at bat. The probability is 0.3 that he gets a hit in his next at bat.

b - A seven member committee of students is formed to study environmental issues. what is the likelihood that any one of the seven is chosen as the spokesperson?

c - You purchase one of 5 million tickets sold for lotto Canada. What is the likelihood want to win \$1 million jackpot?

d - The probability of an earthquake in Northern California in the next 10 years above 5.0 on the Richter scale is 0.80.

3 - A sample of 40 oil industry executives was selected to test a questionnaire. One question about environmental issues required a yes or no answer.

a - What is the experiment?

b - List one possible event.

C- Ten of the 40 executives responded yes. Based on the sample responses, what is the probability that an oil industry executive will respond yes?

d - What concept of probability does this illustrate?

e - Are each of the possible outcomes equally likely a mutually exclusive?

4- Bank of America customer selects their own three digit personal identification number (PIN) for use at ATMs.

a -Think of this as an experiment and list four possible outcomes.

b -What is the probability Mr. Jones and Mrs. Smith select the same PIN?

c -Which concept of probability did you use to answer (b)?

5 - The events A and B are mutually exclusive. Suppose  $P(A)=.30$  and  $P(B)=.20$ . What is the probability of either A or B occurring? What is the probability that neither A nor B will happen?

6- A study of 200 advertising firms revealed their income after taxes:

income after taxes	Number of firms
under \$1 million	102
\$1 million-\$20 million	61
\$ 20 million or more	37

a-what is the probability an advertising firm selected at random has under \$1 million in the income after taxes?

b-What is the probability an advertising firm selected at random has either an income between \$1 million and \$20 million, or an income of \$20 million or more? What rule of probability was applied?

7 - Suppose the probability you will get an A in this class is 0.25 and the probability you will get a B is 0.5 .What is the probability your grade will be above a C?

8 - The probabilities of the events A and B are 0.20 and 0.30, respectively. The probability that both A and B occur is 0.15. What is the probability of either A or B occurring?

9- Suppose the two events A and B are mutually exclusive. What is the probability of their joint occurrence?

10 - A survey of grocery stores in the south east revealed 40% had a pharmacy, 50% had a floral shop, and 70% had a deli. Suppose 10% of the stores have all three departments, 30% have both a pharmacy and deli, 25% have both a floral shop and deli , and 20% have both a pharmacy and floral shop.

a-What is the probability of selecting a store at random and finding it has both a pharmacy and floral shop?

b-what is the probability of selecting the store at random and finding it has both a pharmacy and a deli?

C-Are the events "select a store with a deli" and "select a store with a pharmacy" mutually exclusive?

d-What is the name given to the event of "selecting a store with a pharmacy, a floral shop, and a deli?"

e- What is the probability of selecting a store that does not have all three departments?

11- Suppose  $P(A)=.40$  and  $P(B|A)=.30$  What is the joint probability of A and B?

12 - A local bank reports that 80% of its customers maintain a checking account, 60% have a savings account, and 50% have both. If a customer is chosen at random, what is the probability of the customer has either a checking or a savings account? What is the probability of the customer does not have either a checking or savings account?

13 - Refer to the following table.

Second event	First Event			Total
	A1	A2	A3	
B1	2	1	3	6
B2	1	2	1	4
Total	3	3	4	10

a-Determine  $P(A1)$ .

b-Determine  $P(B1|A2)$ .

c-Determine  $P(B2 \text{ and } A3)$ .

14 - There are 100 employees at Kiddie carts international. 57 of the employees are production workers, 40 are supervisors, 2 are secretaries, and the remaining employee is the president. Suppose an employee is selected:

a- What is the probability the selected employee is a production worker?

b- What is the probability the selected employee is either a production worker supervisor?

C-Refer to part (B). Are these events mutually exclusive?

d-What is the probability the selected employee is neither a production worker nor a supervisor?

15 -The Ludlow Wildcats baseball team, a minor league team in the Cleveland Indians organization, plays 70 percent of their games at night and 30 percent during the day. The team wins 50 percent of their night games and 90 percent of their day games. According to today's newspaper, they won yesterday. What is the probability the game was played at night?

16-The credit department of Lion's Department Store in Anaheim, California, reported that 30 percent of their sales are cash or check, 30 percent are paid with a credit card and 40 percent with a debit card. Twenty percent of the cash or check purchases, 90 percent of the credit card purchases, and 60 percent of the debit card purchases are for more than \$50. Ms. Tina Stevens just purchased a new dress that cost \$120. What is the probability that she paid cash or check?