**FOM 12 Chapter 5 Review Package**

Formulas for this chapter if there is overlap

Probability of A given B

1. A packetof 20 candies has 7 that are caramel. If a candy is chosen at random, determine
   1. the probability that a caramel candy is chosen
   2. the probability that a caramel candy is not chosen,
2. Two dice are roiled. Determine the probability of the following.
   1. The sum of the two dice is eight or ten. (make a table to help)
   2. The sum of the two dice is not seven
   3. The sUm of the two dice is even or greater than nine
3. The months of the year are placed on a card and then the cards are well shuffled. What is the probability that a card drawn has
   1. A month that starts with "J”
   2. A month that end in “y”

**Probability and Odds**

1. A card is randomly drawn from a deck of 52 cards.
   1. What is the probability of drawing a face card?
   2. What are the Odds in favour of drawing a face card?
   3. What are the Odds against drawing an ace?
2. Youjin bought a box of a dozen doughnuts that contained five chocolate doughnuts, three cinnamon doughnuts, three jelly doughnuts, and one sugar doughnut. She randomly selects a doughnut from the box.
   1. What are the odds in favour of her selecting a chocolate doughnut?
   2. What are the odds against her selecting a jelly doughnut?
   3. What is the probability of her selecting a cinnamon doughnut or a sugar doughnut?
3. A weather forecaster says that the odds against rain tomorrow are 7 : 13. What is the probability of rain tomorrow?
4. A high school football coach is trying to decide which quarterback he should start in next week's game. He examines the win: loss ratio for the two quarterbacks. Based on this information, which quarterback should he start? Explain your answer.

|  |  |  |
| --- | --- | --- |
| **Player** | **Wins** | **Losses** |
| Matthew | 8 | 5 |
| Azam | 7 | 4 |

**Mutually Exclusive Events P(A or B)**

1. If P(A) = 1/2, P(B) =1/5 f, and P(A and B)=O, find P(A or B).
2. If P(A)=0.3, P(B) = 0.8, and P(A or B) = 0.4, find P( A and B).
3. A card is drawn from a standard deck Determine the probability that

(a)a face card or a club is drawn (b) a five of diamond or a Queen is drawn

(c) a black card or diamond is drawn (d) a Jack or a red card is drawn

**Conditional Probability**

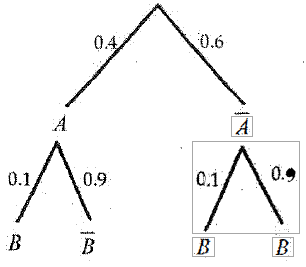
1. Given: P(A and B) = 0.4 and P(B) = 0.65, find P(A I B)
2. Let A and B be events such that P(A) = 0.6, P(B)=0.4, and P(A and B) = 0.3
   1. Find P(A or B)
   2. Find )
   3. )
3. The student population of a high school this year is given in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Girls** | **Boys** | **Total** |
| Senior 2 | 250 | 350 | 600 |
| Senior 3 | 250 | 200 | 450 |
| Senior 4 | 215 | 210 | 425 |
| Total | 715 | 760 | 1475 |

If a student is selected at random from the school, find

(a) P(boy) (b) P(Senior 4 student)

(c) P(girl ) (d) P(senior 3 I girl)



**Tree Diagrams to Solve Probability**

1. Use the given tree diagram to determine:

(a) P(B) (b)

(c)) (d) )

1. There are two bus routes between Luke's home and downtown where he works. Luke uses route A two-thirds of the time, and route B one-third of the time. On route A, 10% of the buses are late, and on route B, 20% of the buses are late.
2. Draw a tree diagram to represent the information.
3. What is the probability the Luke is late for work on a particular day?
4. Given that Luke arrives late, what is the probability he travelled by route A?
5. Bottle A has 4 red, 5 white and 6 black balls. Bottle B has 5 red, 6 white and 7 black balls. A coin is flipped to determine which bottle a ball is to be selected from.
6. Represent the information on a tree diagram.
7. What is the probability of selecting a black ball?
8. If a black ball is selected, what is the probability that it came from bottle A?

**Classifying Events**

1. The experiment is to study the athletic activities and the level of fitness of a person. The first event is that the person plays several different sports on a regular basis. The second event is that the person enjoys a high level of fitness. Independent or dependent?
2. The experiment is to flip a coin and to roll a six-sided die. The first event is that a tail is flipped. The second even is that a one is rolled. Independent or dependent'!
3. The experiment is rolling a die. The first event is that the number is less that four. The second event is that the number is odd. Mutually exclusive or not mutually exclusive?
4. The experiment is cutting a deck of cards. The first event is that the card is red. The second event is that the card is a black face card. Mutually exclusive or not mutually exclusive?

**Independent/Dependent Events P(A and B)**

1. When rolling a six-sided die and cutting a deck of cards, what is the probability of obtaining a six and a heart?
2. When tossing a coin and cutting a deck of cards, what is the probability of obtaining a head and a queen?
3. The probabilities that Emma will pass grade 12 math and Grade 12 physics this semester are 0.85 and 0.75. If these events are independent, find the probability that she will pass

(a) both math and physics (b) math but not physics

(c) physics but not math (d) neither math nor physics

1. The letters of the alphabet are placed on tiles and put in a bag. A tile is chosen, replaced, and then another tile is chosen, determine the probability of
2. A vowel then another vowel
3. A consonant and then another consonant
4. Two cards are draw without replacement from a standard deck of 52 cards. Determine the probability of the following events

(a) club and then a diamond (b) red card and then a black card

(c) red ace and then another red ace (d) 2 of clubs and then 2 of clubs

**Venn Diagrams to Solve Probability**

1. In a math class of 20 students, ten students have graphing calculators, eight students have scientific calculators, and two students have no calculator at all.

(a)Represent the information using a Venn diagram.

If a student is selected at random from the class, what is the estimated probability that:

(b)the student has a calculator?

(c)the student has a graphing calculator, given that the students has a calculator.

1. At a second-hand music store, researchers found that the probabilities that a teenage buys a particular item are as follows:

CD 85%

Cassette 10%

Both 5%

What is the probability that a teenager, chosen at random, does not buy a CD or a cassette?