Time Frame: 50 minutes

Subject Matter: The Addition Rules of Probability

**TELL ME**

Anticipatory Set:

In a statistics class there are 18 juniors and 10 seniors; 6 of the seniors are females, and 12 of the juniors are males. If a student is selected at random, find the probability of selecting the following:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Event | Mutually Exclusive or Not | Rule | Solution | Answer |
| A junior or a female |  |  |  |  |
| A senior or a female |  |  |  |  |
| A junior or a senior |  |  |  |  |

Objective: TSWBAT find the probability of an event using the addition rules for probability.

Standards: DA – 1.1, 1.2, & 1.5

Materials: Textbook, O.H.P. & Transparencies

**SHOW ME**

Presentation of Information:

Definition of Terms:

* **Addition Rule # 1**

When two events A and B are mutually exclusive, the probability that A **or** B will occur is

***P(A or B) = P(A) + P(B)***

* **Addition Rule # 2**

When two events A and B are not mutually exclusive, then

***P(A or B) = P(A) + P(B) – P(A and B)***

**Example 1:** A grocery store employs cashiers, stock clerks, and deli personnel. The distribution of employees according to marital status is shown here.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marital Status | Cashiers | Stock Clerks | Deli Personnel | Total |
| Married | 8 | 12 | 3 |  |
| Not married | 5 | 15 | 2 |  |
| Total |  |  |  |  |

If an employee is selected at random, find these probabilities:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Event | Mutually Exclusive or Not | Rule | Solution | Answer |
| The employee is a stock clerk or married |  |  |  |  |
| The employee is not married |  |  |  |  |
| The employee is a cashier or is not married |  |  |  |  |
| The employee is married or not married. |  |  |  |  |
| The employee is deli personnel or is married. |  |  |  |  |
| The employee is a cashier or a stock clerk. |  |  |  |  |

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**LET ME TRY**

1. The number of endangered species for several groups is listed here.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Mammals | Birds | Reptiles | Amphibians | Total |
| United States | 63 | 78 | 14 | 10 |  |
| Foreign | 251 | 175 | 64 | 8 |  |
| Total |  |  |  |  |  |

If one endangered species is selected at random, find the probability that it is

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Event | Mutually Exclusive or Not | Rule | Solution | Answer |
| Found in the U.S.A. or is a bird. |  |  |  |  |
| Foreign or a mammal. |  |  |  |  |
| A mammal or a bird |  |  |  |  |
| Found in the U.S.A. or is an amphibian |  |  |  |  |
| Found in the U.S.A. or foreign |  |  |  |  |
| Foreign or is a reptile |  |  |  |  |

1. In a certain geographic region, newspapers are classified as being published daily morning, daily evening, and weekly. Some have comics section and other do not. The distribution is shown here.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Have comics section | Morning | Evening | Weekly | Total |
| Yes | 2 | 3 | 1 |  |
| No | 3 | 4 | 2 |  |
| Total |  |  |  |  |

If a newspaper is selected at random, find these probabilities.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Event | Mutually Exclusive or Not | Rule | Solution | Answer |
| The newspaper is a weekly publication. |  |  |  |  |
| The newspaper is a daily morning publication or has comics. |  |  |  |  |
| The newspaper is published weekly or does not have comics. |  |  |  |  |
| The newspaper is a daily morning or evening publication. |  |  |  |  |
| The newspaper is published every evening or does not have comic. |  |  |  |  |
| The newspaper has or doesn’t have a comic section. |  |  |  |  |

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Homework:

Three cable channels (6, 8, and 10) have quiz shows, comedies, and dramas. The number of each is shown here.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of Show | Channel 6 | Channel 8 | Channel 10 | Total |
| Quiz Show | 5 | 2 | 1 |  |
| Comedy | 3 | 2 | 8 |  |
| Drama | 4 | 4 | 2 |  |
| Total |  |  |  |  |

If a show is selected at random, find these probabilities.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Event | Mutually Exclusive or Not | Rule | Solution | Answer |
| The show is a quiz show or it is shown on channel 8. |  |  |  |  |
| The show is a drama or a comedy. |  |  |  |  |
| The show is shown in channel 10 or it is a drama. |  |  |  |  |
| The show is shown in channel 10 or channel 8. |  |  |  |  |
| The show is a quiz show, comedy, or drama. |  |  |  |  |

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Homework:

Three cable channels (6, 8, and 10) have quiz shows, comedies, and dramas. The number of each is shown here.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type of Show | Channel 6 | Channel 8 | Channel 10 | Total |
| Quiz Show | 5 | 2 | 1 |  |
| Comedy | 3 | 2 | 8 |  |
| Drama | 4 | 4 | 2 |  |
| Total |  |  |  |  |

If a show is selected at random, find these probabilities.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Event | Mutually Exclusive or Not | Rule | Solution | Answer |
| The show is a quiz show or it is shown on channel 8. |  |  |  |  |
| The show is a drama or a comedy. |  |  |  |  |
| The show is shown in channel 10 or it is a drama. |  |  |  |  |
| The show is shown in channel 10 or channel 8. |  |  |  |  |
| The show is a quiz show, comedy, or drama. |  |  |  |  |