Algebra II Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Probability Review Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Hour\_\_\_\_\_\_\_

1. A study of traffic patterns in a large city shows that if the weather is rainy, there is a 50% chance of an automobile accident occurring during the morning commute. If the weather is clear, the chance of an accident is reduced to 35%. Suppose the weather forecast for tomorrow predicts a 70% chance of rain.

**a.** Draw a tree diagram based on the information.

**b.** Find P(it will rain tomorrow and there will be an accident). Show your work.

**c.** Find P(there will be an accident tomorrow). Show your work.

1. Lynn and Dawn tossed a coin 60 times and got heads 32 times. What is the experimental probability of tossing heads using Lynn and Dawn’s results?
2. A spinner is numbered from 1 through 10 with each number equally likely to occur. What is the probability of obtaining a number less than 2 or greater than 7 in a single spin?
3. A bag contains 7 red marbles, 7 white marbles, and 4 blue marbles. Find *P*(red or blue).
4. Assume a rabbit variety can be either long-haired (dominant) or short-haired (recessive). If a parent has one of each type of gene, then the two genes are equally likely to be passed to its offspring. If a rabbit has one or two dominant genes, it will be long-haired. What is the probability that a rabbit will be short-haired?

|  |
| --- |
| **Gene from Father** |
|  |  | **G** | **g** |
| **Gene from** | **G** | GG | Gg |
| **Mother** | **g** | Gg | gg |

**Hint: Capital G is Dominant; Lowercase g is Recessive**

**Suppose *Q* and *R* are independent events. Find *P*(*Q* and *R*).**

 *6) P*(*Q*) = 0.02, *P*(*R*) = 0.78

 7) *P*(*Q*) = , *P*(*R*) = 

 8) Two jars contain white balls and yellow balls. The first jar contains 4 white balls and 9 yellow balls and the second jar contains 9 white balls and 10 yellow balls. A ball is drawn at random from each jar. What is the probability that both balls are white?

**Suppose *S* and *T* are mutually exclusive events. Find *P*(*S* or *T*).**

 9) *P*(*S*) = 10%, *P*(*T*) = 43%

 10) *P*(*S*) = , *P*(*T*) = 

 11) If all possible results are equally likely, what is the probability that a spin of the spinner will land on an upper case letter or a consonant?



 12) Use the frequency table. Find the probability that a person goes to the movies at **least 5 times** a month. **Round to the nearest thousandth**.

|  |  |
| --- | --- |
| Trips to the Movies |  |
| **Number of Movies** | **Number of Moviegoers** |
| More than 7 movies per month | 112 |
| 5–7 movies per month | 184 |
| 2–4 movies per month | 273 |
| Less than 2 movies per month | 213 |
| **Total** | **782** |

 13) The table shows the results of a survey of students in two math classes.

Find *P*(more than 1 hour of TV | 6th period class). **Round to the nearest thousandth**.

Did You Watch More Than One Hour of TV Last Night?

|  |  |  |
| --- | --- | --- |
|  | **Yes** | **No** |
| **3rd period class** | 6 | 10 |
| **6th period class** | 15 | 8 |

 14) The table shows the results of a survey of college students. Find the probability that a student is taking a humanities class, given the student is male. Round to the nearest thousandth.

First Class of the Day for College Students

|  |  |  |
| --- | --- | --- |
|  | **Male** | **Female** |
| **Humanities** | 55 | 75 |
| **Science** | 65 | 60 |
| **Other** | 75 | 90 |

 15) Each person in a group of students was identified by year and asked when he or she preferred taking classes: in the morning, afternoon, or evening. The results are shown in the table**. Find the probability that the student preferred afternoon classes given he or she is a freshman**. Round to the nearest thousandth.

When Do You Prefer to Take Classes?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Freshman** | **Sophomore** | **Junior** | **Senior** |
| **Morning** | 4 | 18 | 17 | 10 |
| **Afternoon** | 15 | 4 | 4 | 7 |
| **Evening** | 11 | 11 | 17 | 5 |

16) The probability that a city bus is ready for service when needed is 76%. The probability that a city bus is ready for service and has a working radio is 70%. Find the probability that a bus chosen at random has a working radio given that it is ready for service**. Round to the nearest tenth of a percent**.

 17) A class of 40 students has 11 honor students and 10 athletes. Three of the honor students are also athletes. One student is chosen at random. **Find the probability that this student is an athlete given that the student is not an honor student**. Round to the nearest thousandth. (HINT: FILL IN TWO WAY TABLE)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Athlete | Not an Athlete | Total |
| Honor Student | 3 |  | 11 |
| Not an Honor Student |  |  |  |
| Total | 10 |  | 40 |

 18) Suppose you roll a standard number cube once. Are rolling a 4 and rolling a 6 utually exclusive events? Explain.

**Algebra II - Probability REVIEW**

**Answer Section**

**ESSAY**

 1.

|  |  |
| --- | --- |
| [4] | **a.** **b.** **c**.  |
| [3] | one part incorrect |
| [2] | two parts incorrect |
| [1] | correct answers but no work shown |

**SHORT ANSWER**

 2. 

 3. 

 4. 

 5. 

 6. 0.0156

 7. 

 8. 

 9. 53%

 10. 

 11. 0.9

 12. 0.379

 13. 0.652

 14. 0.282

 15. 0.500

 16. 92.1%

 17. 0.241

 18. Yes; you cannot roll a 4 and a 6 at the same time.