**Algebra 3-4 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Unit 5 & 6 Test Probability & Statistics Block: \_\_\_\_\_\_\_\_\_\_\_**

**Level 2**

\_\_\_\_ 1. A yogurt shop offers 6 different flavors of frozen yogurt and 12 different toppings. **How many choices are possible for a single serving of frozen yogurt with one topping?**

\_\_\_\_ 2. **Evaluate** 

\_\_\_\_ 3. Sarah flipped a coin 15 times. The following are her results. **What is her experimental probability of the coin landing on heads?**

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| H | T | T | T | H | T | T | H | T | T | T | H | H | T | T |

\_\_\_\_ 4. A bag contains 5 red marbles, 6 white marbles, and 5 blue marbles. **Find *P*(not red).**

\_\_\_\_ 5. A bag contains 5 red marbles, 6 white marbles, and 5 blue marbles. **Find *P*(green).**

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**Decide if the events are mutually exclusive.**

\_\_\_\_ 6. Two fair number cubes are rolled. Their sum is greater than 10; one of the numbers is a six.

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**Decide if the events are independent or dependent.**

\_\_\_\_ 7. A member of the junior class is elected junior class president. A member of the sophomore class is elected sophomore class president.

8. **Find the mean, median, mode and range of the data set. Round to the nearest tenth.**

2, 10, 6, 9, 1, 15, 11, 10, 15, 13, 15, 20

Mean: \_\_\_\_\_\_\_\_\_ Median: \_\_\_\_\_\_\_\_\_ Mode: \_\_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_\_\_   
  
Outlier (if there is one): \_\_\_\_\_\_\_\_\_

9. **Make a box-and-whisker plot of the data of the data from *problem 8.***

**Level 3**

\_\_\_\_ 1. Doug has 6 math books to line up on a shelf. Beth has 4 English books to line up on a shelf. In how many more orders can Doug line up his books than Beth?

\_\_\_\_ 2. In how many ways can 12 basketball players be listed in a program?

\_\_\_\_ 3. There are 8 people on the ballot for regional judges. Voters can vote for any 4. Voters can choose to vote for 0¸ 1¸ 2¸ 3¸ or 4 judges. In how many different ways can a person vote?

\_\_\_\_ 4. A bag contains 5 red marbles, 6 white marbles, and 5 blue marbles. You draw one marble.   
Find *P*(red or blue).

\_\_\_\_ 5. A bag contains 5 red marbles, 6 white marbles, and 5 blue marbles. You draw 2 marbles

Find *P*(red then blue).

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\_\_\_\_ 6. A bag contains 5 red marbles, 6 white marbles, and 5 blue marbles. Find *P*(red and blue).

\_\_\_\_ 7. You randomly choose a number from 1 to 10. Find *P*(even or less than 5).

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

\_\_\_\_ 8. *P*(*S*) = 20%, *P*(*T*) = 22%

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\_\_\_\_ 9. 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 contingency table. Find the probability that the student preferred afternoon classes given he or she is a junior. Round to the nearest thousandth.

When Do You Prefer to Take Classes?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Freshman** | **Sophomore** | **Junior** | **Senior** |
| **Morning** | 19 | 2 | 6 | 16 |
| **Afternoon** | 17 | 3 | 13 | 15 |
| **Evening** | 8 | 14 | 9 | 7 |

**Use the data set to answer questions 10 and 11.** [L3]

10, 10, 10, 12, 14, 16, 16, 18, 18, 18

10. What is the 40th percentile? 11. At what percentile is 18?

12. The scores on an exam are normally distributed, with a mean of 74 and a standard deviation of 7. Create a normal distribution curve. What percent of the scores are less than 81?

13. Susan keeps track of the number of tickets sold for each play presented at The Community Theater. Within how many standard deviations from the mean do all the values fall?

135, 71, 69, 80, 158, 152, 161, 96, 122, 118, 87, 85

**Level 4**

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 25%. Suppose the weather forecast for tomorrow predicts a 75% chance of rain.

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

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

2. The football coach has decided to randomly choose 6 players to represent the team at this year’s pep rally. The team consists of 15 seniors and 7 juniors. What is the probability that only one senior will be chosen?

3. The high temperatures for a 7-day week in July for Omaha were 100°, 99°, 101°, 101°, 85°, 98°, and 97°. Jim Flowers described the temperature for the week using the mean, 97°, Bill Randby used the median, 99°, and Rusty Lord used the mode, 101°.

**a.** Which meteorologist chose the measure of central tendency that best describes the data? Explain.

**b.** Explain why the other two meteorologists did not choose the best representation of the data.