MAT 1372 Statistics with Probability Practice Exam 1 Fall 2013

Closed book and notes. No use of computers, laptops, tablets or other handhelds. A calculator is ok.

1. The formula **=B$2\*$A1** is located in cell **B1**.

a) What does cell B1 evaluate to?

b) If this was copied and pasted into cell D3, what would the resulting formula be?

c) What would the cell D3 evaluate to?

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| --- | --- | --- | --- | --- |
|  | **A** | **B** | **C** | **D** |
| **1** | 2 | **=B$2\*$A1** | 4 | 5 |
| **2** | 3 | 3 | 8 | 6 |
| **3** | 5 | 4 | 3 | ????????? |
| **4** | 4 | 3 | 4 | 9 |

1. The following are the weights of chickens that have been put out for sale in a supermarket. Make a stem and leaf plot using every .05 for the stem (3.7(5), 3.8,3.8(5),3.9,3.9(5), 4.0,4.0(5) 4.1, 4.1(5)). What can you say about the distribution? Is it evenly distributed? Bell-shaped? Symmetric? Find the median and mode. The mean turns out to be 3.97. Does this indicate right or left skewing? Why?

3.75 3.88 3.94 3.96 4.02 4.09

3.82 3.92 3.94 3.98 4.03 4.10

3.84 3.93 3.96 3.99 4.06 4.12

3.86 3.93 3.96 4.02 4.06 4.17

1. A histogram uses bins, each of which represents a(n) \_\_\_\_\_\_\_\_ of data. If our data go from a low of 21 to a

high of 48 and we want 7 bins, then the width of each bin is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(show your calculation.)

For 10 bins, the width is \_\_\_\_\_\_\_\_\_\_\_\_. For 5 bins, the width is\_\_\_\_\_\_\_\_\_\_\_\_\_. Given our love for 5’s and

10’s, what would most likely be our choice for bin width? Why?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

For this last choice, if using Excel, the first and last #’s for setting up the bins would be \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_

or if using a stem and leaf plot, the stems would be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. A box contains six balls—one red, and five blue. Consider an experiment that consists of withdrawing a ball from the box, replacing it, and withdrawing a second ball. Draw a tree diagram. Be sure to include labels and probabilities. Use the tree diagram to make a table with outcomes and probabilities. **Express all probabilities as fractions in lowest terms.**
   1. What is the sample space of this experiment?
   2. As a set, what is the event A: the first ball drawn is red? What is its probability?
   3. As a set, what is the event B: the same color ball is drawn twice? What is its probability?
   4. Find A or B and its probability. Draw a Venn diagram with outcomes. Shade appropriately.
   5. Find A and (not B) and its probability. Draw a Venn diagram with outcomes. Shade appropriately.
2. Repeat Prob. 5 when the second ball is drawn without replacement of the first ball.
3. Of the families in a certain community, all have a parent or grandparent, 93 percent have at least one parent, and 18 percent have at least one grandparent.
   1. If a family is chosen at random, what is the probability it has both a parent and a grandparent? Draw a Venn diagram with probabilities. Shade appropriately.
   2. If the community consists of 1000 families, how many of them have only a grandparent? Draw a Venn diagram with frequencies. Shade appropriately.
4. It is estimated that 20 percent of all adolescents in the United States are obese, 1 percent of all adolescents suffer from diabetes and 0.8 percent of all adolescents both are obese and suffer from diabetes. Determine the conditional probability that a randomly chosen adolescent
   1. suffers from diabetes given that he or she is obese;
   2. is obese given that she or he suffers from diabetes.
5. The adults in an apartment building consist of 12 men and 15 women. A committee is formed of 6 randomly selected adult residents. What is the probability that it will consist of

|  |  |
| --- | --- |
| * 1. 4 women and 2 men? | * 1. 5 women and 1 men? |
| * 1. 6 women (and 0 men)? | * 1. At least 4 women? |
| * 1. Use complement to find atleast 3 men. |  |

1. A license plate from Vermont has 3 letters followed by 4 digits, e.g. KAK-3310
   1. How many different license plates can be made?
   2. If the letters must be distinct and the first digit cannot be a zero, how many plates can be made?
   3. If exactly 2 letters must be the same and the last digit must be odd, how many plates can be made?