Math 1116, Sample Spaces, Fall 2014 Name KEY

Instructions: Take two bags (or a bag and a box of cards) from the box of sample spaces brought by your instructor. Complete the following for each bag (or box) you choose.

Bag/Box #1	Bag/Box #2
1. What kind of item is in this bag/box? marbles	1. What kind of item is in this bag/box? 6-sided dice
2. How many total items are in the bag/box? 130	2. How many total items are in the bag/box? 48
3. Can you categorize the items in the bag/box? If so, explain how. Solids - 98 multis - 32	3. Can you categorize the items in the bag/box? If so, explain how. could do colors, or types of dice, but can also do sides 1, 2, 3, 4, 5, 6 sides
4. How many items are in each category? See above	4. How many items are in each category? 1 each on a single die

these are just examples
Your answers may differ

5. **If all the individual items in the bag/box are equally likely to be selected from the bag/box, what is the probability of selecting an item from each category?**

$\frac{98}{130} \approx 75.4\%$ solids

$\frac{32}{130} \approx 24.6\%$ multis

5. If all the individual items in the bag/box are equally likely to be selected from the bag/box, what is the probability of selecting an item from each category?

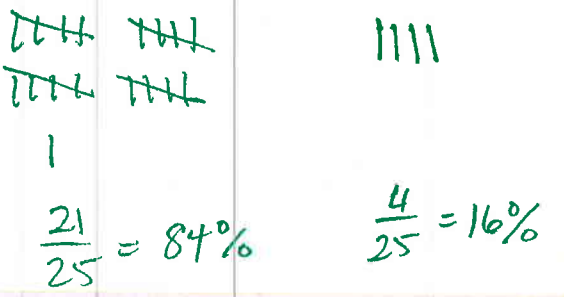
$\frac{1}{6}$ each

1, 3, 5 $= \frac{3}{6} = 50\%$

2, 4, 6 $= \frac{3}{6} = 50\%$

6. **Conduct the following experiment: Choose a category whose probability is at least ¼ (25%) or higher. Randomly choose an item from the bag/box, record which category it belongs to (specifically, does it belong to the category you choose or another one?). Put the object back and randomize (i.e. stir the contents, shake or shuffle). Repeat this process until you have 25 sample selections.**

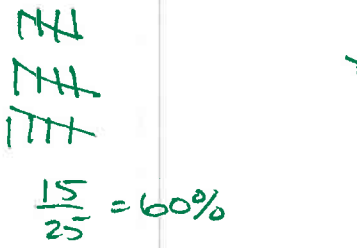
Category 1 solids **Category (Other)** multis



$\frac{21}{25} = 84\%$ $\frac{4}{25} = 16\%$

6. Conduct the following experiment: Choose a category whose probability is at least ¼ (25%) or higher. Randomly choose an item from the bag/box, record which category it belongs to (specifically, does it belong to the category you choose or another one?). Put the object back and randomize (i.e. stir the contents, shake or shuffle). Repeat this process until you have 25 sample selections.

Category 1 odds $= 50\%$ Category (Other) evens $= 50\%$



$\frac{15}{25} = 60\%$ $\frac{10}{25} = 40\%$

7. **Use the information you collected from your experimental sample and compare it to your probability calculation in #5. Are they about the same or very different?**

they are not very different.

7. Use the information you collected from your experimental sample and compare it to your probability calculation in #5. Are they about the same or very different?

they are within 20% of the predicted values for such a small sample that is the best we can hope for