Math 1116, Quiz #1, Fall 2014 Name KEY

Instructions: Show all work. Answer each question as completely as possible. Use exact values. For counting problems you may use scientific notation (with three significant figures) for any numbers larger than a million.

1. How many different outcomes are there for flipping a coin twelve times?

$2^{12} = 4096$

2. Suppose you have 6 flags that are all different. How many different ways can you order any three of those flags?

$6 \cdot 5 \cdot 4 = 120$

3. Suppose you are packing for a vacation. You pack 4 shirts, 2 pairs of pants, 2 pairs of shoes, and 3 jackets. Assuming you need one of each to dress each day, how long a vacation can you take before you have to repeat the exact same combination of outfits?

$4 \cdot 2 \cdot 2 \cdot 3 = 48$

4. Suppose you are taking an exam that consists of 10 multiple choice questions, each with 4 answer choices. How many different ways can you answer all ten questions?

$4^{10} = 1{,}048{,}576$

5. You roll an 8-sided die, a 6-sided die, and a 12-sided die. How many different outcomes of rolling all three are there?

$8 \cdot 6 \cdot 12 = 576$

6. A certain website sends out random passwords to new members. Suppose the passwords consist of only lowercase letters and numbers. How many eight-character passwords are there before the website has to reuse passwords?

$36^8 = 2.82 \times 10^{12}$