Algebra 2 Unit 8 Extra Practice Problems

1. In how many ways can Susan arrange 7 books into 4 slots on her bookshelf?

$_7P_4 = 840$

2. Five friends play a game. Each person writes his or her name on a piece of paper, and the papers are randomly redistributed. Find the probability that each person gets back his or her own name.

$\frac{1}{5!} = \frac{1}{120}$

3. How many different ways can the letters in the word ASSASSINATE be arranged?

$\frac{11!}{4!\,3!} = 277200$

4. Find the probability of selecting the winning NCAA Tournament bracket. (64 teams playing) Write the answer as a fraction and a decimal.

There will be 63 total games played

$\frac{1}{2^{63}}$ or $\left(\frac{1}{2}\right)^{63} = \frac{1}{9.2\times10^{18}}$ or 1.08×10^{-19}

5. Suppose you were able to correctly predict the winner of a game with 70% accuracy. What is the probability of selecting the winning NCAA Tournament bracket?

$\left(\frac{7}{10}\right)^{63} \approx 1.74\times10^{-10}$

6. Find the probability of winning the California Mega Millions Lottery, where participants must correctly select 5 out of 56 numbers, as well as a bonus number out of 46 numbers. Numbers do not have to be in a certain order and they cannot be repeated. Write the answer as a fraction and a decimal.

$\frac{1}{_{56}C_5 \cdot {}_{46}C_1} = \frac{1}{175{,}711{,}536}$ or 5.69×10^{-9}

7. How many ways can a deck of cards be shuffled?

$52! \approx 8.07\times10^{67}$

8. You decide to tell your fortune by drawing two cards from a standard deck of 52 cards. What is the probability of drawing two cards of the same suite in a row? The cards are not replaced in the deck.

P(2 diamonds) + P(2 hearts) + P(2 clubs) + P(2 Spades)

$= 4\left(\frac{13}{52}\cdot\frac{12}{51}\right) = \frac{4}{17}$

9. 12 friends are having a party. They are each bringing a snack from a list of 15 snacks. What is the probability that at least 2 people bring the same snack?

1 − P(no one brings the same snack)

$1 - \frac{_{15}P_{12}}{15^{12}} \approx 0.998$