Name: _____ Date: _____

Chapter 11 Gifted and Enrichment

1. The Enigma machine was developed before World War II and used before and during the war as a coding machine. In simple terms, as each letter of a message was typed, it was changed to a different letter by the Enigma machine. The coded message was sent by Morse code and an Enigma machine was used to decode the message. How many different combinations of letters are possible to spell the word *Enigma*?

2. If a card from a standard deck of 52 playing cards is selected at random and not shown, which is more difficult?

- to guess the suit of a card
- to guess if the card is a non-number card

Explain your reasoning.
Use fractions to show the probability of guessing both correctly in one guess.

3. Two cards with a 3, two cards with a 4, and one card with an 8 are put in a hat.

a) Three cards are pulled out and arranged in the order pulled to make a 3-digit number. How many different 3-digit numbers are possible?

b) One card is pulled out, the digit recorded as the hundreds digit and the card replaced. Then, another card is pulled out, the digit recorded as the tens digit and the card replaced. Then, another card is pulled out, the digit recorded as the ones digit. How many different 3-digit numbers are possible?

4. Six balls are randomly selected from a bucket with 49 balls that are numbered 1 to 49. Method A has each ball returned to the bucket after being selected before the next ball is selected. Method B does not have each ball returned. Trying to guess the six numbers would not be easy, but which method would be more difficult?

5. A regular coin with a head and a tail and a special coin with two heads are placed in a bag. You pull out one coin, flip it three times resulting in heads each time. What is the probability that you pulled out the special coin?