Math 4 Honors

Name _____

Date _____

Lessons 5-4 & 5-5 Learning Check

Directions: Answer the questions below – silently & individually. When you are done, log into Navnet & enter your answers. You have 15 minutes to complete this.

1. Fifty people bought tickets for a local raffle. The tickets are placed in a large bowl from which prize-winning tickets are randomly drawn one at a time. Five prizes are to be given away. The nine members of the Jones family each bought one ticket. *Round your answers to three decimal places.*

   a. If a winning ticket is put back in the bowl after it is drawn, what is the probability that no prize is won by a member of the Jones family?

   $\left(\frac{41}{50}\right)^5 \approx .371$

   b. If a winning ticket is not put back in the bowl after it is drawn, what is the probability that no prize is won by a member of the Jones family?

   $\frac{41 \cdot 40 \cdot 39 \cdot 38 \cdot 37}{50 \cdot 49 \cdot 48 \cdot 47 \cdot 46} \approx .354$

   c. Suppose a winning ticket is not put back in the bowl, and people not in the Jones family win the first two prizes. What is the probability that no prize is won by a member of the Jones family?

   $\frac{39}{48} \cdot \frac{38}{47} \cdot \frac{37}{46} \approx .528$ OR $\frac{{}_{39}C_3}{{}_{48}C_3}$

2. Expand using Pascal's Triangle.

   $(3x-5y)^4 =$

   $$81x^4 - 540x^3y + 1350x^2y^2 - 1500xy^3 + 625y^4$$

3. Expand using the Binomial Theorem.

   $(4x+3)^7 =$

   $$16384x^7 + 86016x^6 + 193536x^5 + 241920x^4 +$$

   $$181440x^3 + 81648x^2 + 20412x + 2187$$

4. Find the coefficient of the x^2y^8 term in $(x+y)^{10}$.

   ${}_{10}C_8 = 45$

5. Find the coefficient of the x^2 term in $(2x-4)^5$.

   ${}_5C_3(2x)^2 \cdot (4)^3 = -2560$