Quiz- Expected Value Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

AMDM

***Answer each question completely and show all work to receive full credit.***

**At the Gwinnett County fair, one of the games that the fair goers could play involves throwing a ball. The rules of the game are as follows**

 **- You get 4 balls to throw and you must throw it into the strike zone to count.**

 **- If you throw all four strikes, you get a large stuffed animal.**

 **- If you throw three strikes, you get a medium prize.**

 **- If you throw 1-2 strikes, you get a rubber snake.**

 **- If you throw 0 strikes, you go home empty-handed.**

1. What are the possible outcomes that you could expect to have? Make a tree diagram to show your different outcomes. (Separate sheet of paper)

2. What is the probability of throwing the following?

 A. P(4) B. P(3) C. P(2)

 D. P(1-2) E. P(0)

3. If 150 play the game once, how many of each would be given away?

 A. Large stuffed animal B. Medium Prize C. Rubber snake

4. Use Pascal’s Triangle to determine the number of outcomes if 8 balls were thrown?

 (Sketch the Triangle)

**Allen gets 15$ a week for his allowance. He wants to try to up his allowance so he decides he will shoot baskets to improve his game and his allowance. He suggests to his parents that:**

* **If he misses the first basket, he only gets $10**
* **If he makes the first basket, he gets 20$ and a chance to make a second shoot for an additional 5$.**

**Allen is a 45% shooter (he makes a basket 45% of the time)**

5. Sketch a tree diagram to show Allen’s probabilities.

6. How many times a year do you expect Allen to get

 10$-\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 20$-\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 25$-\_\_\_\_\_\_\_\_\_\_\_\_\_

7. How much allowance will he receive in a year? (Show your work)

8. Should Allen’s father accept the deal? *Explain and show your justification*