Textbook Activity
Day 4

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These questions will be completed by the student and will count as class time. The students will be responsible for completing the work related to these activities and this work will count as attendance.

This work is due first thing during class on Day 5. Failure to turn in this work will cause you to be 2 hours out without an excuse.

Directions:
Read Chapter 5 of EYCLS, pages 73 to

Please use the lecture slides, Excel calculator, and your textbook to answer the following questions:

1. Define, in your own words, discrete probability distribution.

   A LISTING OF ALL POSSIBLE DISTINCT EVENTS FOR A VARIABLE AND THEIR PROBABILITIES OF OCCURENCE.

2. What is the expected value of a random variable? What does it mean?

   THE SUM OF THE PRODUCTS FORMED BY MULTIPLYING EACH POSSIBLE EVENT IN A DISCRETE PROBABILITY DISTRIBUTION BY ITS CORRESPONDING PROBABILITY. (THE EXPECTED VALUE TELLS YOU WHAT THE VALUE MIGHT BE IN THE LONG RUN)

3. What is the standard deviation of a random variable? How can it be used?

   THE MEASURE OF VARIATION AROUND THE EXPECTED VALUE OF A VARIABLE. FOR EXAMPLE, YOU CAN USE THE SD TO DETERMINE THE LEVEL OF RISK IN AN INVESTMENT.

4. What is the first rule of probability?

THE PROBABILITY OF AN EVENT MUST BE BETWEEN 0 AND 1

5. The Binomial distribution is used with a random variable that meets specific criteria. List these criteria.

   a. THE VARIABLE IS FOR A SAMPLE WITH A FIXED NUMBER OF TRIALS.
   b. THE VARIABLE HAS ONLY TWO MUTUALLY EXCLUSIVE AND COLLECTIVELY EXHAUSTIVE EVENTS (SUCCESS OR FAILURE)
   c. THE PROBABILITY OF SUCCESS AND ALSO FAILURE ARE BOTH CONSISTENT IN ALL TRIALS.
   d. THE EVENT (SUCCESS OR FAILURE) OF ANY SINGLE TRIAL IS NOT INFLUENCED BY THE EVENT OF ANY OTHER TRIAL.

6. What is the normal distribution? What are the criteria that its random variables must meet?

THIS IS PROBABILITY DISTRIBUTION OF A SINGLE VARIABLE. THE GRAPHED CURVE MUST BE SYMMETRICAL; THE MEAN, MEDIAN, AND MODE MUST HAVE THE SAME VALUE; THE POPULATION MEAN AND THE STANDARD DEVIATION DETERMINE PROBABILITIES; DISTRIBUTION EXTENDS FROM NEGATIVE TO POSITIVE INFINITY; ALWAYS EXPRESSED BY INEQUALITIES