1. Prove one of the Identities based in Pascal's Triangle using:

   (a) Blockwalking

   (b) A Combinatorial Proof

   Do not pick an identity that was proven on Anchor.

   Which method was easiest for this identity? What do you think made it easiest?

2. Create a 6-sided die where

   (a) The chances of rolling a one are 2/3.

   (b) The chances of rolling an even number are 100

   (c) The probability of rolling a 3 is 0

   (d) The probability of the sum of two of your die is 8 is 1/6.

3. Determine if the following events are independent or dependent. Note that you do not have to solve these problems, just determine if they are independent or dependent.

   (a) Drawing a red card, then drawing a card labeled k.

   (b) Drawing a red card, then drawing another red card.

   (c) Drawing a red card, then rolling a 6 on a standard, fair, 6-sided die.

   (d) Rolling a 6 on a standard, fair, 6-sided die, then rolling a 1 on the die.

4. Find the probability of the following events. Assume all dice are standard, fair 6-sided dice.

   (a) Rolling 2 dice and they are both ones.

   (b) Rolling a one, then rolling another one.

   (c) Rolling an even number, then an odd number.

   (d) Rolling an odd number, then an even number.

   (e) Rolling an even number, then an even number.

   (f) Rolling an even number, then a different even number.

5. Imagine there's a test for a disease that only 2% of people have. The test has a 99% sensitivity rate, and a 95% specificity rate.

   (a) If a person has a positive result, what is the probability they have the disease?

   (b) If a person has a negative result, what is the probability they do not have the disease?

6. Find the expected value of

    (a) Rolling a standard, fair 8-sided die.

    (b) The sum of two rolls of a standard, fair, 8-sided die.

    (c) The sum of four rolls of a standard, fair 8-sided die.