CHAPTER 10  Calculator Notes for the TI-Nspire and TI-Nspire CAS

Note 10A: Dice Simulation
You can simulate the throw of a die using the random integer command in the Lists & Spreadsheet application. Label columns A, B, and C as die1, die2, and sumdice, respectively. To simulate 300 throws of a pair of dice, type randint(1, 6, 300) in the formula cells for die1 and die2. In the formula cell for sumdice, type die1 + die2 and press ·.

You can use a histogram to display the distribution of sumdice. Press (and choose Data & Statistics. Add sumdice to the x-axis, press (menu), and choose Plot Type | Histogram. See Note 2C for help graphing a histogram.

Note 10B: Permutations
You can use the Calculator application to find the number of permutations of n objects chosen r at a time. Press (menu) and choose Probability | Permutations. Type the number of objects (n) to choose from, the number of objects (r) chosen at a time, and press ·. For example, to find the number of permutations of five objects chosen three at a time, press (menu), choose Probability | Permutations, type 5, 3, and press ·.

Alternatively, type the command npr(5, 3).

Note 10C: Factorials
You can use the Calculator application to evaluate factorials. To use the factorial command, press (menu) and choose Probability | Factorial. For example, to find 5!, type 5, press (menu), choose Probability | Factorial, and press ·.

In the order of operations, factorial has higher precedence than negation, so −3! is equivalent to −(3!).

Note 10D: Combinations
You can use the Calculator application to find the number of combinations of n objects chosen r at a time. Press (menu) and choose Probability | Combinations. Type the number of objects (n) to choose from, the number of objects (r) chosen at a time, and press ·. For example, to find the number of combinations of five objects chosen three at a time, press (menu), choose Probability | Combinations, type 5, 3 and press ·.

Alternatively, type the command ncr(5, 3).
Note 10E: Binomial Probability

Single Probability

In the Calculator application, you can use the binomial probability distribution function command, \( \text{binomPdf} \), to calculate the probability of any number of successes in a probability experiment. Press \( \text{menu} \) and choose \( \text{ Probability} \) | \( \text{Distributions} \) | \( \text{Binomial Pdf} \).

- **Num Trials, \( n \)** = the total number of trials.
- **Prob Success, \( p \)** = the probability that each trial is a success.
- **X Value** = the number of desired successes.

For example, to find the probability of eight successes out of ten trials with a probability of success for each trial of 0.75, type \( 10 \), press \( e \), type \( 0.75 \), press \( e \), type \( 8 \), and press \( \cdot \).

The \( \text{binomPdf} \) command is a shortcut for calculating the value of one term of a binomial expansion. That is, \( \text{binomPdf}(10,0.75,8) \) is the same as \( _{10}C_8 \cdot (0.75)^8 \cdot (0.25)^2 \). You can type the command directly instead of using the menu.

To find more than one probability at the same time, do not enter any information in the \( x \)-value entry box. For example, to find the probability of three or fewer successes out of three trials with a probability of success of each trial of 0.6, type \( 3 \), press \( e \), type \( 0.6 \), and press \( \cdot \). Alternatively, type the command \( \text{binompdf}(3, 0.6) \). (continued)
Cumulative Probability

The binomial cumulative distribution function command, \( \text{binomCdf}() \), is similar to the \( \text{binomPdf}() \) command, but it sums the binomial probabilities from zero successes to the desired number of successes. Press \( \text{menu} \) and choose Probability | Distributions | Binomial Cdf.

- **Num Trials, \( n \)** = the total number of trials.
- **Prob Success, \( p \)** = the probability that each trial is a success.
- **Lower Bound** = 0.
- **Upper Bound** = the highest number of successes.

For example, to find the probability of six or fewer successes out of ten trials with a probability of success for each trial of 0.75, type 10, press \( \text{tab} \), type 0.75, press \( \text{tab} \), type 6, and press \( \text{tab} \). To find the probability of more than six successes, subtract the previous answer from 1. Alternatively, type the command \( \text{binomCdf}(10, 0.75, 0, 6) \).