

ExtendSim Homework #3: Due two days after our last class: Wednesday December 11 at 11:59pm

Wegman's Prepared Food Delivery

Wegman's prepared food delivery works as follows: Using an online app, customer specify their order in terms of specific items: Deli items, Hot Food items, and Soda/Beverage items. So for example, a customer might order 3 deli items, 2 hot food items and 3 beverage items. (Of course the specific items are listed.)

There is one picker for each of these categories. For simplicity assume that each item ordered takes 1.5 minutes for a picker to collect. Once all category items are picked, the picker walks to the assembly baset at the front of the store. The the picker's task time is exponentially distributed with mean= (# of items in that category)*1.5minutes. At the basket the assembler will box/package up the set of items for pick-up. It takes the assembler a constant 15 seconds for each item to do this.

For a typical order, the number of Deli items ordered follows a Poisson distribution with parameter 5, the number of Hot items ordered follows a Poisson distribution with parameter 4 and the number of Beverage items follows a Poission distribution with parameter 3.

The time between arrivals for orders is 15 minutes and is exponentially distributed.

Question 1: What is the mean time to assemble an order?

Question 2: What is the probability that an order will be complete within 60 minutes?

One block that might be new is the Equation block which is a value block where you can do computations.

Here is how you use it.

Open the block to its "Equation" tab. Expand the number of "Input variables" to the number you desire: if it is three they will be respectively be labeled "inCon0", "inCon1", "inCon2", etc.

In the "Enter the equation of the form..." type your formula in Excel-like format: suppose it is $\text{inCon0} * \text{inCon1}^{\text{inCon3}}$.

The answer comes out the node on the left hand side of the block.



The Equation blocks inside looks like:

