Detailed instructions on understanding and using the Excel OTB models

- Let's begin by remembering the purpose of having a plan: to forecast future Sales with reasonable accuracy that will guide Purchase Order quantities.

- As you first look at the model, we will focus on the example version OTB in rows four through 20. You can see that time runs across the top, from left to right, and metrics down the rows in column B. "wk" is the abbreviation for week, and "QTR" is the abbreviation for quarter.

- There are two QTRs in the model. The first is an example of a 13-week quarter of actualized data results (column C to P), followed by the next 13 weeks of forecasted data results of what the merchandise planner believes will happen (column Q to AD).

- Before we discuss the process, let's first define each metric row in column B:

  The white rows:
  - BOP Inv. is the amount of Inventory $ investment available at the start of the week.
  - Sales are the amount of Sales $ you generate each week.
  - Receipts are the amount of new Purchase Order $ you bring into your Inventory each week.
  - EOP Inv. is the amount of Inventory $ investment available at the end of the week.

  The highlighted rows:
  - LY BOP Inv. is last year's Inventory $ investment at the start of that week.
  - LY Sales are last year's Sales $.
  - TY/LY Sales variance is how much more or less you sold that week vs last year.
  - LY Receipts are last year's Receipts $.
  - LY EOP Inv. is last year's Inventory $ investment at the end of that week.

    Four aadditional metric rows:
    - Stock-to-Sales is the ratio of how much Inventory you have to generate your Sales.
    - Sell thru % is similar to Stock-to-Sales, but expressed differently. This calculates the Sales as a % of how much Inventory $ investment is available at the start of the week.
    - Then two more similar rows, but representing LY (or last year) data.

- How the model works: The BOP and EOP Inv. rows are how much Inventory $ you have on hand each week. You never want these to run out to zero, or else you'll have no inventory left to sell to achieve your Sales forecast. You also don't want them to be too high—you've paid for that inventory and don't want to hold too much of it without converting to sales, as sales pay for the inventory, the overhead, and generate profit for the company. So how do you determine if you have the perfect amount of Inventory to make your Sales? By observing the "Stock-to-Sales" and "Sell thru %" rows. These are indicators of your Inventory's efficiency concerning the Sales you achieve.

If you look at the Stock-to-Sales row for each week from week one to week 13 (which represents the first quarter of the year that just passed), you'll notice the range of Stock-to-Sales is as high as nine and as low as two. A good benchmark for this company is between six and nine, which means you have enough Inventory stock to sell for the next six to eight weeks. Our observation of these weeks is that weeks one to six are ideal, but down to four, three and two in weeks eight to 10 (highlighted in yellow) is too low. What happens when the Stock-to-Sales gets too low? Sales will diminish, which no company wants to see and is reflected in weeks 10 and 11 in the Sales row (also highlighted in yellow). Sales will diminish because, remembering that this is an apparel company, keeping the product in all sizes in every store is nearly impossible to achieve when Inventory stock levels get too low. We can only avoid this issue if all sizes sell at the same rate in every store, which never happens. Sizes will eventually sell out in many stores, representing the missed Sales.

The same thing appears in the Sell-thru % row, with Sell-thru %'s too high in weeks eight to 11 (highlighted in yellow). A good benchmark for this company is between 12%-16%.

So, how do we solve this problem? If you could go back in time and redo this Sales quarter for weeks one to 13, you would ensure that an additional week of Receipts came in for week seven, right before the yellow highlighted issues come into play. Doing so would give you more Inventory $ to sell through that stretch of weeks to keep all sizes well-stocked. Then you wouldn't see the Sales drop in weeks 10 and 11. So, for example, if you type in $6,000 of Receipts for week seven in the white Receipts row, you'll see the Stock-to-Sales and the Sell-thru % rows improve.

That briefly explains the past results for weeks one to 13 and what we may assume occurred. So, if we are now at the beginning of week 14 for this exercise, we can use that logic and see how it applies to the future weeks 14 to 26.

Here, the BOP and EOP Inventory $ positions each week are calculations. BOP is simply the previous week's EOP because if you end week 13 with $6,450 worth of Inventory, you also begin week 14 with that same $6,450. We calculate EOP as:

"BOP for the week, minus Sales for the week, plus Receipts for the week."
As a calculation, that would look like this: "BOP – Sales + Receipts = EOP"

The next step is to forecast the future week's Sales, which is done by looking at the TY/LY Sales variance row %'s and establishing an average of the normal weeks. The 79% variance in the QTR-1 column (highlighted in grey) is one indicator of the average TY/LY variance. However, it also includes the very low 53% and 28% in weeks 10 to 11, and even the 66% in week 12 might be a bit low since it's just coming out of that low period. Since we plan to be fully in stock for QTR-2, we want to establish a better variance by not factoring in weeks 10 to 12. The average of the rest of the weeks = 88% TY/LY variance. Assuming we can be fully in stock, that's our best assumption of how we believe all our weeks in QTR-2 will approximately transpire, so we create our Sales forecast (the top blue shaded row) for each week from 14 to 26 to be 88% more than LY Sales, and you'll see that in the TY/LY variance row.

NOTE: A more evolved method of this Sales forecasting would also look at the last year's (LY) Sales trend and see if there was anything unusual in those weeks too, but for that, we would need to see Sales from two years ago and create more variances against that metric. That is too detailed for this exercise, but please note that it's another vital factor to consider.

The next step is to determine the ideal BOP Inventory, so you can make sure you don't go below it. This logic is similar to how we determined that 88% TY/LY variance was likely the truest Sales variance to LY by eliminating the anomaly weeks. We do that when determining the ideal BOP Inventory as well, so in this instance, we look at all the weeks in QTR-1 that have Sell-thru %'s between the ideal 11% to 15% range, so that's weeks two to three, five to six, and 12 (16.2% is close enough). The average BOP Inventory for those select five weeks = $11,810. That's our ideal BOP.

Now that we have created our Ideal BOP Inventory and Sales forecast for all future weeks and we see how the BOP and EOP Inv adjust to that each week, we need to determine where the future Inventory Receipts will come in to ensure we have an optimal Stock-to-Sales ratio and Sell-thru % each week. We do that by recognizing that we need more Inventory to come in week 14. To calculate how much we need, we:

Ideal BOP minus current BOP plus the next four weeks of Sales (weeks 15-18)
As a calculation, that would look like this:
*"Ideal BOP – BOP + (Sales * future four weeks) = week-14 Receipts"*

You then see that both the Stock-to-Sales and Sell-thru % rows from week 15-to-18 now look good, fitting within our ideal range of six to nine for Stock-to-Sales, and 11%-15% for Sell-thru %. Since we're only buying the next four weeks of Sales *(which is only a guideline and may change depending on the business needs),* we need to order more Inventory Receipts to come in every four weeks. This order is simpler to calculate, as you add up the following four weeks of Sales (weeks 19-22) and enter that amount in week-18 Receipts. This calculation repeats for the next four weeks, and so on. As a double-check to confirm that your model is working correctly, ensure that your week-26 BOP Inv. is the same as your Ideal BOP number so you know Receipts are working correctly.

YOUR TASK TO COMPLETE:

In rows 24-42 of the Excel file, you will see a second forecast model with different data than the first. Weeks one to 13 are actualized data that occurred over the past 13 weeks. You are now starting week 14 and must fill in the future forecast for Sales and Receipts. Using the previous training in the first model showing what to look for in the first 13 weeks of actualized data, you will need to fill in these three deliverables: (1) the ideal category BOP in cell Q24, (2) a forecast of your Sales in row 29 for weeks 14 to 26, then (3) a forecast of the Receipts you'll need in row 34 for select weeks within 14 to 26.

Continue to reference the notes above to help guide you through the process, then save your work in the file and submit it.