### ITMG 100

**EXCEL SESSION 2**

**Spreadsheet Design**

**Absolute and Relative Reference**

This is one of the most difficult worksheet concepts to understand. One point to keep in mind is that the paste operation is the only one affected by an absolute cell reference. An absolute cell reference instructs the past operation to keep the same cell reference as it copies a formula to another. Let’s take a look at our example.

We know that for each month we have some revenue figure. We also know that we have some expenses tied to each revenue entry. However in this model we don’t have actual numbers for expenses only approximated percentages. For example, we never know how much commission we have to pay out to a particular person until the end of the month. But we do know the person will get paid .0225 (or 2.25%) for every dollar raised. Maybe that person will be in dire need and earn a lot. Maybe they won’t really want to work that hard so they don’t care what they get. Either way at the end of the month all we know is we have to pay them the promised 2.25%. Hence we create an assumption box and then for every month we will multiply the total revenue generated by the commission promised.

Here is the syntax of an absolute reference (which can be created by hitting the key F4)

$B$17

There are other occasions where we wish to copy a formula and have it go over a number of cells and not fixed and tied to one cell—this was executed in the previous case homework. It is called a relative reference. It is notated by the following syntax:

B17

We can also use a mixed reference in which we lock a particular cell or row depending on what the situation calls for. The following is the syntax:

$B17 This locks the column and lets the row reference change

B$17 This locks the row and lets the column reference change

**START (PRE FORMATTING)**



# STEP TWO (FORMATTING)



# Finished



# THE IF FUNCTION

Sometimes items need to be calculated differently depending on a condition. We can utilize a programming structure called the IF selection criteria to make this happen in Excel. In our example we can say that a bonus of $60,000 will be given if TOTAL revenue is greater than or equal to the $6,500,000 amount stated. If the total revenue generated is not greater than or equal to $6,500,000 then no bonus is awarded. NOTE THAT ANY BONUS AWARDED WILL RESULT IN AN EXPENSE AMOUNT.

How to use the IF Function

The IF Function is useful when the value you want to assign to a cell is dependent upon a logical test. Here is how the syntax works:

=IF(logical test, value IF TRUE, value IF FALSE)

=IF(B22>=6,500,000, 60,000, 0)

=IF(B4>B22, B20,0)

In essence by employing this function you tell excel to display the value B20 in the cell if the condition is true, or 0 if the condition is false).

There are two ways to enter an IF Function. One is to use the FX key, the other is to key in it directly. Use whatever method is easiest for you to execute.

# WHY THIS MIGHT BE COOL

So one question you might ask is why go through so much work for a spreadsheet model? Well one reason is to add robustness to your model and to allow you to engage in other model test. One such method is called a WHAT-IF ANALYSIS. This is where you have the opportunity to make some changes to see what effect will occur on the total outcome. For example what if we wanted to see if we could increase TOTAL NET INCOME to a certain degree.

If we have modeled our spreadsheet correctly we could use a GOAL SEEK FUNCTION to seek what might happen if we look at the opportunity we might have to reduce one of our assumptions.

Goal Seek is a function that allows us to change one parameter to meet one specified criteria. In this case we might want to see how we might be able to net a TOTAL NET INCOME of $4,500,00 by reducing our Equipment Expenditures. By since we started with a % Assumption—what exact amount % reduction would accomplish this? Let’s ask the Goal Seek Function Wizard.

To Execute the Goal Seek Function Wizard we select TOOLS | GOAL SEEK and a dialog box appears. At this point we have excel point the select cell to the cell that contains our TOTAL NET INCOME for all six months. Then we enter in the value $4,500,000 and then we select the BY CHANGING CELL to the cell that contains the assumption of our EQUIPMENT PERCENT.