**Learning Objective: Understand stock option valuation. Understand Normsdist function in excel, use SOLVER to find the implied volatility of an option.**

This homework will be completed in Excel. This homework has finance and excel learning objectives.

**Instructions for completion:**

Please use the Excel File named “Portfolio\_HW\_5.xlsm.” This is similar to the files posted in week 13. This assignment involves completing the “work” that is done in the videos for Week 13. Following along the videos to understand how it is done.

Work is required in the following worksheets:

**-Option\_Pricing**

Using the Black-Scholes Option Pricing model, write formulas for d1, d2, N(d1), N(d2), N(-d1), N(-d2), the call price and the put price. The put price should be obtained also by using the put-call parity formula.

**Instructions for Writing Formulas: Any blank cell which is “filled” with a GRAY color must have a formula. In addition, any blank cell “filled” with a pale YELLOW color must have inputs!**

**Please write the formulas as shown in the week 13 videos!**

IMPORTANT: You may want to follow along the week 13 videos using the inputs from the videos to make sure your formulas are all working!

For this homework you will obtain the Call and Put prices for a call and a put of Starbuck’s (SBUX).

Data to use as inputs:

|  |  |
| --- | --- |
| Stock price as of 11/9/2018 | $68.60 |
| Exercise price (for both call and put): | $65.50 |
| 1 month Treasury rate | 2.21% |
| Option maturity date | 12/7/2018 |

You are computing these call and put prices as of 11/9/2018.

In Cells H2 and H3, place the “current date” and the date the options mature. Using the DAYS function in Excel, compute the number of days between the current date (11/9/2018) and the maturity date of the option. Convert this to a percentage of the year using a 365 year. Put these formulas in Cells H4 and H5, respectively. In cells B3, B4 and B5 place the stock price, the exercise price, and the risk-free rate, respectively. “Pull” the “T” (time to maturity) that you compute in Cell H5 into B6.

Use SOLVER to find the volatility that will result in a call price of $3.60. Have SOLVER place the volatility in Cell B7. The call price of $3.60 should appear in Cell B18 (where you have written your Black-Scholes formula for a call price).

**All work must be done individually. Do not share your files with other students.**

When you complete your assignment, please save your excel file as follows:

HW\_5\_YOURLASTNAME

So, for me, it would be: HW\_5\_Garner.xlsm

SAVE AS A MACRO ENABLED FILE. This helps with grading. The file extension should be: .xlsm

Complete the Information sheet in the Excel file with your last name and your GT ID!

**END OF INSTRUCTIONS**