



EarningsBeats

MAX PAIN CALCULATOR TUTORIAL



Video Tutorial:

We have created a video tutorial to demonstrate the example (AMC, June 2021) that is presented in the Excel file. [Click to access the video tutorial.](#)



Step One: Enable the Solver add-in in Microsoft Excel. To do so, follow these steps:

- Select the Data tab > Analysis Tools > Solver Add-In (Check the box) > OK

The image displays two screenshots of the Microsoft Excel interface. The top screenshot shows the 'Data' tab selected in the ribbon, with the 'Analysis Tools' button circled in red. The bottom screenshot shows the 'Add-ins' dialog box with 'Solver Add-in' checked and the 'OK' button circled in red. A red arrow points from the 'Analysis Tools' button in the top screenshot to the 'Add-ins' dialog box in the bottom screenshot.

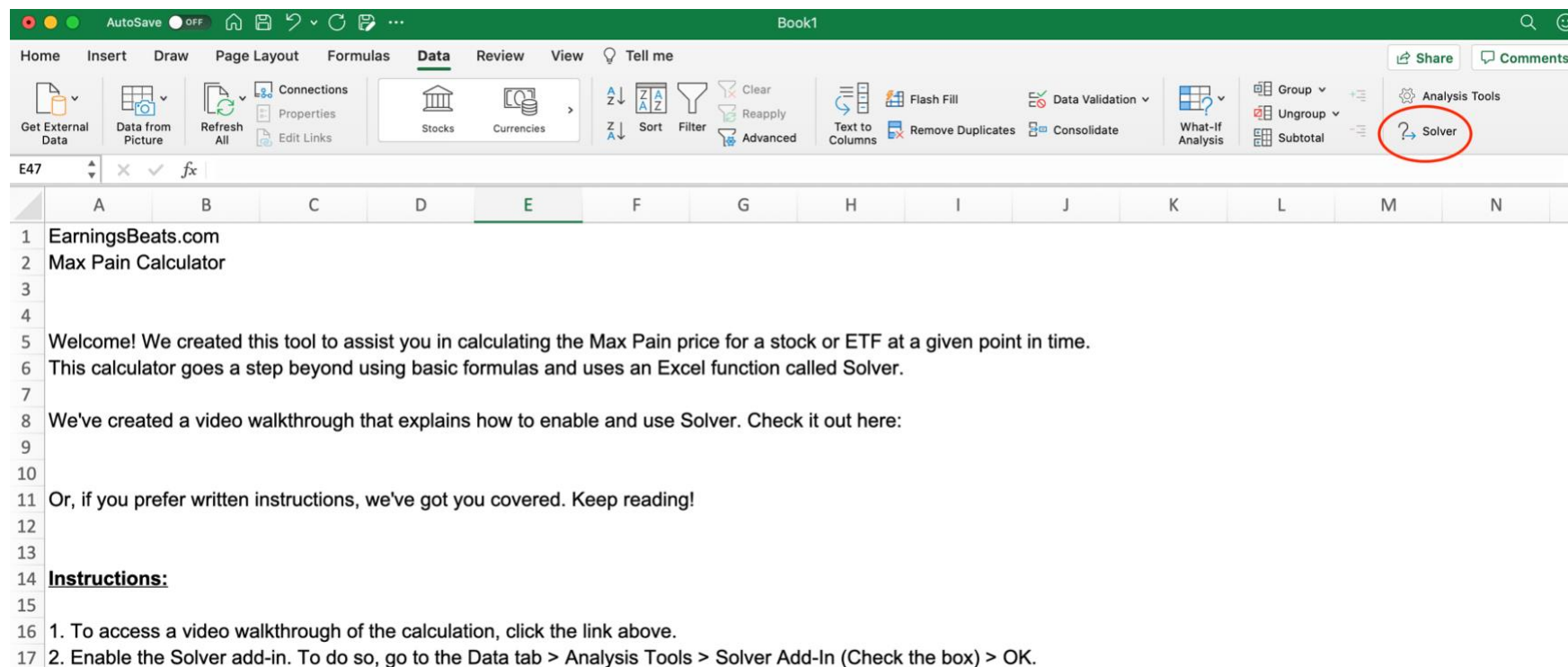
Excel Screenshot 1 (Top): The 'Data' tab is selected in the ribbon. The 'Analysis Tools' button is circled in red. The worksheet contains text about a Max Pain Calculator and instructions on how to enable the Solver add-in.

Excel Screenshot 2 (Bottom): The 'Add-ins' dialog box is open. The 'Solver Add-in' checkbox is checked. The 'OK' button is circled in red. A red arrow points from the 'Analysis Tools' button in the top screenshot to the 'Add-ins' dialog box.

Note: For this tutorial, we are using Excel for Mac version 16.50. If you're using a different version of Excel and are unable to follow the above steps, [click here to access the Microsoft Support article](#) which explains how to enable Solver across different operating systems.



Once complete, you should see an option for Solver on your Data tab:



Step Two: Before getting started in the calculator, it's important to note that Solver will override some of the formulas contained in the file. This means that once you have used Solver within a calculator tab (i.e. Calculator_Stock1, Calculator_Stock2, or Calculator_Stock3 in your file), you will not be able to use the same tab again for a different stock or ETF. We recommend saving a copy of the calculator before using Solver to be used as a template each time that you wish to compute Max Pain (e.g. monthly).

Continued on next page.



Step Three: Next, you will need to retrieve data for your stock or ETF of interest which will be input into the calculation. To do so, follow these steps:

- a. Go to www.CBOE.com.
- b. Click on the Data tab.
- c. Under the Quotes Dashboard, enter the ticker symbol for your stock/ETF of choice (for the example included in our calculation file, we used AMC as of June 15, 2021 at 2:58 PM EDT). Click Search.
- d. Click on the Options tab.
- e. Under Filters, select the following:
 - i. Volume: "All"
 - ii. Expiration Type: "Standard"
 - iii. Options Range: "All"
 - iv. Expiration: [Enter your desired expiration date here. For this example, we used "2021 June"]
- f. Click on View Chain.
- g. You should now see data. You can either (1) download the data in a CSV file to copy and paste into the calculator (recommended since it's much faster), or (2) type the data directly into the calculation (skip to step iii below). To download the data:
 - i. Scroll to the bottom of the data on CBOE. Select the option to Download CSV.
 - ii. Open the CSV file using Microsoft Excel.
 - iii. Copy and paste the following columns from the CSV file into our calculator:
 - i. Strike (CSV Column L) under Strike (EB Calculator Column A)
 - ii. Open Interest – Calls (CSV Column K) under Calls (EB Calculator Column C)
 - iii. Open Interest – Puts (CSV Column V) under Puts (EB Calculator Column E)

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Step Four: Once the CBOE data is entered, enter the current price of the stock/ETF in cell C7 of our calculator (for this example, AMC was trading at \$59.79).

Book1										
C7 59.79										
1	EarningsBeats.com			Instructions:						
2	Max Pain Analysis			Member input cell. Input max pain data in these cells. Once data is entered,						
3				you're ready to use Excel Solver to find the max pain price.						
4				Watch this video demonstration on how to use Solver.						
5	AMC									
6										
7	Current Price	59.79								
8	Max Pain Price									
9	Solver Cell (see instr.)	#####	WATCH VIDEO							
10										
11		TOTAL =	1,344,454,463.00		(50,469,962.00)	1,293,984,501.00			-	
12										
13		CURRENT VALUE						MAX		
14			Call		Put	Net		Call		
15	Strike	Calls	Premium	Puts	Premium	Premium		Calls	Premium	Puts
16										
17	0.50	98	581,042.00	16,252	-			98	-	16,252
18	1.00	20	117,580.00	13,830	-			20	-	13,830
19	1.50	69	402,201.00	1,985	-			69	-	1,985
20	2.00	117	676,143.00	21,707	-			117	-	21,707
21	2.50	311	1,781,719.00	7,136	-			311	-	7,136
22	3.00	364	2,067,156.00	19,496	-			364	-	19,496
23	3.50	71	399,659.00	3,889	-			71	-	3,889
24	4.00	328	1,829,912.00	10,680	-			328	-	10,680
25	4.50	212	1,172,148.00	4,983	-			212	-	4,983
26	5.00	1,032	5,654,328.00	16,244	-			1,032	-	16,244
27	5.50	376	2,041,304.00	2,922	-			376	-	2,922
28	6.00	620	3,334,980.00	10,448	-			620	-	10,448
29	7.00	3,321	17,531,559.00	13,177	-			3,321	-	13,177
30	7.50	94	491,526.00	1,257	-			94	-	1,257
31	8.00	3,878	20,084,162.00	10,116	-			3,878	-	10,116
32	8.50	142	728,318.00	3,385	-			142	-	3,385
33	9.00	2,485	12,621,315.00	20,122	-			2,485	-	20,122
34	9.50	168	844,872.00	1,961	-			168	-	1,961
35	10.00	19,586	97,518,694.00	48,530	-			19,586	-	48,530
36	10.50	204	1,005,516.00	4,574	-			204	-	4,574
37	11.00	4,251	20,740,629.00	14,786	-			4,251	-	14,786
38	11.50	207	999,603.00	1,417	-			207	-	1,417
39	12.00	9,405	44,946,495.00	12,936	-			9,405	-	12,936



Step Five: Now that you've input the data, it's time to solve for the Max Pain price. Here are the steps to calculate Max Pain using Solver:

- Select cell C9 ("Solver Cell")
- Click on the Data tab, then click Solver.
- Enter these inputs exactly as shown (note: once these have been entered once, Excel should remember them for future calculations):

The screenshot shows the Excel Solver Parameters dialog box. The 'Set Objective' field is set to **\$C\$9**. The 'To' field is set to **Value Of: 0**. The 'By Changing Variable Cells' field is set to **\$C\$8**. The 'Subject to the Constraints' field is empty. The 'Solving Method' is set to **GRG Nonlinear**. The background spreadsheet shows a 'Max Pain Analysis' for AMC with a current price of 59.79 and a total of 1,344,454,463.00. A red arrow points to cell C9, which is highlighted in yellow and contains the text 'WATCH VIDEO'.

Strike	Calls	Call Premium
0.50	98	581,042.00
1.00	20	117,580.00
1.50	69	402,201.00
2.00	117	676,143.00
2.50	311	1,781,719.00
3.00	364	2,067,156.00

MAX PAIN			
Calls	Call Premium	Puts	Put Premium
98	-	16,252	(812)
20	-	13,830	(1,383)
69	-	1,985	(297)
117	-	21,707	(4,341)
311	-	7,136	(1,784)
364	-	19,496	(5,848)

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- d. Click “Solve”. Excel should return a Solution. The Solver Cell (C9) should now be 0, and a Max Pain price should show (if you followed this example, it should be \$31.97). Occasionally, Excel may return the message that it could not find a feasible solution; however, if the Solver Cell is 0, it likely worked and is resulting from a nominal rounding issue.

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Max Pain Analysis

AMC

Current Price: 59.79
Max Pain Price: 31.97
Solver Cell (see instr.): 0.00

Instructions:
Member input cell. Input max pain data in these cells. Once data is entered, you're ready to use Excel Solver to find the max pain price.
[Watch this video demonstration on how to use Solver.](#)

Solver Results
Solver found a solution. All constraints and optimality conditions are satisfied.
☒ Keep Solver Solution
☐ Restore Original Values
Reports: Answer, Sensitivity, Limits
☐ Return to Solver Parameters Dialog
☐ Outline Reports
Save Scenario... Cancel OK

Strike	Calls	Premium	Put Premium
0.50	98	581,042.00	16,252
1.00	20	117,580.00	13,830
1.50	69	402,201.00	1,985
2.00	117	676,143.00	21,707
2.50	311	1,781,719.00	7,136
3.00	364	2,067,156.00	19,496
3.50	71	399,659.00	3,889

MAX PAIN			
Call	Premium	Puts	Put Premium
98	308,408.29	16,252	
20	61,940.47	13,830	
69	210,244.61	1,985	
117	350,651.73	21,707	
311	916,524.26	7,136	
364	1,054,516.49	19,496	
71	202,138.66	3,889	

Note: This guide/tutorial does not cover what Max Pain is or how to interpret the calculation. For that information, we recommend watching our [Monthly Max Pain Options \(June 2021\) video](#). See time stamp 37:33 for a discussion with Tom Bowley, Chief Market Strategist.