

A photograph of a person's hands and arms resting on a light-colored wooden desk. A laptop is open on the desk, and a white coffee cup sits to the left. In the center, a blue rectangular overlay contains the text "EarningsBeats" in a cursive font above "MAX PAIN CALCULATOR TUTORIAL" in large, bold, white capital letters. The entire graphic is framed by a thin blue border.

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

Book1

Home Insert Draw Page Layout Formulas **Data** Review View Tell me

B19 A B C D E F G H I J K L M N O P Q R S T U V

1 EarningsBeats.com  
2 Max Pain Calculator  
3  
4  
5 Welcome! We created this tool to assist you in calculating the Max Pain price for a stock or ETF at a given point in time.  
6 This calculator goes a step beyond using basic formulas and uses an Excel function called Solver.  
7 We've created a video walkthrough that explains how to enable and use Solver. Check it out here:  
10  
11  
12 Or, if you prefer written instructions, we've got you covered. Keep reading!  
13  
14  
15 **Instructions:**  
16 1. To access a video walkthrough of the calculation, click the link above.  
17 2. Enable the Solver add-in. To do so, go to the Data tab > Analysis Tools > Solver Add-In (Check the box) > OK.

Book1

Home Insert Draw Page Layout Formulas **Data** Review View Tell me

K9 A B C D E F G H I J K L M N O P Q R S T U V V

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3  
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Add-ins

Add-ins available:  
 Analysis ToolPak  
 Solver Add-In

Solver Add-In

Browse... Cancel **OK**

**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:

The screenshot shows the Microsoft Excel ribbon with the 'Data' tab selected. The 'Analysis Tools' group on the ribbon has a red circle around the 'Solver' button. The main worksheet area contains the following text:

EarningsBeats.com  
Max Pain Calculator

Welcome! We created this tool to assist you in calculating the Max Pain price for a stock or ETF at a given point in time. This calculator goes a step beyond using basic formulas and uses an Excel function called Solver.

We've created a video walkthrough that explains how to enable and use Solver. Check it out here:

Or, if you prefer written instructions, we've got you covered. Keep reading!

**Instructions:**

1. To access a video walkthrough of the calculation, click the link above.
2. Enable the Solver add-in. To do so, go to the Data tab > Analysis Tools > Solver Add-In (Check the box) > OK.

**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](http://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)

*Continued on next page.*



**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).

Screenshot of Microsoft Excel showing a spreadsheet titled "Book1". The spreadsheet contains instructions for using Solver to find the max pain price. Cell C7 contains the value "59.79", which is highlighted with a red arrow and circled in red. A yellow cell labeled "WATCH VIDEO" is also highlighted with a red arrow. The spreadsheet includes a table of CBOE data with columns for Strike, Calls, Premium, Put, Premium, Net Premium, and Call/Put counts.

		CURRENT VALUE				MA		
14	Strike	Call	Put	Net	Call			
15		Calls	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:

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

The screenshot shows a Microsoft Excel spreadsheet titled "Book1". The worksheet is named "Max Pain Analysis". The formula bar shows the formula =EARNINGSBEATS.COM. The cell C9 contains the value 59.79. The cell C8 is highlighted with a yellow border and contains the text "WATCH VIDEO". The cell C11 contains the formula =TOTAL = 1,344,454,463.00. The cell C14 contains the formula =MAX PAIN.

The "Data" tab is selected, and the "Solver Parameters" dialog box is open. The "Set Objective" field is set to \$C\$9 with the "Value Of" radio button selected and the value 0. The "By Changing Variable Cells" field is set to \$C\$8. The "Subject to the Constraints" section is empty. The "Solving Method" section indicates the use of the GRG Nonlinear engine for smooth nonlinear problems. The "Call" and "Put" columns show the results of the solver for different strike prices.

Strike	Calls	Premium	Put	Premium
0.50	98	581,042.00	98	16,252
1.00	20	117,580.00	20	(1,383)
1.50	69	402,201.00	69	(297)
2.00	117	676,143.00	117	(4,341)
2.50	311	1,781,719.00	311	(1,784)
3.00	364	2,067,156.00	364	(5,848)
3.50	71	2,999,650.00	71	(1,261)

Continued on next page.



- 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.

The screenshot shows an Excel spreadsheet titled "Book1". The worksheet contains the following data:

	A	B	C	D	E	F	G	H	I	J	K	L
1	EarningsBeats.com											
2	Max Pain Analysis											
3												
4												
5	AMC											
6												
7	Current Price		59.79									
8	Max Pain Price		31.97									
9	Solver Cell (see instr.)		0.00									
10												
11		TOTAL =	1,344,454									
12												
13												
14												
15	Strike	Calls	Premium									
16												
17	0.50	98	581,042.00	16,252	-							
18	1.00	20	117,580.00	13,830	-							
19	1.50	69	402,201.00	1,985	-							
20	2.00	117	676,143.00	21,707	-							
21	2.50	311	1,781,719.00	7,136	-							
22	3.00	364	2,067,156.00	19,496	-							
23	3.50	71	399,659.00	3,889	-							

The "Solver Results" dialog box is open, showing the message: "Solver found a solution. All constraints and optimality conditions are satisfied." It has the following settings:

- Keep Solver Solution
- Restore Original Values
- Return to Solver Parameters Dialog
- Outline Reports
- Reports:
  - Answer
  - Sensitivity
  - Limits

Buttons: Save Scenario..., Cancel, OK.

**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.