

## **Aircraft Performance Calculation Tips & Excel File Structure**

# Block 2 Schedule – Aircraft Performance

Block 2 – Aircraft Performance		
Tuesday, February 1		Table Lookup, Flight Envelope
Thursday, February 3		Thrust Required
Tuesday, February 8		Energy, Min & Max Velocities
Thursday, February 10		Rate of Climb & Ceilings
Tuesday, February 15		Material Review
Thursday, February 17	<b>Exam #2a</b>	
Tuesday, February 22		Climb & Accel
Thursday, February 24		Maneuver
Tuesday, March 1		Airfield
Thursday, March 3		
Tuesday, March 8		Material Review
Thursday, March 10	<b>Exam #2b</b>	

# Aircraft Data Worksheet

Aircraft Data									
					<b>numeng</b>				
span	17	ft	<b>b</b>	# engine	1		max g's	5.0	
wing area	37.8	sq ft		T SLS	202 lb		max KEAS	260	
K	0.062		<b>K</b>	sfc SLS	1.3 lb/(lb-hr)		max q	229.13	lb/ft^2
AR	7.65								
CD0	0.0200		<b>CD0</b>						
CLmax	1.35								

Excel lets you define “names”

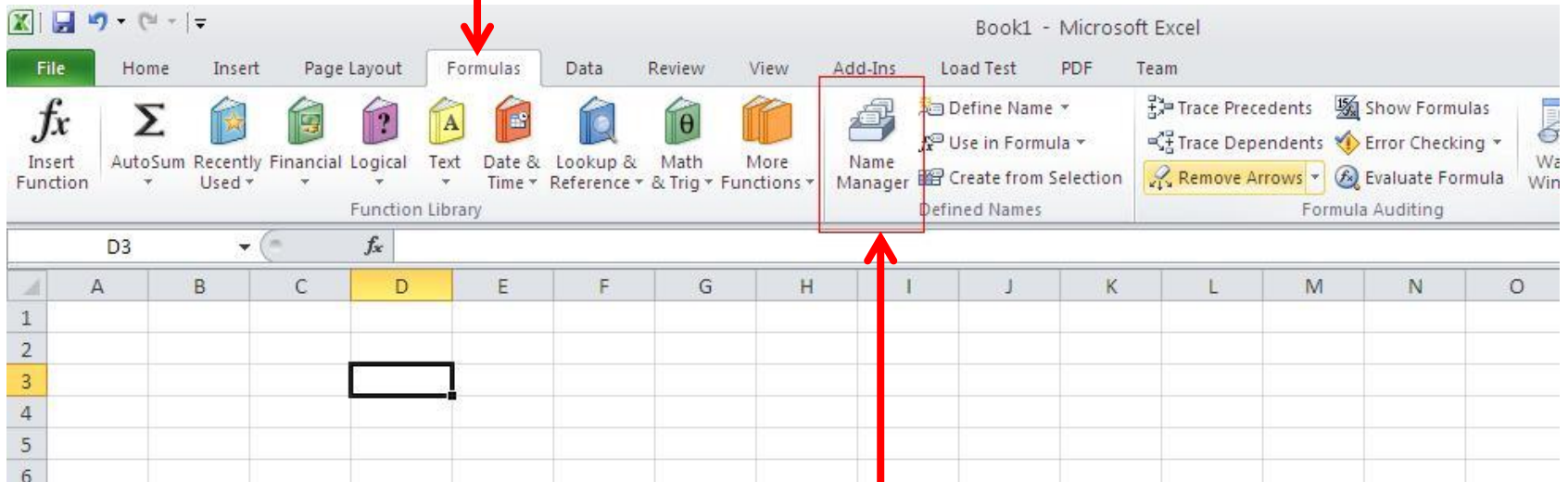
# Aircraft Data Worksheet

Click on the cell where the value is or highlight a range of cells for an array

Aircraft Data									
span	17 ft		# engine	1			max g's	5.0	
wing area	37.8 sq ft		T SLS	202 lb			max KEAS	260	
K	0.062		sfc SLS	1.3 lb/(lb-hr)			max q	229.13 lb/ft^2	
AR	7.65								
CD0	0.0200								
CLmax	1.35								

# Aircraft Data Worksheet

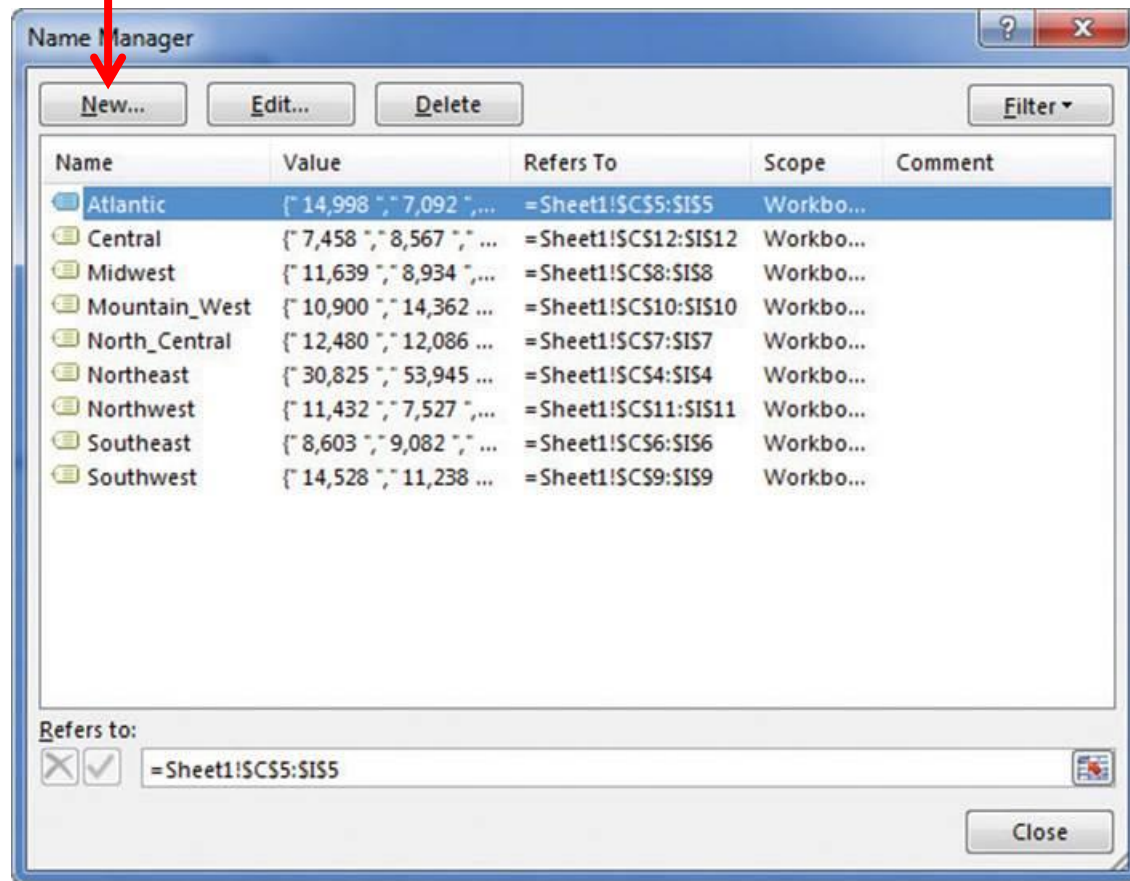
Click on “Formulas”



Click on “Name Manager”

# Aircraft Data Worksheet

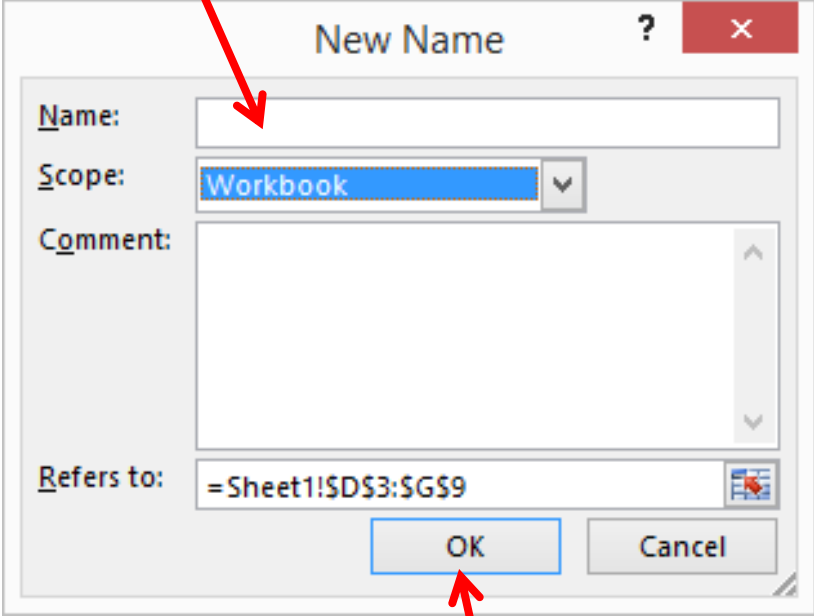
Click on “New”



# Aircraft Data Worksheet

Click in the “Name” box and type in the variable’s name

Type “b” for wing span



The screenshot shows the 'New Name' dialog box in Microsoft Excel. The dialog has a title bar with a question mark and a close button. Inside, there are four fields: 'Name:', 'Scope:', 'Comment:', and 'Refers to:'. The 'Name' field is empty and has a red arrow pointing to it. The 'Scope' dropdown menu is set to 'Workbook'. The 'Comment' field is empty. The 'Refers to' field contains the formula '=Sheet1!\$D\$3:\$G\$9'. At the bottom, there are 'OK' and 'Cancel' buttons. A red arrow points to the 'OK' button.

Click “OK”

# Aircraft Data Worksheet

Aircraft Data									
span	17	ft	<b>b</b>	# engine	1			max g's	5.0
wing area	37.8	sq ft	<b>S</b>	T SLS	202	lb		max KEAS	260
K	0.062			sfc SLS	1.3	lb/(lb-hr)		max q	229.13 lb/ft^2
AR	7.65		<b>= b * b / S</b>						
CD0	0.0200								
CLmax	1.35								

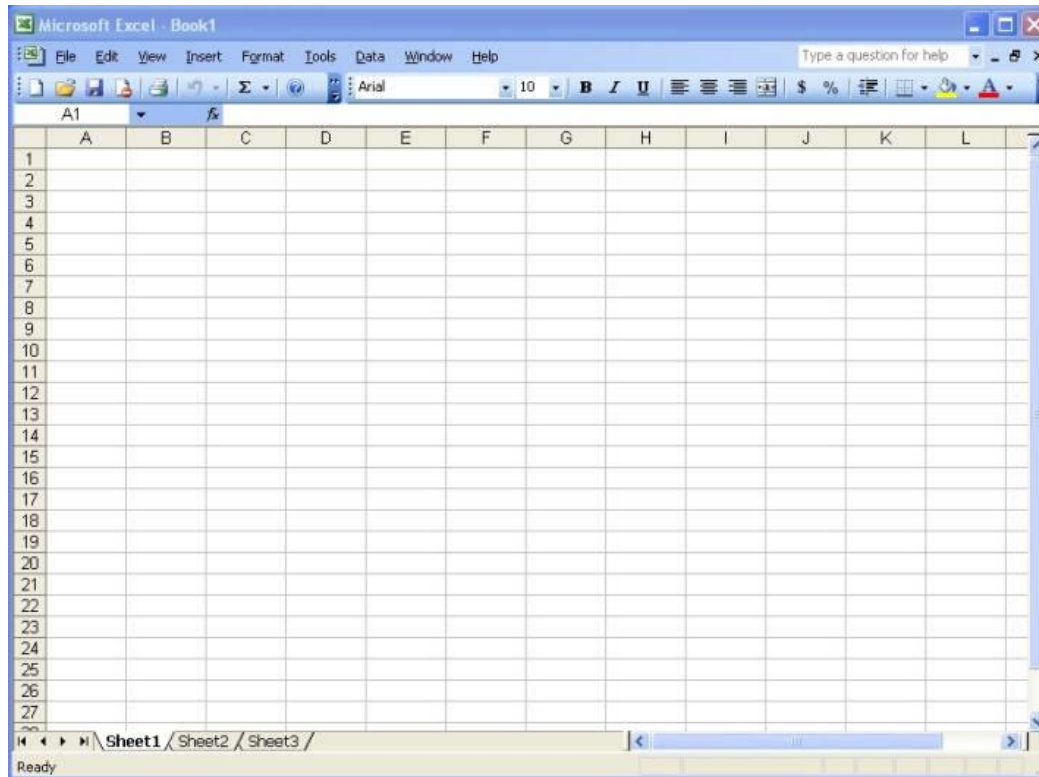


# Calculations Worksheet

Calculations									
SEA LEVEL					10,000 FT				
AIRCRAFT & ATMOSPHERIC DATA					AIRCRAFT & ATMOSPHERIC DATA				
Weight	900	lb	QMS	1481.4 lb/ft^2	Weight	900	lb	QMS	1018.7 lb/ft^2
Altitude	0				Altitude	10,000	ft	a	1077.4 ft/sec
Max CL/CD	14.20				Max CL/CD	14.20		rho	0.00175527 slugs/ft^3
Max CL^1.5/CD	12.20				Max CL^1.5/CD	12.20		density ratio	0.73847509
T/W	0.2244				T/W	0.1657			
W/S	23.8095				W/S	23.8095			
Z	2.1381				Z	2.2416			
MAX RATE OF CLIMB CALCULATIONS					MAX RATE OF CLIMB CALCULATIONS				
Max Rate of Climb	36.50	ft/sec			Max Rate of Climb	24.29	ft/sec		
Velocity for max R/C	283.05	ft/sec	0.2535	Mach	Velocity for max R/C	289.82	ft/sec	0.2690	Mach
Max Climb Angle	8.86	degrees			Max Climb Angle	5.47	degrees		
Velocity for max climb angle	186.69	ft/sec	0.1672	Mach	Velocity for max climb angle	218.06	ft/sec	0.2024	Mach
MINIMUM GLIDE ANGLE CALCULATIONS					MINIMUM GLIDE ANGLE CALCULATIONS				
Minimum Glide Angle	4.03	degrees			Minimum Glide Angle	4.03	degrees		
Eq Glide Velocity	187.81	ft/sec	0.1682	Mach	Eq Glide Velocity	218.55	ft/sec	0.2029	Mach
Min Sink Rate	11.61	ft/sec			Min Sink Rate	13.50	ft/sec		
Velocity for min sink rate	142.71	ft/sec	0.1278	Mach	Velocity for min sink rate	166.07	ft/sec	0.1541	Mach
					Range for glide from 10,000 ft	141,990	ft	26.9	miles

**=SQRT(1/(4\*CD0\*K))**

# Excel File Structure

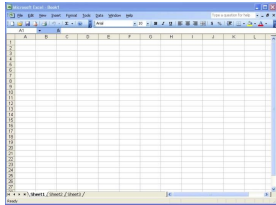


**Sheet 1 – Atmosphere Table**

**Sheet 2 – Aircraft Data**

**Sheet 3 – Calculations**

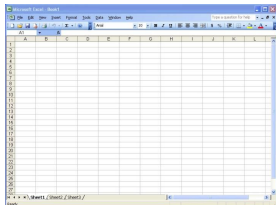
# Excel File Structure



**Atmosphere Table**

**Aircraft Data**

**Calculations #1**

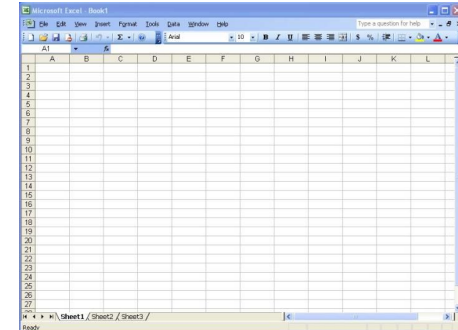


**Atmosphere Table**

**Aircraft Data**

**Calculations #2**

...



**Atmosphere Table**

**Aircraft Data**

**Calculations #1**

**Calculations #2**

**Calculations #3**

...

# Atmosphere Table Worksheet

	TEMPF	TEMPR	TEMPC	TR	PR	PRESHG	PRES	RHO	DR	SQRTDR	QMS	SPW	ASPEED	VELA
0	59.0	518.7	15.0	1.0000	1.0000	29.92	2116.22	0.00237688	1.0000	1.0000	1481.4	0.0765	1116.45	661.1
500	57.2	516.9	14.0	0.9966	0.9821	29.38	2078.26	0.00234230	0.9855	0.9927	1454.8	0.0754	1114.53	659.9
1000	55.4	515.1	13.0	0.9931	0.9644	28.86	2040.86	0.00230810	0.9711	0.9854	1428.6	0.0743	1112.61	658.8
1500	53.6	513.3	12.0	0.9897	0.9470	28.33	2004.00	0.00227429	0.9568	0.9782	1402.8	0.0732	1110.68	657.6
2000	51.8	511.5	11.0	0.9862	0.9298	27.82	1967.68	0.00224086	0.9428	0.9710	1377.4	0.0721	1108.75	656.5
2500	50.1	509.8	10.0	0.9828	0.9129	27.32	1931.90	0.00220780	0.9289	0.9638	1352.3	0.0710	1106.81	655.4
3000	48.3	508.0	9.0	0.9794	0.8962	26.82	1896.64	0.00217512	0.9151	0.9566	1327.6	0.0700	1104.88	654.2
3500	46.5	506.2	8.0	0.9759	0.8798	26.33	1861.91	0.00214281	0.9015	0.9495	1303.3	0.0689	1102.94	653.1
4000	44.7	504.4	7.1	0.9725	0.8637	25.84	1827.70	0.00211087	0.8881	0.9424	1279.4	0.0679	1100.99	651.9
4500	42.9	502.6	6.1	0.9691	0.8477	25.37	1793.99	0.00207929	0.8748	0.9353	1255.8	0.0669	1099.04	650.7
5000	41.1	500.8	5.1	0.9656	0.8320	24.90	1760.79	0.00204808	0.8617	0.9283	1232.6	0.0659	1097.09	649.6
5500	39.4	499.1	4.1	0.9622	0.8166	24.43	1728.10	0.00201723	0.8487	0.9212	1209.7	0.0649	1095.14	648.4
6000	37.6	497.3	3.1	0.9587	0.8014	23.98	1695.89	0.00198673	0.8359	0.9143	1187.1	0.0639	1093.18	647.3
6500	35.8	495.5	2.1	0.9553	0.7864	23.53	1664.17	0.00195659	0.8232	0.9073	1164.9	0.0630	1091.22	646.1
7000	34.0	493.7	1.1	0.9519	0.7716	23.09	1632.94	0.00192680	0.8106	0.9004	1143.1	0.0620	1089.25	645.0
7500	32.2	491.9	0.1	0.9484	0.7571	22.65	1602.18	0.00189736	0.7983	0.8935	1121.5	0.0610	1087.28	643.8
8000	30.4	490.1	-0.9	0.9450	0.7428	22.22	1571.89	0.00186826	0.7860	0.8866	1100.3	0.0601	1085.31	642.6
8500	28.7	488.4	-1.9	0.9416	0.7287	21.80	1542.06	0.00183950	0.7739	0.8797	1079.4	0.0592	1083.34	641.4
9000	26.9	486.6	-2.8	0.9381	0.7148	21.39	1512.70	0.00181109	0.7620	0.8729	1058.9	0.0583	1081.36	640.3
9500	25.1	484.8	-3.8	0.9347	0.7012	20.98	1483.79	0.00178301	0.7501	0.8661	1038.7	0.0574	1079.37	639.1
10000	23.3	483.0	-4.8	0.9312	0.6877	20.58	1455.33	0.00175527	0.7385	0.8593	1018.7	0.0565	1077.39	637.9

# Calculations Worksheet

Calculations				
SEA LEVEL				
AIRCRAFT & ATMOSPHERIC DATA				
Weight	900	lb	QMS	1481.4 lb/ft^2
Altitude	0	ft	a	1116.5 ft/sec
Max CL/CD	14.20		rho	0.00237688 slugs/ft^3
Max CL^1.5/CD	12.20		density ratio	1.00000000
T/W	0.2244			
W/S	23.8095			
Z	2.1381			
MAX RATE OF CLIMB CALCULATIONS				
Max Rate of Climb	36.50	ft/sec		
Velocity for max R/C	283.05	ft/sec	0.2535	Mach
Max Climb Angle	8.86	degrees		
Velocity for max climb angle	186.69	ft/sec	0.1672	Mach
MINIMUM GLIDE ANGLE CALCULATIONS				
Minimum Glide Angle	4.03	degrees		
Eq Glide Velocity	187.81	ft/sec	0.1682	Mach
Min Sink Rate	11.61	ft/sec		
Velocity for min sink rate	142.71	ft/sec	0.1278	Mach

10,000 FT				
AIRCRAFT & ATMOSPHERIC DATA				
Weight	900	lb	QMS	1018.7 lb/ft^2
Altitude	10,000	ft	a	1077.4 ft/sec
Max CL/CD	14.20		rho	0.00175527 slugs/ft^3
Max CL^1.5/CD	12.20		density ratio	0.73847509
T/W	0.1657			
W/S	23.8095			
Z	2.2416			
MAX RATE OF CLIMB CALCULATIONS				
Max Rate of Climb	24.29	ft/sec		
Velocity for max R/C	289.82	ft/sec	0.2690	Mach
Max Climb Angle	5.47	degrees		
Velocity for max climb angle	218.06	ft/sec	0.2024	Mach
MINIMUM GLIDE ANGLE CALCULATIONS				
Minimum Glide Angle	4.03	degrees		
Eq Glide Velocity	218.55	ft/sec	0.2029	Mach
Min Sink Rate	13.50	ft/sec		
Velocity for min sink rate	166.07	ft/sec	0.1541	Mach
Range for glide from 10,000 ft	141,990	ft	26.9	miles

# Atmosphere Table Worksheet

Look up density at 5,000 ft

	TEMPF	TEMPR	TEMPC	TR	PR	PRESHG	PRES	RHO	DR	SQRTDR	QMS	SPW	ASPEED	VELA
0	59.0	518.7	15.0	1.0000	1.0000	29.92	2116.22	0.00237688	1.0000	1.0000	1481.4	0.0765	1116.45	661.1
500	57.2	516.9	14.0	0.9966	0.9821	29.38	2078.26	0.00234230	0.9855	0.9927	1454.8	0.0754	1114.53	659.9
1000	55.4	515.1	13.0	0.9931	0.9644	28.86	2040.86	0.00230810	0.9711	0.9854	1428.6	0.0743	1112.61	658.8
1500	53.6	513.3	12.0	0.9897	0.9470	28.33	2004.00	0.00227429	0.9568	0.9782	1402.8	0.0732	1110.68	657.6
2000	51.8	511.5	11.0	0.9862	0.9298	27.82	1967.68	0.00224086	0.9428	0.9710	1377.4	0.0721	1108.75	656.5
2500	50.1	509.8	10.0	0.9828	0.9129	27.32	1931.90	0.00220780	0.9289	0.9638	1352.3	0.0710	1106.81	655.4
3000	48.3	508.0	9.0	0.9794	0.8962	26.82	1896.64	0.00217512	0.9151	0.9566	1327.6	0.0700	1104.88	654.2
3500	46.5	506.2	8.0	0.9759	0.8798	26.33	1861.91	0.00214281	0.9015	0.9495	1303.3	0.0689	1102.94	653.1
4000	44.7	504.4	7.1	0.9725	0.8637	25.84	1827.70	0.00211087	0.8881	0.9424	1279.4	0.0679	1100.99	651.9
4500	42.9	502.6	6.1	0.9691	0.8477	25.37	1793.99	0.00207929	0.8748	0.9353	1255.8	0.0669	1099.04	650.7
5000	41.1	500.8	5.1	0.9656	0.8320	24.90	1760.71	0.00204808	0.8617	0.9283	1232.6	0.0659	1097.09	649.6
5500	39.4	499.1	4.1	0.9622	0.8166	24.43	1728.10	0.00201723	0.8487	0.9212	1209.7	0.0649	1095.14	648.4
6000	37.6	497.3	3.1	0.9587	0.8014	23.98	1695.89	0.00198673	0.8359	0.9143	1187.1	0.0639	1093.18	647.3
6500	35.8	495.5	2.1	0.9553	0.7864	23.53	1664.17	0.00195659	0.8232	0.9073	1164.9	0.0630	1091.22	646.1
7000	34.0	493.7	1.1	0.9519	0.7716	23.09	1632.94	0.00192680	0.8106	0.9004	1143.1	0.0620	1089.25	645.0
7500	32.2	491.9	0.1	0.9484	0.7571	22.65	1602.18	0.00189736	0.7983	0.8935	1121.5	0.0610	1087.28	643.8
8000	30.4	490.1	-0.9	0.9450	0.7428	22.22	1571.89	0.00186826	0.7860	0.8866	1100.3	0.0601	1085.31	642.6
8500	28.7	488.4	-1.9	0.9416	0.7287	21.80	1542.06	0.00183950	0.7739	0.8797	1079.4	0.0592	1083.34	641.4
9000	26.9	486.6	-2.8	0.9381	0.7148	21.39	1512.70	0.00181109	0.7620	0.8729	1058.9	0.0583	1081.36	640.3
9500	25.1	484.8	-3.8	0.9347	0.7012	20.98	1483.79	0.00178301	0.7501	0.8661	1038.7	0.0574	1079.37	639.1
10000	23.3	483.0	-4.8	0.9312	0.6877	20.58	1455.33	0.00175527	0.7385	0.8593	1018.7	0.0565	1077.39	637.9

What if you want to look up density at 5,200 ft??

# Atmosphere Table Worksheet

## One-dimensional table lookup

	TEMPF	TEMPR	TEMPC	TR	PR	PRESHG	PRES	RHO	DR	SQRTDR	QMS	SPW	ASPEED	VELA
0	59.0	518.7	15.0	1.0000	1.0000	29.92	2116.22	0.00237688	1.0000	1.0000	1481.4	0.0765	1116.45	661.1
500	57.2	516.9	14.0	0.9966	0.9821	29.38	2078.26	0.00234230	0.9855	0.9927	1454.8	0.0754	1114.53	659.9
1000	55.4	515.1	13.0	0.9931	0.9644	28.86	2040.86	0.00230810	0.9711	0.9854	1428.6	0.0743	1112.61	658.8
1500	53.6	513.3	12.0	0.9897	0.9470	28.33	2004.00	0.00227429	0.9568	0.9782	1402.8	0.0732	1110.68	657.6
2000	51.8	511.5	11.0	0.9862	0.9298	27.82	1967.68	0.00224086	0.9428	0.9710	1377.4	0.0721	1108.75	656.5
2500	50.1	509.8	10.0	0.9828	0.9129	27.32	1931.90	0.00220780	0.9289	0.9638	1352.3	0.0710	1106.81	655.4
3000	48.3	508.0	9.0	0.9794	0.8962	26.82	1896.64	0.00217512	0.9151	0.9566	1327.6	0.0700	1104.88	654.2
3500	46.5	506.2	8.0	0.9759	0.8798	26.33	1861.91	0.00214281	0.9015	0.9495	1303.3	0.0689	1102.94	653.1
4000	44.7	504.4	7.1	0.9725	0.8637	25.84	1827.70	0.00211087	0.8881	0.9424	1279.4	0.0679	1100.99	651.9
4500	42.9	502.6	6.1	0.9691	0.8477	25.37	1793.99	0.00207929	0.8748	0.9353	1255.8	0.0669	1099.04	650.7
5000	41.1	500.8	5.1	0.9656	0.8320	24.90	1760.79	0.00204808	0.8617	0.9283	1232.6	0.0659	1097.09	649.6
5500	39.4	499.1	4.1	0.9622	0.8166	24.43	1728.10	0.00201723	0.8487	0.9212	1209.7	0.0649	1095.14	648.4
6000	37.6	497.3	3.1	0.9587	0.8014	23.98	1695.89	0.00198673	0.8359	0.9143	1187.1	0.0639	1093.18	647.3
6500	35.8	495.5	2.1	0.9553	0.7864	23.53	1664.17	0.00195659	0.8232	0.9073	1164.9	0.0630	1091.22	646.1
7000	34.0	493.7	1.1	0.9519	0.7716	23.09	1632.94	0.00192680	0.8106	0.9004	1143.1	0.0620	1089.25	645.0
7500	32.2	491.9	0.1	0.9484	0.7571	22.65	1602.18	0.00189736	0.7983	0.8935	1121.5	0.0610	1087.28	643.8
8000	30.4	490.1	-0.9	0.9450	0.7428	22.22	1571.89	0.00186826	0.7860	0.8866	1100.3	0.0601	1085.31	642.6
8500	28.7	488.4	-1.9	0.9416	0.7287	21.80	1542.06	0.00183950	0.7739	0.8797	1079.4	0.0592	1083.34	641.4
9000	26.9	486.6	-2.8	0.9381	0.7148	21.39	1512.70	0.00181109	0.7620	0.8729	1058.9	0.0583	1081.36	640.3
9500	25.1	484.8	-3.8	0.9347	0.7012	20.98	1483.79	0.00178301	0.7501	0.8661	1038.7	0.0574	1079.37	639.1
10000	23.3	483.0	-4.8	0.9312	0.6877	20.58	1455.33	0.00175527	0.7385	0.8593	1018.7	0.0565	1077.39	637.9

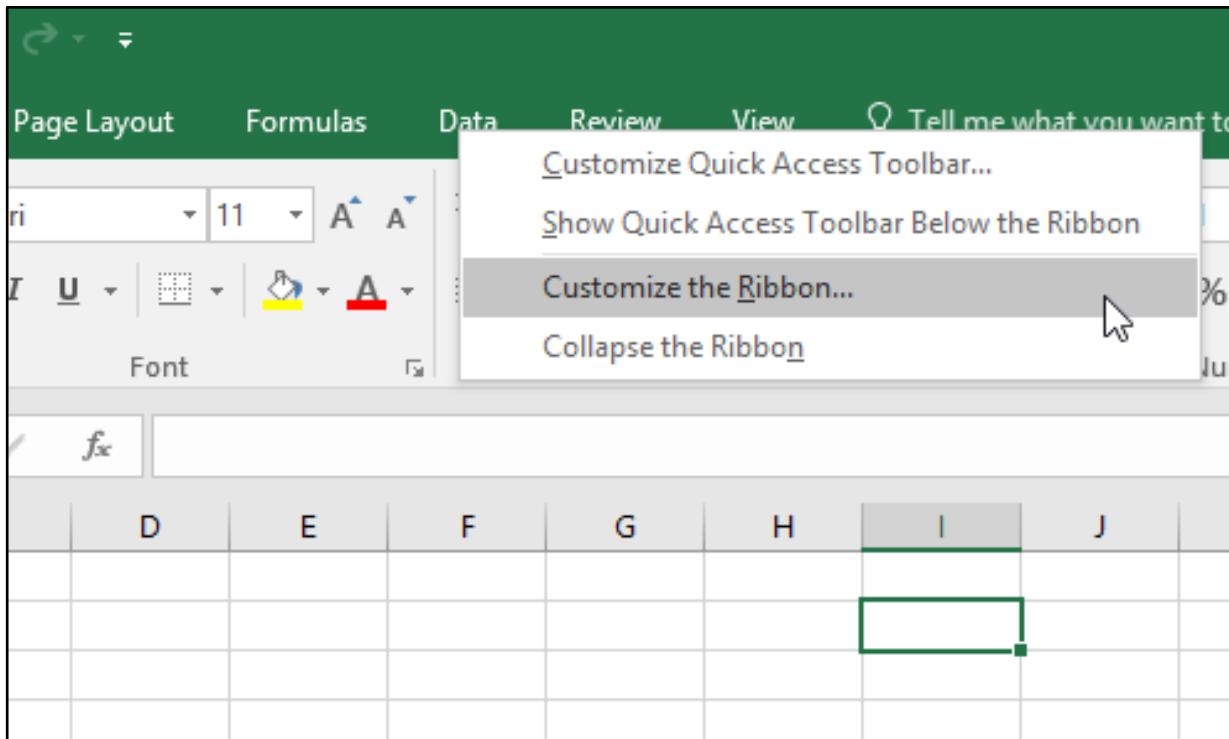
↑  
atmos\_h  
(x)

↑  
atmos\_rho  
(y)

# Excel Developer

## Need to add the Developer tab to Microsoft Excel menu

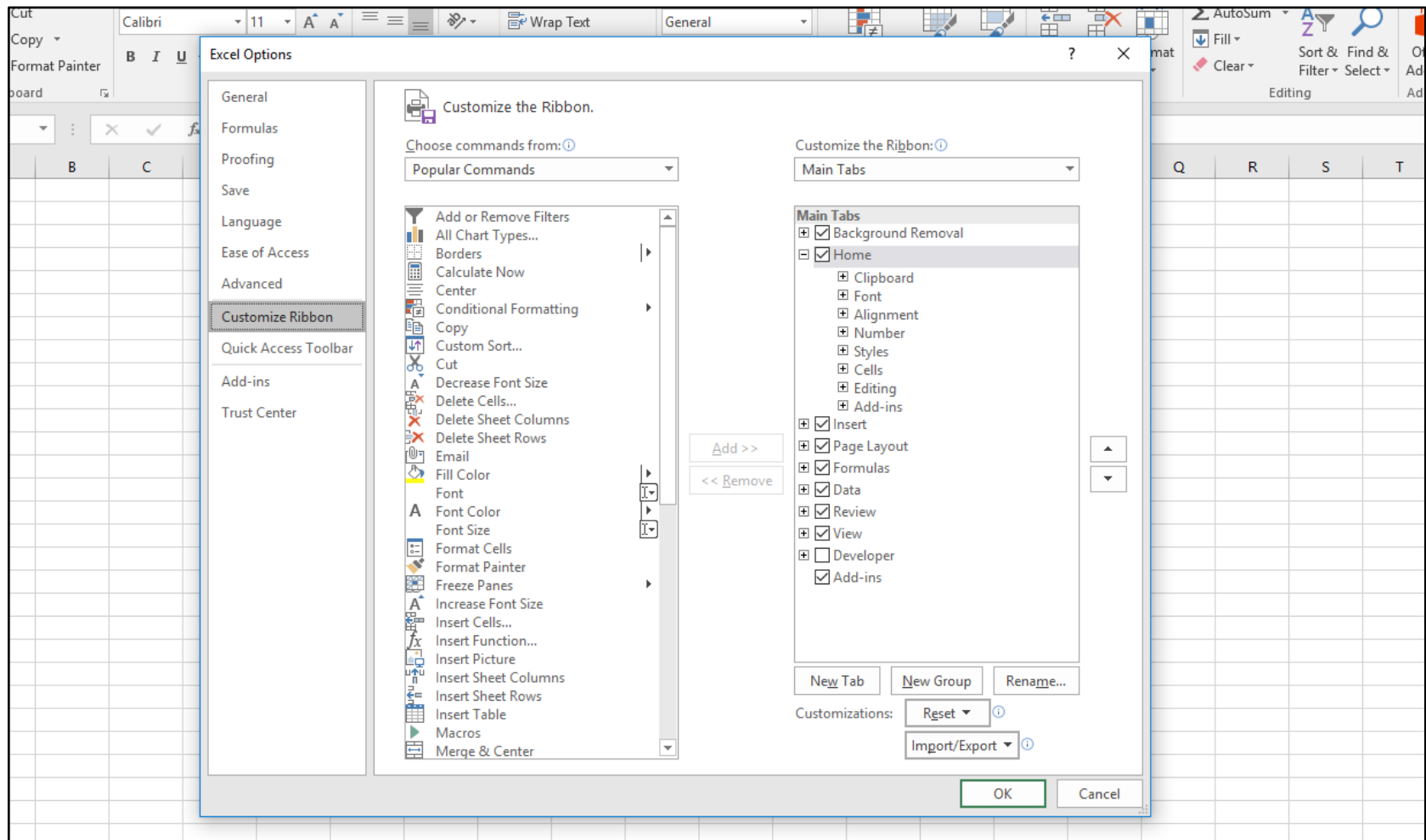
The fastest way to add the Developer tab to the Ribbon starts with a simple-right click.  
**Right-click on one of the Ribbon tabs**, and you'll see a new menu come up:





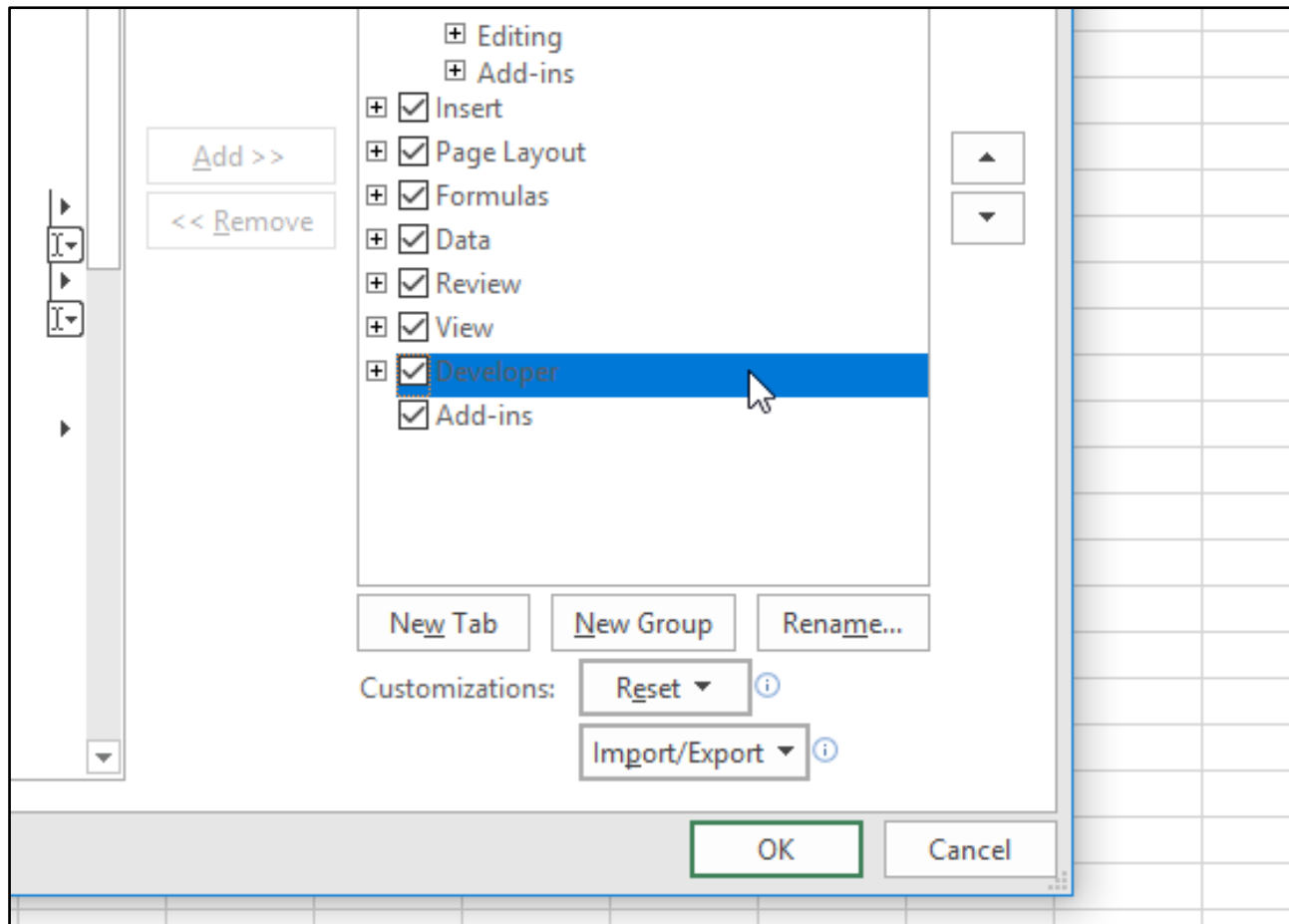
# Excel Developer

Click **Customize the Ribbon**, and you'll get a new window:



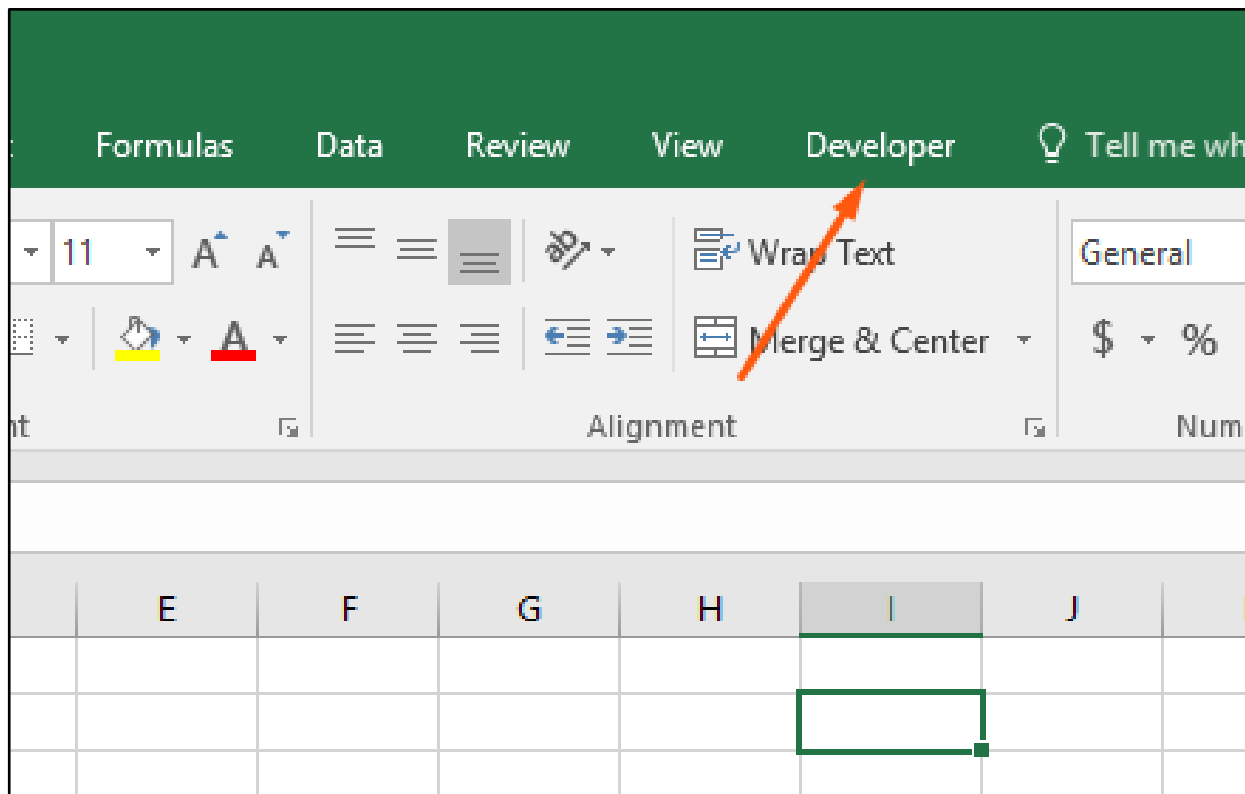
# Excel Developer

From here, check the box next to **Developer** and click **OK**.



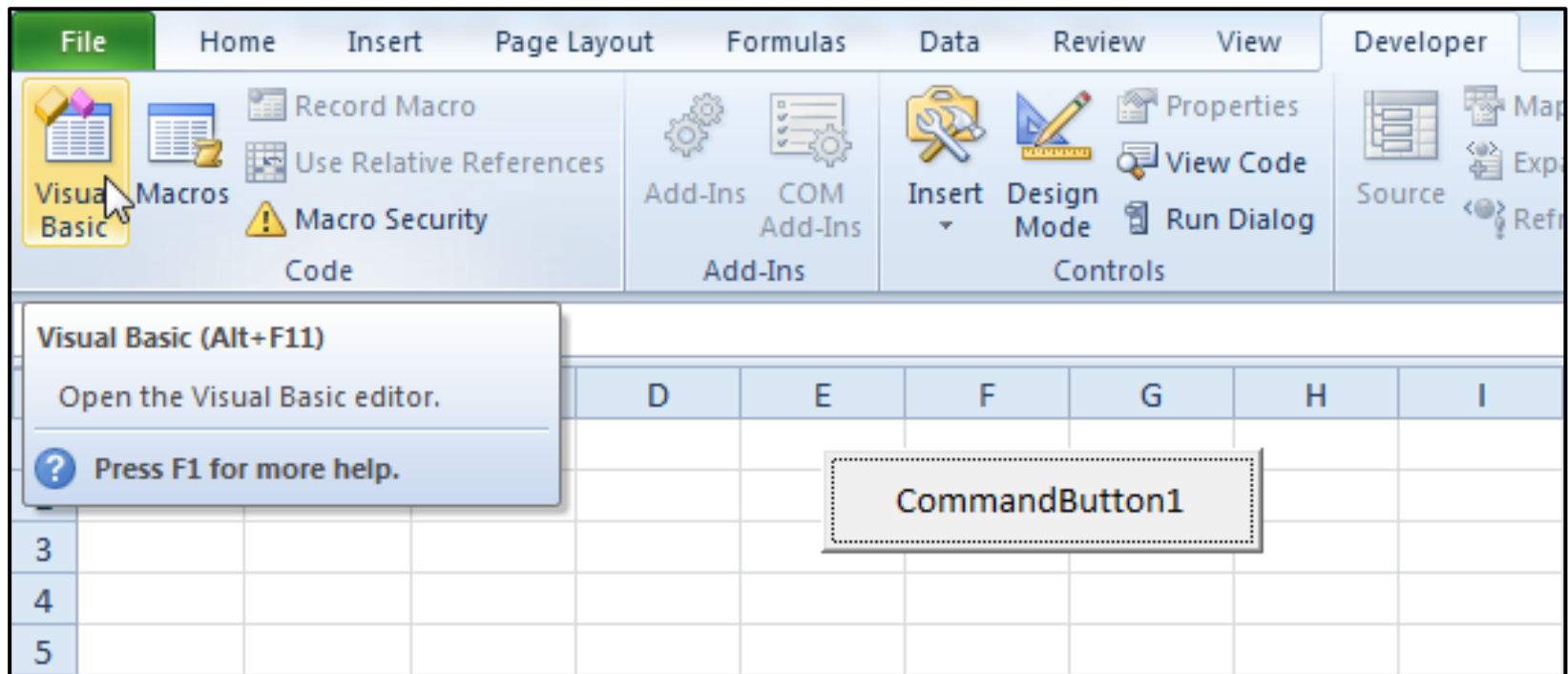
# Excel Developer

Once you've done that, the Developer tab will appear at the end of the Ribbon:



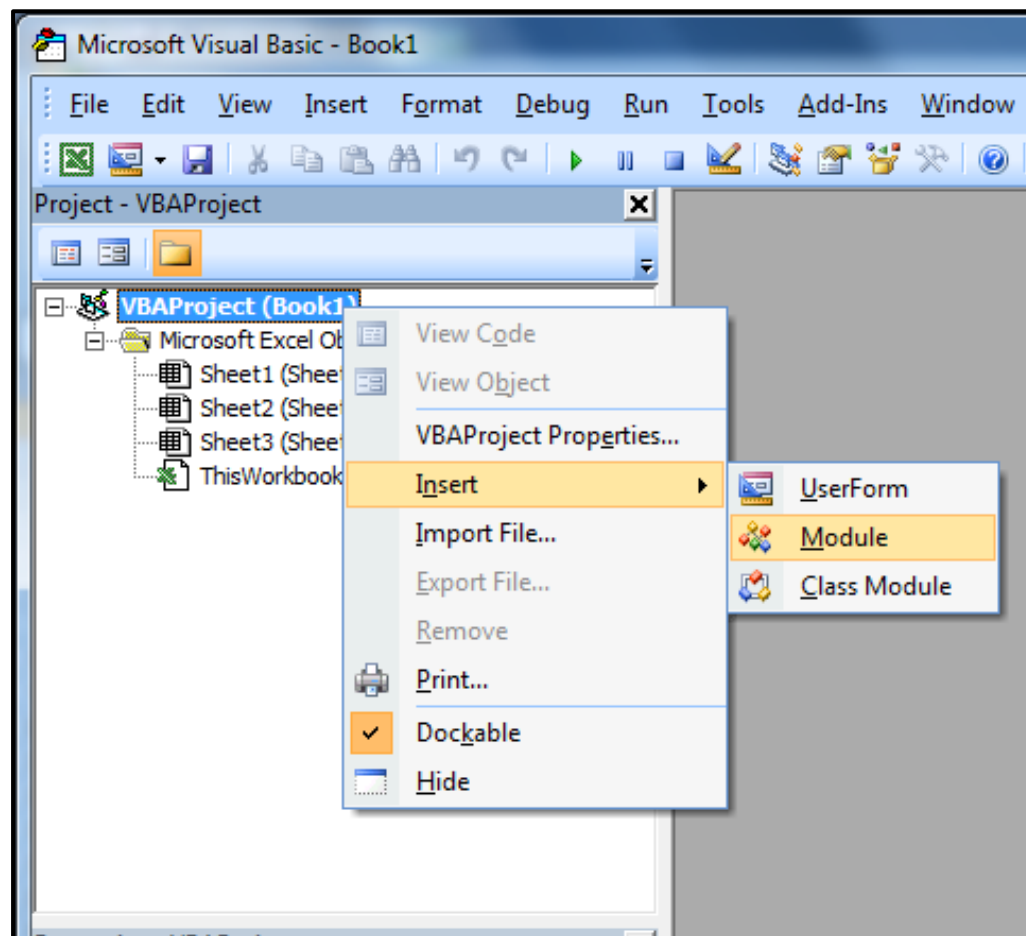
# Excel Developer

Click on the “Developer” tab, then click on the “Visual Basic” icon:



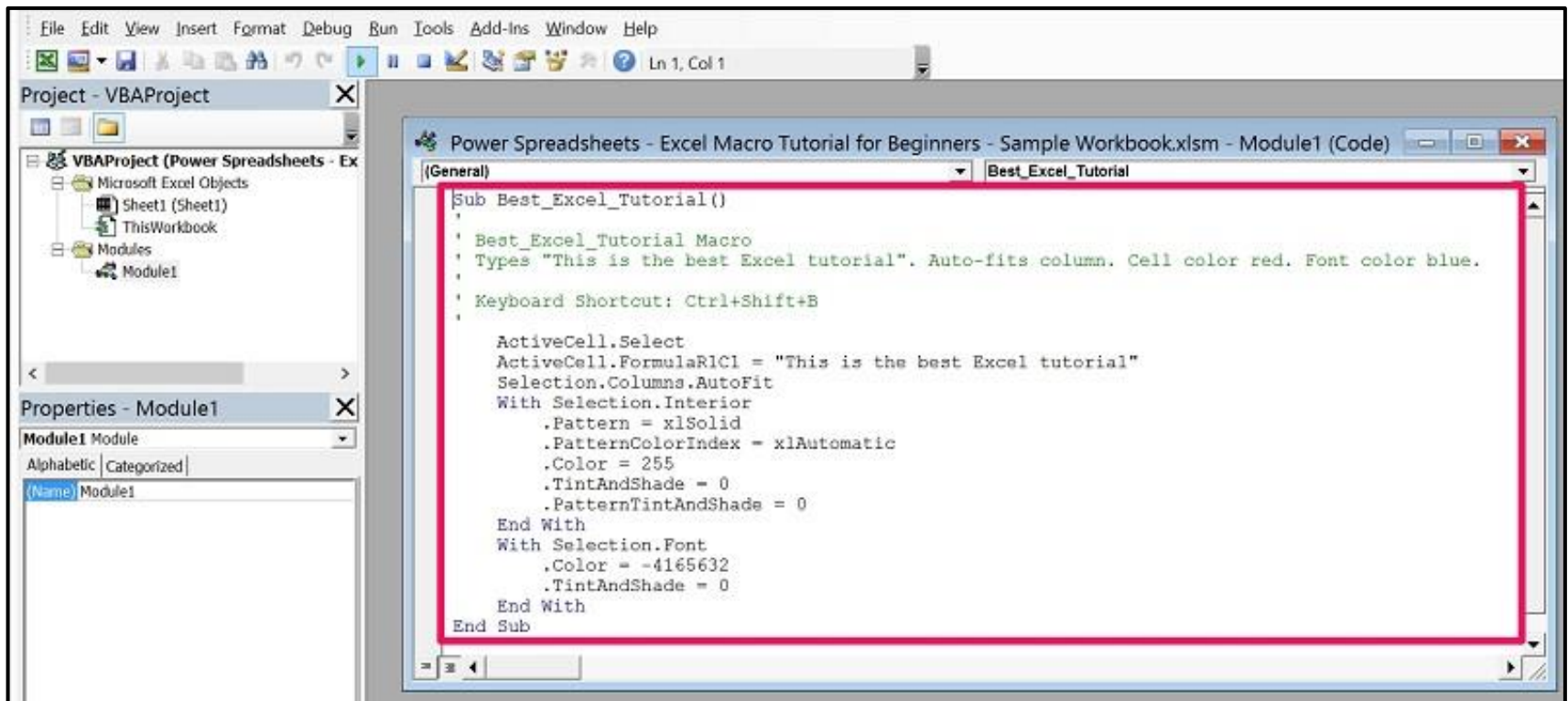
# Excel Developer

Click on “Insert”, then select the “Module” option:



# Excel Developer

Copy the Linterp script into the module:



# 1-D Table Lookup

Function Linterp(x, xvalues, yvalues)

```
x1 = Application.WorksheetFunction.Index(xvalues, Application.WorksheetFunction.Match(x, xvalues, 1))  
x2 = Application.WorksheetFunction.Index(xvalues, Application.WorksheetFunction.Match(x, xvalues, 1) + 1)  
y1 = Application.WorksheetFunction.Index(yvalues, Application.WorksheetFunction.Match(x, xvalues, 1))  
y2 = Application.WorksheetFunction.Index(yvalues, Application.WorksheetFunction.Match(x, xvalues, 1) + 1)
```

```
Linterp = y1 + (y2 - y1) * (x - x1) / (x2 - x1)
```

End Function

**Linterp script is available on Canvas**

**Save your Excel files as “Macro-Enabled Workbook”  
in the form of \*.xlsm**

# 1-D Table Lookup

**=Linterp(x, x-values, y-values)**

**=Linterp(h, atmos\_h, atmos\_rho)**



# 1-D Table Lookup

## One-dimensional table lookup

	TEMPF	TEMPR	TEMPC	TR	PR	PRESHG	PRES	RHO	DR	SQRTDR	QMS	SPW	ASPEED	VELA
0	59.0	518.7	15.0	1.0000	1.0000	29.92	2116.22	0.00237688	1.0000	1.0000	1481.4	0.0765	1116.45	661.1
500	57.2	516.9	14.0	0.9966	0.9821	29.38	2078.26	0.00234230	0.9855	0.9927	1454.8	0.0754	1114.53	659.9
1000	55.4	515.1	13.0	0.9931	0.9644	28.86	2040.86	0.00230810	0.9711	0.9854	1428.6	0.0743	1112.61	658.8
1500	53.6	513.3	12.0	0.9897	0.9470	28.33	2004.00	0.00227429	0.9568	0.9782	1402.8	0.0732	1110.68	657.6
2000	51.8	511.5	11.0	0.9862	0.9298	27.82	1967.68	0.00224086	0.9428	0.9710	1377.4	0.0721	1108.75	656.5
2500	50.1	509.8	10.0	0.9828	0.9129	27.32	1931.90	0.00220780	0.9289	0.9638	1352.3	0.0710	1106.81	655.4
3000	48.3	508.0	9.0	0.9794	0.8962	26.82	1896.64	0.00217512	0.9151	0.9566	1327.6	0.0700	1104.88	654.2
3500	46.5	506.2	8.0	0.9759	0.8798	26.33	1861.91	0.00214281	0.9015	0.9495	1303.3	0.0689	1102.94	653.1
4000	44.7	504.4	7.1	0.9725	0.8637	25.84	1827.70	0.00211087	0.8881	0.9424	1279.4	0.0679	1100.99	651.9
4500	42.9	502.6	6.1	0.9691	0.8477	25.37	1793.99	0.00207929	0.8748	0.9353	1255.8	0.0669	1099.04	650.7
5000	41.1	500.8	5.1	0.9656	0.8320	24.90	1760.79	0.00204808	0.8617	0.9283	1232.6	0.0659	1097.09	649.6
5500	39.4	499.1	4.1	0.9622	0.8166	24.43	1728.10	0.00201723	0.8487	0.9212	1209.7	0.0649	1095.14	648.4
6000	37.6	497.3	3.1	0.9587	0.8014	23.98	1695.89	0.00198673	0.8359	0.9143	1187.1	0.0639	1093.18	647.3
6500	35.8	495.5	2.1	0.9553	0.7864	23.53	1664.17	0.00195659	0.8232	0.9073	1164.9	0.0630	1091.22	646.1
7000	34.0	493.7	1.1	0.9519	0.7716	23.09	1632.94	0.00192680	0.8106	0.9004	1143.1	0.0620	1089.25	645.0
7500	32.2	491.9	0.1	0.9484	0.7571	22.65	1602.18	0.00189736	0.7983	0.8935	1121.5	0.0610	1087.28	643.8
8000	30.4	490.1	-0.9	0.9450	0.7428	22.22	1571.89	0.00186826	0.7860	0.8866	1100.3	0.0601	1085.31	642.6
8500	28.7	488.4	-1.9	0.9416	0.7287	21.80	1542.06	0.00183950	0.7739	0.8797	1079.4	0.0592	1083.34	641.4
9000	26.9	486.6	-2.8	0.9381	0.7148	21.39	1512.70	0.00181109	0.7620	0.8729	1058.9	0.0583	1081.36	640.3
9500	25.1	484.8	-3.8	0.9347	0.7012	20.98	1483.79	0.00178301	0.7501	0.8661	1038.7	0.0574	1079.37	639.1
10000	23.3	483.0	-4.8	0.9312	0.6877	20.58	1455.33	0.00175527	0.7385	0.8593	1018.7	0.0565	1077.39	637.9

↑  
atmos\_h  
(x)

↑  
atmos\_rho  
(y)

# ***Homework Assignment***

**HW #6 – Atmosphere Table Lookup  
(due by 11:59 pm ET on Monday)**

**HW Help Session**

**Monday 1:00 – 2:00 pm ET**

**Posted on Canvas**

**HW #6 Assignment with instructions, tips,  
and checklist**

**HW #6 Template for data table in Excel**

# Questions?