# Excel & Business Math Video/Class Project #08 Arithmetic Tips for Add, Subtract, Multiply, Divide, Exponents, Rounding

# **Topics**

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#### 1) Whole Numbers & Decimals

- i. Define Whole Number (Counting Numbers) = A number with no decimals, such as 5,678, and not negative.
- ii. Define Integer = Positive & Negative Counting Numbers and Zero
- iii. Define Decimal ==> A number written with a decimal such as 4.987 or 0.062 or -1.50

#### 2) Write Number in English

i. Sometimes we need to write our number, like with checks:

Wh	Whole Numbers: numbers to the left of the decimal point. Uses the ten one- place digits: 0,1,2,3,4,5,6,7,8,9. Use a comma every third place.								one-	The word "and" goes here when you write the words.	Deci the parts nu r	mals: decim of a v umber numbe	numbe al poir whole 1 and r betw	ers to f nt - rep - "a wh the "p reen 1	the rig presen hole" is part" is and 0	ht of ting s the a					
Т	rillion	S	E	Billion	S	Ν	/lillion	S	Th	ousar	nds		Ones		"AND"						
Hundred Trillions	Ten Trillions	Trillions	Hundred Billions	Ten Billions	Billions	Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Decimal Point (and)	Tenths	Hundredths	Thousandths	Ten-Thousandths	Hundred-Thousandths	Millionths
			4	5	6	7	5	8	4	5	2	1	1	9		1	5	5			

ii. Here is a Check Example for writing numbers as words:

Sioux's Accounting		No.	4025
3985 14th Ave. S.			66-420
Seattle, WA 98106			1210
		Date	1/9/18
PAY TO THE ORDER OF:	Home Depot	Amount	\$1528.72
Amount	One Thousand Five Hundred Twenty Eight & Seventy Two Cents		Dollars
Boeing Employees Credit Union			
12770 Gateway Dr.			
Tukwila, WA 98168			
Ву	Sioux Radcoolinator		
Memo Purchase Desk			
I 1210 0420 I 60056	055960 II∎ 4025		

## 3) Math Operators & Order of Operations

	Math Operators:	Math Operators on the Standard Keyboard:
()	Parentheses.	( Shift + 9
		) Shift + 0
۸	Raising to an exponent. ("caret", like carrot)	^ Shift + 6
*	Multiplying.	* Shift + 8, or Number Pad
1	Dividing.	/ / Key, or Number Pad
+	Adding.	+ Shift + =, or Number Pad
-	Subtracting or Negation.	Key, or Number Pad

	Math order of operations									
1	First, do everything in the parentheses									
2	Second, do all exponents									
3	Third, do all multiplication and division, left to right									
4	Fourth, do all adding and subtracting, left to right									

Math order of operations								
1	()							
2	^							
3	* / Left to Right							
4	+ - Left to Right							

i. Excel Example as seen in Excel:

1	А	В	С	D	E						
1	MOOO Example 1:										
2	Time Sheet using Military Time										
3	Gross Pay =	Gross Pay = Hours Worked * Wage per Hour									
4	Time In	Time Out	Wage	Gross Pay							
5	8 15		27.75	=(B5-A5)*C5							
and a state		a									

#### 4) Adding in Excel

- i. Adding in Excel with SUM Function
  - 1. If numbers are next to each other, use SUM Function with a range of cells, rather than using the + symbol.
  - 2. If numbers are not next to each other, you can use SUM Function or the + symbol.
  - 3. Commutative Property of Addition allows us to add in any order. You can add the numbers in any order and you still get the equivalent sum, as in:
    - i. 391.62 + 401.58 + 324.21 = 324.21 + 401.58 + 391.62 = 1117.41 and so on...
  - 4. If ranges of cells are not next to each other, use SUM with ranges separated by commas.
  - 5. If individual amounts must be rounded, use ROUND Function BEFORE adding.
  - 6. Efficient to use SUM function for adding because:
    - i. Faster than using the plus symbol.
    - ii. Can handle structural changes like inserting a row.
- ii. Examples for Adding as see in Excel:

1	A		В	C	D		E	F	G		н	l
1	Adding in Excel	Exan	nple 1:									
2	If numbers are r	next :	to each oth	her, use SUM Func	tion with a range	of cel	lls, rather t	han using th	ne + symbol			
3	Efficient to use	e SUM	M function	because:								
4	Fast.											
5	Can handle	stru	ctural char	ges like inserting	a row.							
6	Invoice 12305											
7	Product	Amo	ount									
8	Quad	\$	45.32		Efficient to use	SUM f	unction be	cause:				
9	Sunshine	\$	50.00		1) Fast.							
10	Carlota	\$	169.30		2) Can handle st	ructur	al changes	ilike inserti	ng a row.			
11	Majestic Beaut	\$	25.00									
12	MTA	\$	102.00									
13	Total	\$	391.62		=SUM(B8:B12) is	an ef	ficient for	mula.				
14		\$	391.62		=B12+B11+B10+B	39+B8	is NOT an	efficient for	mula.			
15												
16	Adding in Excel	Exan	nple 2:									
17	If numbers are r	not n	ext to eac	n other, you can us	se SUM Function	or the	+ symbol					
1.1.1.1.1.1.1.1												
18												
18 19	Invoice 12305	Amo	ount		Invoice 12332	Amou	unt		Invoice 12288	Am	ount	
18 19 20	Invoice 12305 Quad	Amo \$	ount 45.32		Invoice 12332 Sunshine	Amou \$	unt 90.43		Invoice 12288 Sunset	Am \$	ount 37.63	
18 19 20 21	Invoice 12305 Quad Sunshine	Amo \$ \$	ount 45.32 50.00		Invoice 12332 Sunshine Quad	Amou \$ \$	unt 90.43 53.13		Invoice 12288 Sunset Aspen	Am \$ \$	ount 37.63 91.24	
18 19 20 21 22	Invoice 12305 Quad Sunshine Carlota	Amo \$ \$ \$	0unt 45.32 50.00 169.30		Invoice 12332 Sunshine Quad MTA	Amou \$ \$ \$	90.43 53.13 78.62		Invoice 12288 Sunset Aspen Quad	Am \$ \$ \$	ount 37.63 91.24 39.02	
18 19 20 21 22 23	Invoice 12305 Quad Sunshine Carlota Majestic Beaut	Amo \$ \$ \$ \$	25.00 25.00		Invoice 12332 Sunshine Quad MTA Majestic Beaut	Amou \$ \$ \$ \$	unt 90.43 53.13 78.62 105.70		Invoice 12288 Sunset Aspen Quad Yanaki	Am \$ \$ \$ \$	37.63 91.24 39.02 106.94	
18 19 20 21 22 23 24	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA	Amo \$ \$ \$ \$ \$	45.32 50.00 169.30 25.00 102.00		Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota	Amou \$ \$ \$ \$ \$	90.43 53.13 78.62 105.70 73.70		Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut	Am \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38	
18 19 20 21 22 23 24 25	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total	Amc \$ \$ \$ \$ \$ \$	25.00 169.30 25.00 102.00 391.62		Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total	Amot \$ \$ \$ \$ \$ \$ \$	unt 90.43 53.13 78.62 105.70 73.70 401.58		Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total	Am \$ \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21	
18 19 20 21 22 23 24 25 26	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total	Amo \$ \$ \$ \$ \$ \$	bunt 45.32 50.00 169.30 25.00 102.00 391.62		Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total	Amou \$ \$ \$ \$ \$ \$	unt 90.43 53.13 78.62 105.70 73.70 401.58		Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total	Am \$ \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21	
18 19 20 21 22 23 24 25 26 27	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total	Amc \$ \$ \$ \$ \$ \$ \$	25000 169.30 25.00 102.00 391.62 1,117.41		Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25	Amot \$ \$ \$ \$ \$ \$	90.43 53.13 78.62 105.70 73.70 401.58		Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total	Am \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21	
<ol> <li>18</li> <li>19</li> <li>20</li> <li>21</li> <li>22</li> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> </ol>	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total	Amo \$ \$ \$ \$ \$ \$ \$	25.00 169.30 25.00 102.00 391.62 1,117.41	or	Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25 **Okay to use +	Amou \$ \$ \$ \$ \$ \$	90.43 53.13 78.62 105.70 73.70 401.58	when cells a	Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total	Am \$ \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21 other.	
<ol> <li>18</li> <li>19</li> <li>20</li> <li>21</li> <li>22</li> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> </ol>	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total	Amo \$ \$ \$ \$ \$ \$ \$	bunt 45.32 50.00 169.30 25.00 102.00 391.62 1,117.41 1,117.41	or	Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25 **Okay to use + =SUM(B25,E25,H	Amot \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	unt 90.43 53.13 78.62 105.70 73.70 401.58	when cells a	Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total	Am \$ \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21	
<ol> <li>18</li> <li>19</li> <li>20</li> <li>21</li> <li>22</li> <li>23</li> <li>24</li> <li>25</li> <li>26</li> <li>27</li> <li>28</li> <li>29</li> <li>30</li> </ol>	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total	Amo \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	bunt 45.32 50.00 169.30 25.00 102.00 391.62 1,117.41 1,117.41	or	Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25 **Okay to use + =SUM(B25,E25,H	Amou \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	unt 90.43 53.13 78.62 105.70 73.70 401.58	when cells a	Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total re not next to e	Am \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21	
18 19 20 21 22 23 24 25 26 27 28 29 30 31	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total Adding in Excel	Amo \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	bunt 45.32 50.00 169.30 25.00 102.00 391.62 1,117.41 1,117.41	or	Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25 **Okay to use + =SUM(B25,E25,H	Amou \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	unt 90.43 53.13 78.62 105.70 73.70 401.58 or SUM(,,,) v	when cells a	Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total re not next to e	Am \$ \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21 other.	
18 19 20 21 22 23 24 25 26 27 28 29 30 31 31 32	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total Adding in Excel Commutative Pr	Amo \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Dunt 45.32 50.00 169.30 25.00 102.00 391.62 1,117.41 1,117.41 1,117.41	or tion allows us to a	Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25 **Okay to use + =SUM(B25,E25,H	Amou \$ \$ \$ \$ \$ \$ ++++c (25)	90.43 53.13 78.62 105.70 73.70 401.58	when cells a	Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total re not next to e	Am \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21 o other.	
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total Adding in Excel Commutative Pr You can add the	Amo \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	bunt 45.32 50.00 169.30 25.00 102.00 391.62 1,117.41 1,117.41 1,117.41 nple 3: rty of Addi bers in an	or tion allows us to a	Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25 **Okay to use + =SUM(B25,E25,F	Amou \$ \$ \$ \$ \$ ++++c 25)	um, as in:	when cells a	Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total	Am \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21 other.	
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total Adding in Excel Commutative Pr You can add the 391.62 + 401.58 -	Amo \$ \$ \$ \$ \$ \$ \$ <b>Exan</b> <b>Exan</b> <b>Exan</b> <b>Exan</b>	bunt 45.32 50.00 169.30 25.00 102.00 391.62 1,117.41 1,117.41 1,117.41 nple 3: rty of Addi abers in an .21 = 324.2	or tion allows us to a y order and you st 1 + 401.58 + 391.62	Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25 **Okay to use + =SUM(B25,E25,H add in any order ill get the equiva = 1117.41 and so	Amou \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	um, as in:	when cells a	Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total	Am \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21 other.	
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total Total Adding in Excel Commutative Pr You can add the 391.62 + 401.58 -	Amo \$ \$ \$ \$ \$ \$ \$ Exam ope num 324	bunt 45.32 50.00 169.30 25.00 102.00 391.62 1,117.41 1,117.41 1,117.41 nple 3: rty of Addi abers in an .21 = 324.2	or tion allows us to a y order and you st 1 + 401.58 + 391.62	Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25 **Okay to use + =SUM(B25,E25,H dd in any order ill get the equiva = 1117.41 and so	Amou \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	unt 90.43 53.13 78.62 105.70 73.70 401.58 or SUM(,,) v	when cells a	Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total re not next to e	Am \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	ount 37.63 91.24 39.02 106.94 49.38 324.21 other.	
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36	Invoice 12305 Quad Sunshine Carlota Majestic Beaut MTA Total Total Total Adding in Excel Commutative Pr You can add the 391.62 + 401.58 -	Amo \$ \$ \$ \$ \$ \$ \$ <b>Exan</b> rope num • 324	Dunt 45.32 50.00 169.30 25.00 102.00 391.62 1,117.41 1,117.41 nple 3: rty of Addi bers in an .21 = 324.2 1,117.41	or tion allows us to a y order and you st 1 + 401.58 + 391.62	Invoice 12332 Sunshine Quad MTA Majestic Beaut Carlota Total =B25+E25+H25 **Okay to use + =SUM(B25,E25,H add in any order ill get the equiva = 1117.41 and so =SUM(H25,E25,E25,E25,E25,E25,E25,E25,E25,E25,E	Amou \$ \$ \$ \$ \$ \$ 25) Amou A	unt 90.43 53.13 78.62 105.70 73.70 401.58 or SUM(,,) v	when cells a	Invoice 12288 Sunset Aspen Quad Yanaki Crested Beaut Total re not next to e	Am \$ \$ \$ \$ \$ \$ \$ ach	ount 37.63 91.24 39.02 106.94 49.38 324.21 o other.	

1	A	В	C	DE		F	G	Н
41	Adding in Excel	Example 4:						
42	If ranges of cells	are not next to	each other, use SUM	<mark>M with r</mark> anges sep	parated by comm	as		
43		-						
44	Invoice 12305	Amount		Invoice 12332	Amount		Invoice 12288	Amount
45	Quad	\$ 45.32		Sunshine	\$ 90.43		Sunset	\$ 37.63
46	Sunshine	\$ 50.00		Quad	\$ 53.13		Aspen	\$ 91.24
47	Carlota	\$ 169.30		MTA	\$ 78.62		Quad	\$ 39.02
48	Majestic Beaut	\$ 25.00		Majestic Beaut	\$ 105.70		Yanaki	\$ 106.94
49	MTA	\$ 102.00		Carlota	\$ 73.70		Crested Beaut	\$ 49.38
50								
51	Total	\$ 1,117.41		=SUM(B45:B49,E	45:E49,H45:H49)			
52								
53	Adding in Excel	Example 5:						
54	If individual amo	unts must be ro	unded, use ROUND	Function BEFORE	adding			
55								
56		Tax Rate	0.07650					
57								
58	Name	Gross Pay	Tax Deduction			Incorrect:		
59	Dillon J	\$804.02	61.51	=ROUND(B59*\$0	\$56,2)	61.50753	=B59*\$C\$56	
60	lan R	\$761.98	58.29			58.29147		
61	Sarah	\$1,125.95	86.14			86.135175		
62	Maria G	\$1,070.57	81.9			81.898605		
63	Kimberlee	\$922.23	70.55			70.550595		
64	Lizaelle M	\$1,206.76	92.32			92.31714		
65	Chad M	\$1,090.18	83.4			83.39877		
66	Lisa L	\$1,117.71	85.5			85.504815		
67	Roy J	\$752.14	57.54			57.53871		
68	Aaron D	\$842.64	64.46			64.46196		
69			741.61	=SUM(C59:C68)		741.6	=ROUND(SUM(	F59:F68),2)
70								
71	Not	Necessary ==>>	741.61	=ROUND(SUM(C	59:C68),2)			

#### 5) Subtracting in Excel

- i. Use Minus Sign when there are two numbers, like when you calculate Net Income.
- ii. When you are subtracting three or more numbers, it usually is easier to add all the numbers that should be subtracted using the SUM Function, and then subtract that single SUM.
- iii. Examples for Subtracting as see in Excel:

	A	В	C	D	E	F	G	Н	I
1	Subtracting in Excel Ex	ample 1:							
2	Use Minus Sign when t	here are two numb	ers, like when you	i calculate Net Inc	ome				
3									
4	Total Revenue	\$5,625,896.00							
5	Total Expenses	\$4,985,623.00							
6	Net Income	\$640,273.00		=B4-B5					
7									
8	Subtracting in Excel Ex	ample 2:							
9	When you are subtract	ing three or more n	umbers, it usually	is easier to add a	ll the numbers tha	it should be subtra	acted using the SUN	A Function, & then subtrac	t that single SUM
10									
11							×	Not Efficient	Efficient
							G14:	H14:	114:
12							=SUM(C14:F14)	=B14-C14-D14-E14-F14	=B14-G14
13	Name	Gross	FICA	Medicare	Fed Tax	Pension	Total	Net Pay	Net Pay
14	Sioux	\$754.00	\$46.75	\$10.93	\$75.40	\$0.00	\$133.08	\$620.92	\$620.92
15	Abdi	822.00	50.96	11.92	82.20	25.00	\$170.08	\$651.92	\$651.92
16	Gigi	911.00	56.48	13.21	91.10	0.00	\$160.79	\$750.21	\$750.21
17	Imani	897.00	55.61	13.01	89.70	0.00	\$158.32	\$738.68	\$738.68
18	Bob	829.00	51.40	12.02	82.90	75.00	\$221.32	\$607.68	\$607.68
19	Tyrone	867.00	53.75	12.57	86.70	100.00	\$253.02	\$613.98	\$613.98
20	June	939.00	58.22	13.62	93.90	15.00	\$180.74	\$758.26	\$758.26

### 6) Check Work When Subtracting or Adding

- i. You can always check your work when adding or subtracting:
  - 1. Adding:
    - i. If **10 + 5 = 15**

ii. Then: 15 – 5 = 10 AND 15 – 10 = 5

ii. Example in Excel:

	A	B	С	D	Е	F					
1	Add and Subtra	ct Example 1:									
2	You can always	check your worl	k when addir	ng and subt	tractir	ng:					
3											
4	If this is TRUE:										
5	Total Revenue -	otal Revenue - Total Expenses = Net Income									
6	Total Revenue	\$5,625,896.00									
7	Total Expenses	\$4,985,623.00									
8	Net Income	\$640,273.00	=B6-B7								
9						Check					
10	Then this is TRU	E:				Your					
11	Total Expenses -	+ Net Income =	Total Revenu	ie		Work					
12	Total Expenses	\$4,985,623.00									
13	Net Income	\$640,273.00	-								
14	Total Revenue	\$5,625,896.00	=B12+B13								
15											
<mark>16</mark>	You could also c	heck:									
17	Total Revenue -	Net Income = T	otal Expense	S							
18	Total Revenue	\$5,625,896.00									
19	Net Income	\$640,273.00									
20	Total Expenses	\$4,985,623.00	=B18-B19								

#### 7) Multiplying in Excel

- i. If you are multiplying two numbers use \* Symbol.
- ii. Terms for Multiplying:

85 Factor multiplication "Symbol" "operator" when we multiply we ask: "Give me 85 of these: 21.25"

- iii. Commutative Property of multiplication means  $2^* 5 = 5^* 2 = 10$
- iv. If you are multiplying in succession three or more numbers, you can use the PRODUCT Function.
- v. When multiplying in business, since we often are dealing with money, we have to consider whether or not we need to use the ROUND Function. If 1) We are required to round, 2) The result of multiplying yields extraneous decimals, & 3) We use result in subsequent formula, we MUST use ROUND.
- vi. Specific example when you are multiplying but don't need to use the ROUND Function:
  - 1. When multiplying a Whole Number by Money (Dollars & Pennies), you will never get extraneous decimals.
- vii. Specific example when you are multiplying, and you need to use the ROUND Function:
  - 1. When multiplying Money (Dollars & Pennies) times a Decimal, you CAN get extraneous decimals.
- viii. When you need to consider using the ROUND Function, if you want to be safe when performing multiplication, anytime you are multiplying decimals and you are dealing with Money, just use the ROUND Function.
- ix. Examples for Multiplying as see in Excel:

1	А	В	C	D	E	F	G	Н	I	J	K
1	Multiplying in Excel Ex	ample 1:									
2	If you are multiplying to	wo numbers use *	Symbol								
3											
4	Product	Quantity	Price	Total						2 1	01125
5	Quad	85	21.25	1806.25		=C5*B5			85 *	21.25 = 1,	006.25
6	Carlota	108	13.95	1506.6					7 1	T	T
7	Sunset	25	11.95	298.75				Fact	or 1	Factor	
8	Aspen	15	12.55	188.25				140.		fro	Auct
9									multipli	cation	
10	Multiplying in Excel Ex	ample 2:							" Sym	bol"	
11	If you are multiplying in	n succession three	or more numbe	rs you can use th	e PRODU	CT Function			" 0 0000	tor"	
12									oper	A.101	
13	Item	Trade Discount	Compliment	Goal: is to multip	oly all thre	ee <mark>co</mark> mplime	nts		when we	multiply we a	sk.
14	1st Trade Discount	50.0%	50.0%						when we		
15	2nd Trade Discount	10.0%	90.0%					n (	Give me	85 of	
16	3rd Trade Discount	6.0%	94.0%					1	these :	21.25 "	
17	Net Cost Equivalent	0.423	0.423	=PRODUCT(C14:	C16)					2120	
18											- 25
19	Multiplying in Excel Ex	ample 3:									
20	Commutative Property	of multiplication r	means 2* 5 = 5*2	2 = 10							
21											
22	2	5	10		2 * 5 = 10	) Here are as	k: 'Give me 2	5s			
23	5	2	10		5 * 2 = 10	) Here are as	k: 'Give me 5	2s			

	A	B	С	D	E F	G	Н	I	J	K	
25	Multiplying in Excel Ex	kample 4:									
26	When multiplying in business, since we often are dealing with money, we have to consider whether or not we need to use the ROUND Function										
27	If 1) We are required	If 1) We are required to round, 2) You have extraneous decimals, & 3) We use result in subsequent formula, we MUST use, ROUND									
20			and the second second								
29	But before you perform	n the multiplicati	on, can you pred	ict if you need ROU	S DNC						
30	Yes you can.				1					2 3	
31		and the second sec			1 4						
32	Multiplying in Excel Ex	kample 5:				200					
33	This is an example where the result of multiplying will NOT yield extraneous decimals.										
34	When multiplying	g a Whole Numb	er by Money (D	ollars & Pennies)	),					· · · · · · · · · · · · · · · · · · ·	
35	you will never get	extraneous dec	imals.								
36											
37	Product	Quantity	Price	Total							
38	Quad	85	21.25	1806.25	=B38*C38	-				· · · · · · · · · · · · · · · · · · ·	
39	Carlota	108	13.95	1506.6							
40	Sunset	25	11.95	298.75							
41	Aspen	15	12.55	188.25							
42			Total	3799.85							
43						5					
44	Multiplying in Excel Ex	kample 6:									
45	This is an example v	where the result	of multiplying	will CAN yield ex	traneous decima	Is.					
46	When multiplying	Money (Dollars	& Pennies) tin	nes a Decimal,							
47	you CAN get extra	neous decimals	1								
48											
49	Product	Price	Discount	Total							
50	Quad	210.25	0.02	4.21	=ROUND(	B50*C50,2)					
51	Carlota	130.95	0.045	5.89							
52	Sunset	110.95	0.1	11.1							
53	Aspen	120.55	0.12	14.47							
54			Total	35.67							
55											
56	Product	Price	Discount	Total							
57	Quad	210.25	0.02	4.205	=B57*C57						
58	Carlota	130.95	0.045	5.89275							
59	Sunset	110.95	0.1	11.095							
60	Aspen	120.55	0.12	14.466							
61			Total	35.65875							
62											
63	Multiplying in Excel Ex	kample 7:									
64	If you want to be saf	fe.									
65	Anvtime vou are n	nultiplying and	vou are dealing	with Money.						1 1	
66	you can use the R	OUND Function	and the second second								
67	,									1	
68	Product	Quantity	Price	Total							
69	Quad	85	21 25	1806.25	=ROUND(	B69*C69 21					
70	Carlota	108	13 95	1506.6	MUSTUSE	ROUND:					
71	Sunset	200	11 95	298 75	1) We are	required	to round				
72	Aspen	15	12 55	188 25	2) You ba	ve extrane	ous decir	mals			
73		1.5	Total	3799.85	or with	money	- as acci				
74		li i		0100.00	vou are	multiplyin	e or divid	ling and w	ou might have extra	aneous decimals	
75					3) We use	e result in	subseque	ent formu	la		
12					of we use	e result iff	subsequ	encronnu			

#### 8) Dividing in Excel

- i. In Excel when we are dividing two numbers use / Symbol
- ii. Terms for Division:
  - 1. When you are performing division, the formula is:

Numerator/Denominator = Quotient

2. When you are performing division, you are asking the question: "How Many Denominators are in the Numerator?"



- iii. Dividing by zero not allowed because "How many Zeroes are in a number???" We have no way of answer that question.
- iv. In Excel we can divide with these two functions:
  - 1. QUOTIENT Function gives you just the integer answer
  - 2. MOD Function gives you just the remainder answer
- v. Same Rounding Rules we saw for multiplying apply with division. When we MUST use ROUND:
  - 1. We are required to round
  - 2. The result of dividing yields extraneous decimals
  - 3. We use result in subsequent formula
- vi. Examples for dividing as seen in Excel are on next page:

1	A	В	C	D		E		F	G
1	Dividing in Excel Ex	ample 1:							
2	If you are dividing t	two numbers use	/ Symbol						
3									
4	Expense for Week	29	155	** Week for th	is business i	always 7 day	5		
5	Daily Expense	122 11285	71 -B4/7	* We have no r	equirement	to round and			
6	Dully Experise	422,14205		we have not	equitement	to round and	use noon	Diditetion	
7	Dividing in Event Ex	amula 2.							
0	Dividing in Excer Ex	ampie 2: 	ha famila in Nu			• • • • • • • • /D •			
8	when you are perf	orming division, t		merator/Denominat	or = Quotien	t ==>> тор/во	ottom = Al	nswer	
9	when you are perf	orming division y	ou are asking the o	question: How Ivian	y Denomina	tors are in the	Numerat	.or?	
10									
11	Numerator	Denominator	Quotient (answ	ver)					-
12	1	0	2	5 =A12/B12	Here	e we are askin	g: How m	any 2s are in	n 10?
13					8				
14	Dividing in Excel Ex	ample 3:			10100000000				
15	** Dividing by zero	not allowed beca	ause "How many Z	eroes are in a numbe	er???"				
16									
17	Numerator	Denominator	Quotient (answ	ver)					
18	1	0	0 #DIV/0!	=A18/B18	Here	e we are askin	g: How m	any Os are in	n 10?
19									
20	Dividing in Excel Ex	ample 4:						11	01
21	We can divide to ge	et the integer ans	wer with a remain	der with the QUOTIE	NT and MO	Functions.		4	
22							1	2 9	
23	Numerator	Denominator	Quotient (ansy	ver) Integer Answei	r Rem	ainder Answe	r	- 8	
24	Relation Address (Andress and A	9	2	4.5	4		1	1	1000
25		-	=A24/B24	=OUOTIENT(A2	4 B24) =M(	D(A24 B24)	-	= 1	
26							-		
20									
1	Α	В	C	D	E		F	G	Н
28	When we MUST use	ROUND:							
29	1) We are required	to round							
30	2) The result of divi	ding yields extrane	ous decimals						
31	3) We use result in	subsequent formul	la						
32									
33	Dividing in Excel Exa	mple 5:							
34	Goal of example: Cal	c <mark>ulate Grade for Cl</mark>	ass						
35	We compare Student	Point Total to the	Maximum Points P	ossible in Class.			-		
36	Anytime we compare	a "Part of the Wh	ole" to the "Whole"	, we use Division. This	is called "Con	npare Part to V	Vhole"		
37	* We have no require	ment to round her	re			1			
38									
			Grade for Class						
201		Student Score	"Compare Part to		Max Points	for Class			
39	Student Name	"Part of Whole"	Whole"	D 40 /4-4 +-	"Whole"				
40	imani	477	0.954	=B40/\$E\$40		500			
41	ugi Turana	360	0.72		* 10/			and use DOI	
42	Sieux	500	1		vve nave	to requirement	to round	and use KOU	in unction
43	Pob	396	0.792						
44	Abdi	1/3	0.346		-				
45	ADUI	404	0.908						
40	Dividing in Event Even	mple 6:							
48	Goal of example: Col	culate Monthly Inc	urance Evnence for	each nolicy, then add	all monthly o	menses to get	total		1
49	This situation meets	the requirement to	a round	cuen policy, then add	an monthly e	spenses to get	cordi.		
50	This situation meets	the requirement to	Jiounu.			115			
50									
		Annual Insurance				Mo	nthly		
51	Policy Number	Expenses	Monthly Expense			Exp	ense		
52	0121.NGXDS-2948	2434.65	202.89	=ROUND(B52/12.2)		Exp	202.89 =	352/12	
53	0171.TOUKP-2257	3940.51	328,38				328,38		
54	0006.TPZUP-1156	3206.84	267.24				267.24		
55	0107.PMQGS-1845	1943.33	161.94				161.94		
56		Total	960.45				960.44		

#### 9) ROUND Function Rules, including Multiplying & Dividing Money

- i. MUST use ROUND:
  - 1. We are required to round
  - 2. You have extraneous decimals, or with money: you are multiplying or dividing and you might have extraneous decimals
  - 3. We use result in subsequent formula

#### **10) Check Work When Multiplying or Dividing**

- ii. You can always check your work when multiplying or dividing:
  - 1. If **10 / 2 = 5**
  - 2. Then 5 \* 2 = 10 AND 10 / 5 = 2
- iii. Examples as seen in Excel:

1	А	В	С	D	E	F						
1	Multiply and	Divide Examp	le 1:									
2	You can always check your work when Multiplying or Dividing:											
3	**by using the non-rounded original numbers											
4												
5	If this is TRUE:											
6	Quantity * Pri	Quantity * Price = Total										
7	85 * 21.255 =	1806.675										
8	Product	Quad										
9	Quantity	85										
10	Price	21.255										
11	Total	1806.675	=B10*B9									
12												
13	Then this is TR	RUE:				Check						
14	Total / Price =	Quantity				Your						
15	1806.675/21	1.255 = 85				Work						
16	Product	Quad										
17	Total	1806.675										
18	Price	21.255										
19	Quantity	85	=B17/B18									
20												
21	You could also check:											
22	Total / Quantity = Price											
23	1806.675 / 85 = 21.255											
24	Product	Quad										
25	Total	1806.675										
26	Quantity	85										
27	Price	21.255										

#### **11)Exponents**

- i. Exponents are convenient way to multiply when you have to multiply the same number over and over!
- ii. In Excel the operator is caret: ^ (Shift + 6)
- iii. Terms:



- iv. In Excel the steps to type a label that shows the Base and Exponent are:
  - 1. Type a lead apostrophe (so number can be considered text)
  - 2. Type Base and Exponent
  - 3. Highlight Exponent
  - 4. Ctrl + 1 to open Format Cells Dialog Box, then on Font Tab, check Superscript checkbox
- v. Example as seen in Excel:

1	Α	В	C	D	E	F	G			
1	Exponent Example	1:								
2	Exponents are conv	enient way	to multiply	when you	have to					
3	multiply the same number over and over!									
4	In Excel the operato	r is caret: ^	(Shift + 6)	l.	-					
5										
6	2		What is th	e number	we are m	ultiplying?				
7	2		2	Base						
8	2		How man	y times did	we have	to multiply	it?			
9	2		6	Exponent			S			
10	2	1	- 5							
11	2		2°	074.00						
12	64		64	=C7^C9			S			
13			-6							
14	Steps to type a labe	el that show	<u>s 2° :</u>	1	1					
15	1) Type a lead apos	trophe (so n	umber can	be conside	ered text)		9			
10	2) Type Base and Ex	ponent: 26								
1/	3) Highlight Expone	nt Cormat Colle	Dialog Pov	than on F	ont Tab	ack Supara	crint chackbox			
10	4) Ctri + 1 to open r	Offinal Cells	Dialog DOX	, then on r		leck supers	chipt checkbox			
20	Exponent Example	2.					-			
21	In Finance we often	times have	to use Exn	onents						
22	Famous Finance Fo	mula for Fu	ture Value	of Lump Si	ım Investr	nent with A	nnual Rate:			
23	FV = (1 + AnnualRat	e)^Years*An	nountInves	ted						
24		1								
	Amount Deposited									
25	in Bank	\$2,500.00								
26	Years Left in Bank	10								
	Annual Interest									
27	Rate	0.045		FV = (1 + A	AnnualRate	e)^Years*Ar	nountInvested			
28	Future Value	3882.424		FV = (1+0.	045)^10*2	2500				
29				FV =(1+B2	7)^B26*B2	25				

## 12)Rounding & ROUND Function Video Examples:

- 1	A	B	C	D	E	F	G	Н	
1	Rounding Example 1:								
2	Round to the Penny when you are dealing with dollars and cents								
3	ROUND(Form	mula,2)							
4									
5	Invoice	Amount	Discount Rate	Discount Amount			Incorrect:		
6	12254	1099.11	0.01	10.99	=ROUND	C6*B6,2)	10.9911	=B6*C6	
7	12255	367.46	0.015	5.51			5.5119		
8	12256	712.35	0.03	21.37			21.3705		
9	12257	655.16	0.02	13.1	i.		13.1032		
10	10	54. 	Total	50.97	2		50.9767		
11					j	7			
12	Rounding Ex	ample 2:	4						
13	Round to the	e Dollar is required fo	or a few tax calculatio	ns, for example Fed	eral Inco	me Tax Forms	31		
14	ROUND(Form	mula,0)							
15									
16	Name	Taxable Amount	Tax Rate	Paid Tax			Incorrect:		
17	Sioux	48661.43	0.125	6083	=ROUND	C17*B17,0)	6082.67875	=B17*C17	
18	Imani	52861.1	0.13	6872	5		6871.943		
19	Bob	51487.39	0.125	6436			6435.92375		
20	Gigi	48436.34	0.13	6297			6296.7242		
21	5.00		Total	25688	5.		25687.2697		
22						1			
23	Rounding Ex	ample 3:							
24	Round to the	e thousandths positio	on because the syllabu	s states that that is	required				
25	ROUND(Forr	mula,3)							
26									
27	Max Possib	le Points	500	5		4			
28									
29	Student	Class Score	Grade			1	Grade		
30	Pham	401.7	0.803	=ROUND(B30/\$C\$2	7,3)	1	0.8034	=B30/\$C\$27	
31	Miki	359.1	0.718	2011-11-10-02019-11-1 2		4	0.7182		
32	Abdi	386.7	0.773				0.7734		
33	Phil	389.5	0.779				0.779		
34		Average	0.768	=ROUND(AVERAGE(	C30:C33),	3)	0.7685		
35									
36	Rounding Ex	ample 4:							
37	Round to the	e thousands position	, sometimes you need t	to do this when crea	ating a Fir	nancial Repor	t.		
38	ROUND(Forr	nula,-3)							
39		1 010 112					1		
			Round to						
			Thousands,						
40	Company	Cash Balance	Divide by 1000						
41	GOOG	48,088,124,879	48,088,125	=ROUND(B41,-3)/10	000				
42	MSFT	11,324,045,674	11,324,046						
43	YHOO	1,526,427,125	1,526,427						
44	FB	18,434,320,789	18,434,321						
		1 11							

# New Keyboard In This Video

1. **Esc Key** = Will Turn Off "Dancing Ants" From Copied Cells