

CHAPTER 10: IRREGULAR NUMBERS

“If I had to sum up in one word what makes a good manager, I’d say decisiveness. You can use the fanciest computers to gather the numbers, but in the end you have to set a timetable and act.”

– Lee Iacocca

Fractions and dates are irregular forms of regular numbers. In this chapter we try to make sense of this confusing—and important—topic.

FRACTIONS

To enter fractions in Excel, type zero, space, and the fraction. For example, to enter $\frac{3}{4}$, type:

0 3/4

and press **↵**. To enter a mixed number, such as $3\frac{2}{3}$ type the whole number, followed by a space, and the fraction:

3 2/3

Although Excel displays the fraction or mixed number, it calculates its decimal equivalent in the Formula bar.

FORMAT FRACTIONS

As with all numbers, fractions can be formatted:

Step 1: Move to the cell containing the fraction and either:

- press **Ctrl** **1**, or,
- **↵** from the pull-down menu, select **F**ormat, **C**ells.

Step 2: On the Number tab, select Fraction from the Category list box.

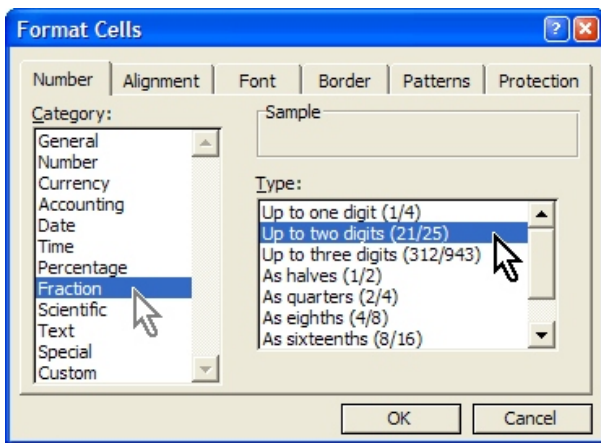


Figure 179

Step 3: In the **Type** list box, select the desired format:

TYPE	FORMAT THIS FRACTION:	
	0 3/8	0 123/456
Up to one digit (1/4)	3/8	1/4
Up to two digits (21/25)	3/8	17/63
Up to three digits (312/943)	3/8	41/152
As halves	1/2	1/2
As quarters (2/4)	2/4	1/4
As eighths (4/8)	3/8	2/8
As sixteenths (8/16)	6/16	4/16
As tenths (3/10)	4/10	3/10
As hundredths (30/100)	38/100	27/100

Formatting a fraction essentially rounds the fraction to the nearest fraction of that format. It’s important to remember that formatting merely changes appearance. No matter how you format a fraction, Excel will use its decimal equivalent in calculations.

ROMAN NUMERALS

If you want to create an outline, you can easily use Roman numerals. The **ROMAN()** function converts numbers into Roman numerals. The general form is:

=ROMAN(x, y)

where x is the value to be converted, and the optional y may be 0, 1, 2, 3, or 4. Higher values produce more concise expressions. There are three idiosyncrasies about this function:

- x must be $\leq 3,999$.
- x must be ≥ 1 . (The Romans didn’t have negative numbers, and the concept of a numeral zero, an Indian invention, was not adopted in the West until the Middle Ages.)

- x must be an integer. (Think about it: the Romans conquered the known world with no concept of decimals. There is hope for you.)

	A	B	C	D
1		This formula displays as	
2		=ROMAN(123)	CXXIII	
3		=ROMAN(-123)	#VALUE!	
4		=ROMAN(12.3)	XII	
5		=ROMAN(0)		
6		=ROMAN(4000)	#VALUE!	

DATES

If you type:

=5/28

and press , Excel will display:

0.178571

as you would expect. If you leave out the equal sign, type:

5/28

and press , Excel will return:

28-May

DATE FORMATS

To format dates and times:

Step 1: From the pull-down menu, select **Format, Cells**.

Step 2: On the Number tab, select the **Date Category**.

Step 3: Select from among the following formats:

- 5/20
- 5/20/03
- 05/20/03
- 20-May
- 20-May-3
- 20-May-03
- May-03
- May-03
- May 20, 2003
- 5/20/03 2:02 pm
- 5/20/03 14:02

and click .

CUSTOMIZING DATES

To customize a date format:

Step 1: From the pull-down menu, select **Format, Cells**.

Step 2: On the Number tab, select the **Custom Category**.

- The formats that appear in the **Type** list are starting points for your work.

Step 3: Type a time/date option in the text box, using the options in the list box as a guide.

DATE CALCULATIONS

Dates in Excel are simply heavily formatted numbers, representing the number of days since January 1, 1900.

For example, if you enter 1 in cell A1, and then format it as a date, it will appear as Jan. 1, 1900.

If you enter 10/22/97 into a number-formatted cell, you'd get 35725. That's the number of days between 1/1/1900 and 10/22/97. To check this, set a cell to number format and enter 1/1/1900. You should get 1. To check it further, enter 12/31/1900. Since 1900 was a leap year, you'll get 366.

SUBTRACTING DATES

If you'd like to know how many days left until St. Patrick's day, 2010, run Excel and type:

= "3/17/10" - "5/20/03"

Excel will return the number of days between the two dates. How many days until Christmas in the year 2010?

	A	B	C
1		Christmas, 2010	12/25/2010
2		Today	5/20/03
3		Days until Christmas 2010	=C1-C2
4			

ADDING DATES

When you buy something it is very important to observe the terms of payment. There is some debate about how this should be done. The people in Finance typically argue that you should pay on the very last day, arguing that you can make interest in that money in the interim. Managers argue that you should pay promptly to build trust and reliability in your vendor relationships. In either case, it *must* be paid by a certain deadline, which we can easily calculate.

Let's say that you were to pay in 60 days. Today is May 20, 2003. When is it due?

	A	B	C
1		Today:	5/20/03
2		Grace period (in days):	60
3		Due date	=C1+C2
4			

DATE FUNCTIONS

To place the current time and date in a spreadsheet, use

=NOW ()


The NOW() function will place a serial number in the cell, and then format it as:

5/20/03 11:23

If you click the comma format icon, you will see a number. The number to the left of the decimal point represents the number of days since 1/1/1900. The decimal portion represents the current time. Midnight is .0 and noon is .5.

You can format this function to report just the date, just the time, or both, in any format:

Step 1: Open the Cell format dialog; either:

- press **Ctrl 1**; or,
-  from the pull-down menu, select **Format, Cells**.

Step 2: On the Number tab, select the Time Category, as shown in Figure 180.

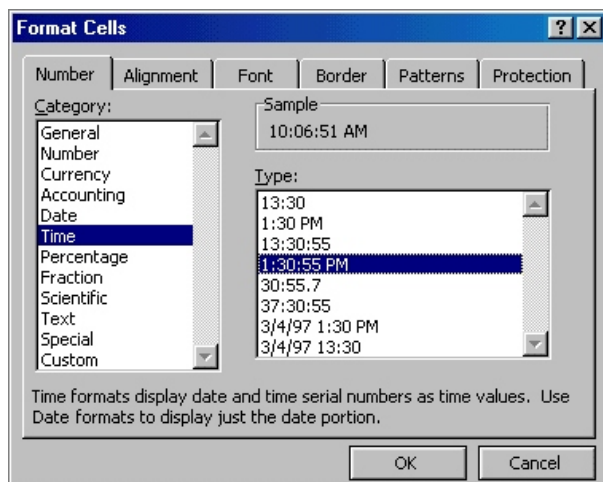


Figure 180

Step 3: Under **Type**, select the desired format.

- Note that the actual cell's contents will appear in the Sample frame.

Step 4: Click **OK** to save your changes and close the dialog.

TODAY()

The TODAY() function works just like NOW(), except that it returns only the whole number portion, left of the decimal point.

DATE & TIME SHORTCUTS

To enter today's date in a hurry, press **Ctrl ;** and press **←Enter**.


To enter today's time, press **Ctrl Shift :** and press **←Enter**.

TIME

As we mentioned earlier, Excel stores time as a serial number. The whole number represents the number of days since 1/1/1900 and the decimal part represents the fraction of the day. To illustrate this:

Step 1: In cell A1, enter 1.75 and press **←Enter**.

Step 2: Open the Cell format dialog; either:

- press **Ctrl 1**; or,
-  from the pull-down menu, select **Format, Cells**.

Step 3: On the Number tab, select Time.

Step 4: In the Type list, select 3/14/98 1:30 PM.

Step 5: Click **OK**.

The result will be 1/1/00 6:00 PM, which reflects the fact that 6:00 PM is $\frac{3}{4}$ of a 24-hour day. Noon would be represented by .5, and 11:59 PM is about .9999.

If you type a number that contains a colon, Excel assumes you were entering a time, and formats it accordingly. For example, if you type:

1:23

and press **←Enter**, Excel will display 1:23 AM. If you click the **,**, Excel will display 0.06.

PARSING TIME

NOTES

Excel stores time as a serial number and expresses that number as a recognizable time format. We can parse time into its components with six similar functions:

- =SECOND(*x*) returns the seconds;
- =MINUTE(*x*) returns the minutes;
- =HOUR(*x*) returns the hours;
- =DAY(*x*) returns the date;
- =MONTH(*x*) returns the month; and,
- =YEAR(*x*) returns the year.

To illustrate these functions, consider this worksheet:

	A	B	C
1	5/13/2003 6:34:27		27
2			34
3			6
4			13
5			5
6			2003

=SECOND(A1)
 =MINUTE(A1)
 =HOUR(A1)
 =DAY(A1)
 =MONTH(A1)
 =YEAR(A1)

We can use this knowledge to convert units. For example, you might want to convert elapsed time into minutes:

	A	B	C	D
1	Elapsed Time	In Minutes		
2	2:37	157		
3				
4				

=HOUR(A2)*60+MINUTE(A2)

Y2K

If you enter this date:

1/1/10

do you mean January 1, 1910, or January 1, 2010? Microsoft® Office considers January 1, 1930 the break point. When the year portion of a date falls between 00 and 29, Office assumes you mean the years 2000 through 2029. If you enter the year as 30 through 99, Office assumes you mean the years 1930 through 1999.

To obtain a year between 1900 through 1929, or 2030 through 2099, or you forget the break point, simply type all four digits of the year.