MICROSOFT EXCEL

Understanding Number Formats

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What are number formats?

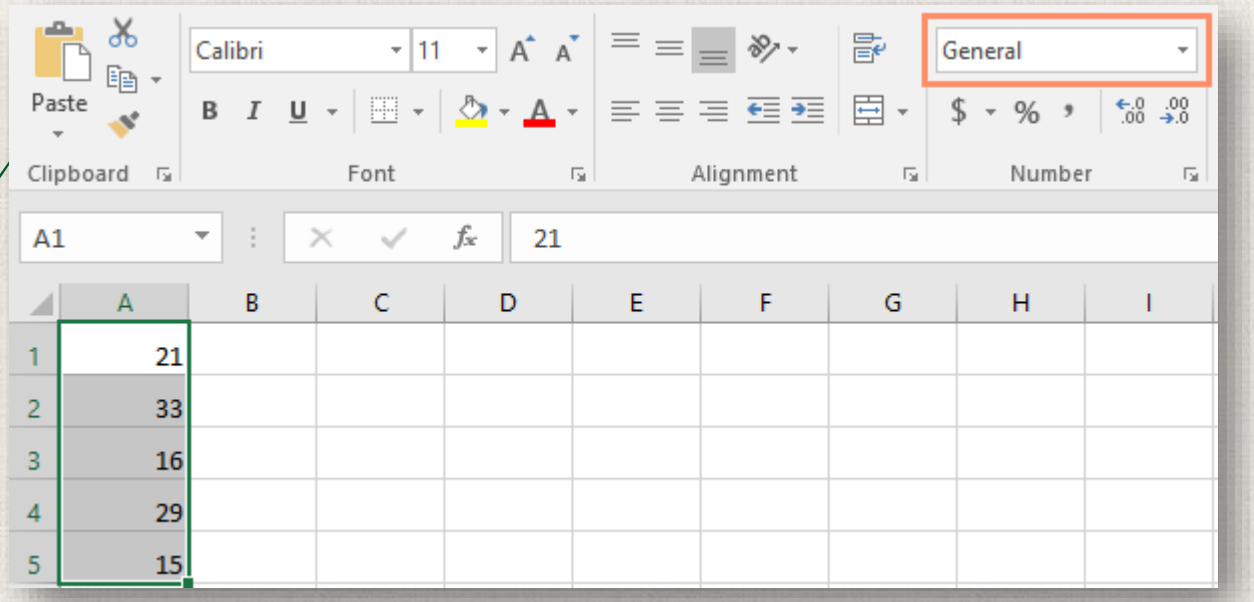
- Whenever you're working with a spreadsheet, it's a good idea to use appropriate **number formats** for your data. Number formats tell your spreadsheet exactly what type of data you're using, like percentages (%), currency ($), times, dates, and so on.

Why we use number formats?

- Number formats don't just make your spreadsheet easier to read—they also make it easier to use. When you apply a number format, you're telling your spreadsheet exactly **what types of values** are stored in a cell. For example, the **date** format tells the spreadsheet that you're entering **specific calendar dates**. This allows the spreadsheet to better understand your data, which can help ensure that your data remains consistent and that your formulas are calculated correctly.
  - If you don't need to use a specific number format, the spreadsheet will usually apply the **general** number format by default. However, the general format may apply some small formatting changes to your data.

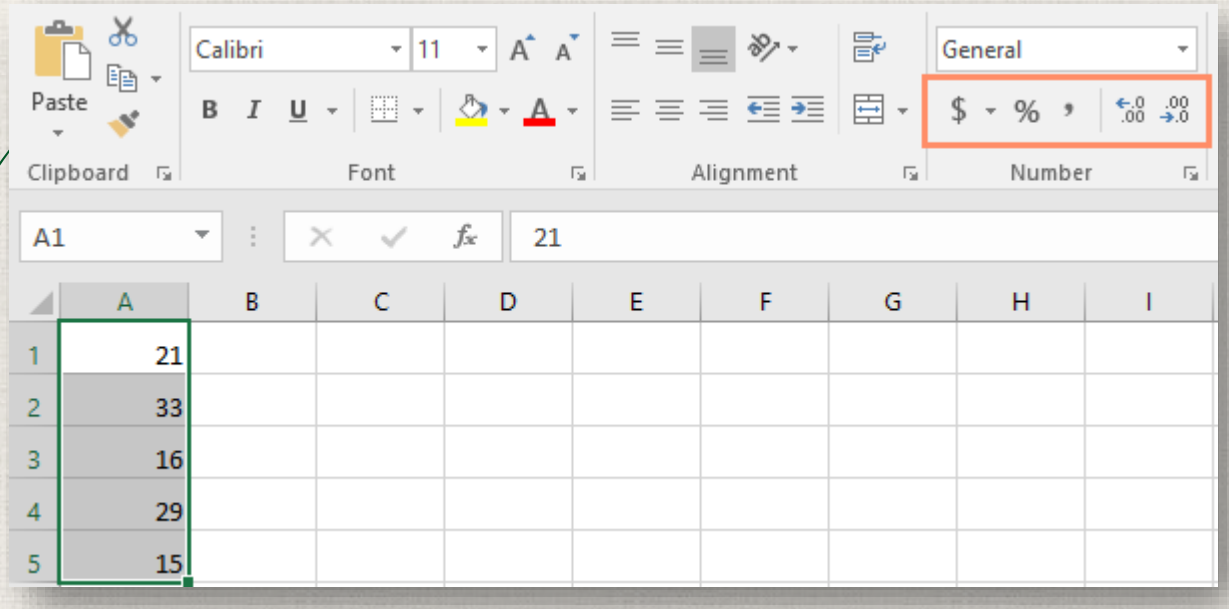
Applying number formats

- Go to the **Home** tab, click the **Number Format** drop-down menu in the **Number** group, and select the desired format.



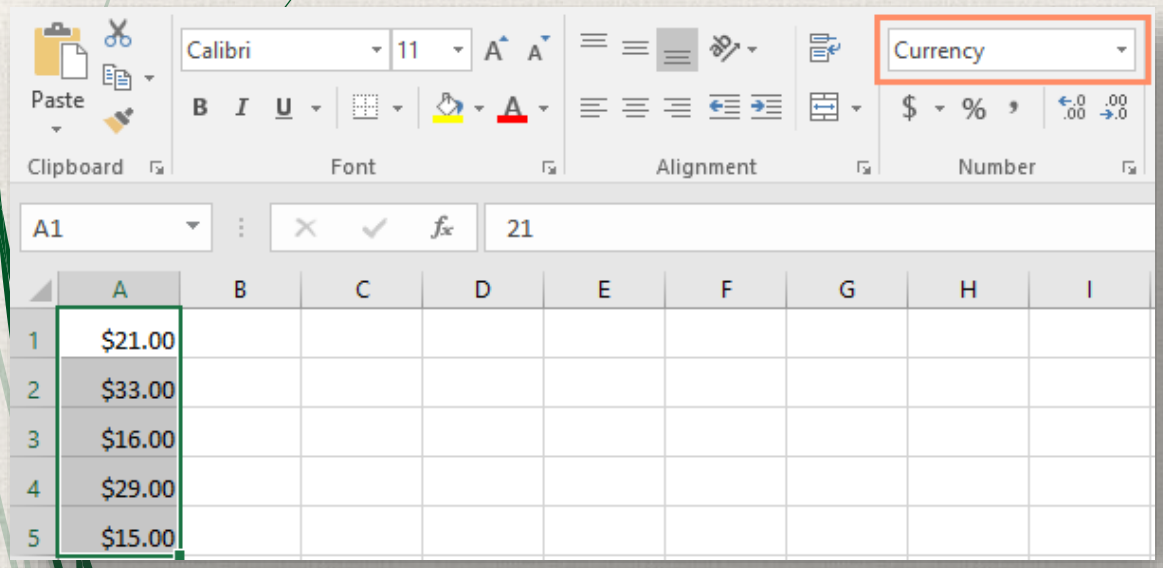
Applying number formats

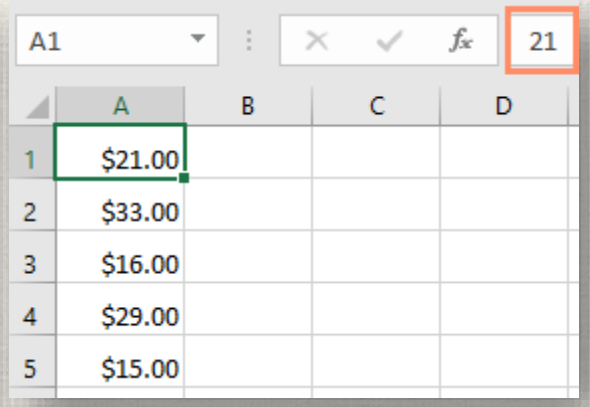
- You can also click one of the quick number-formatting commands below the drop-down menu.



Applying number formats

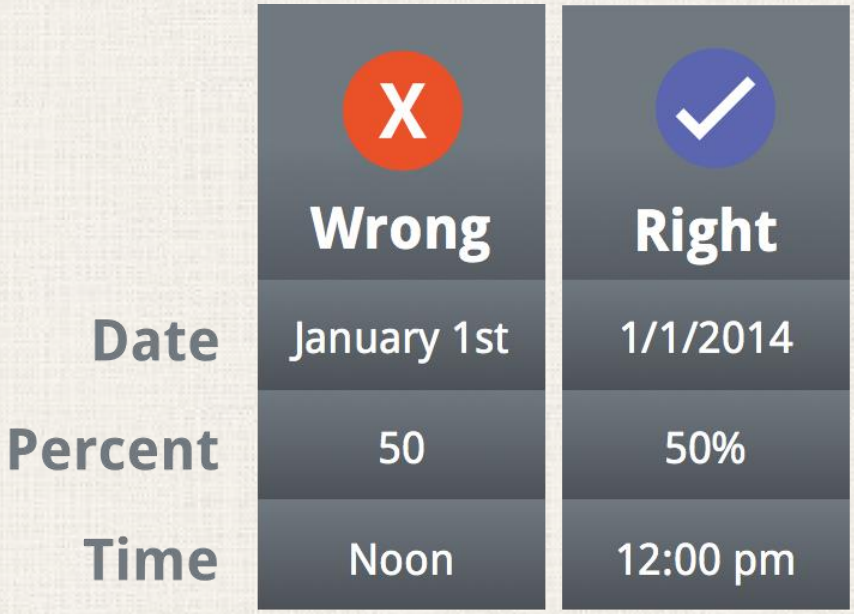
- In this example, we've applied the **Currency** number format, which adds currency symbols ($) and displays two decimal places for any numerical values.
- If you select any cells with number formatting, you can see the **actual value** of the cell in the formula bar. The spreadsheet will use this value for formulas and other calculations.





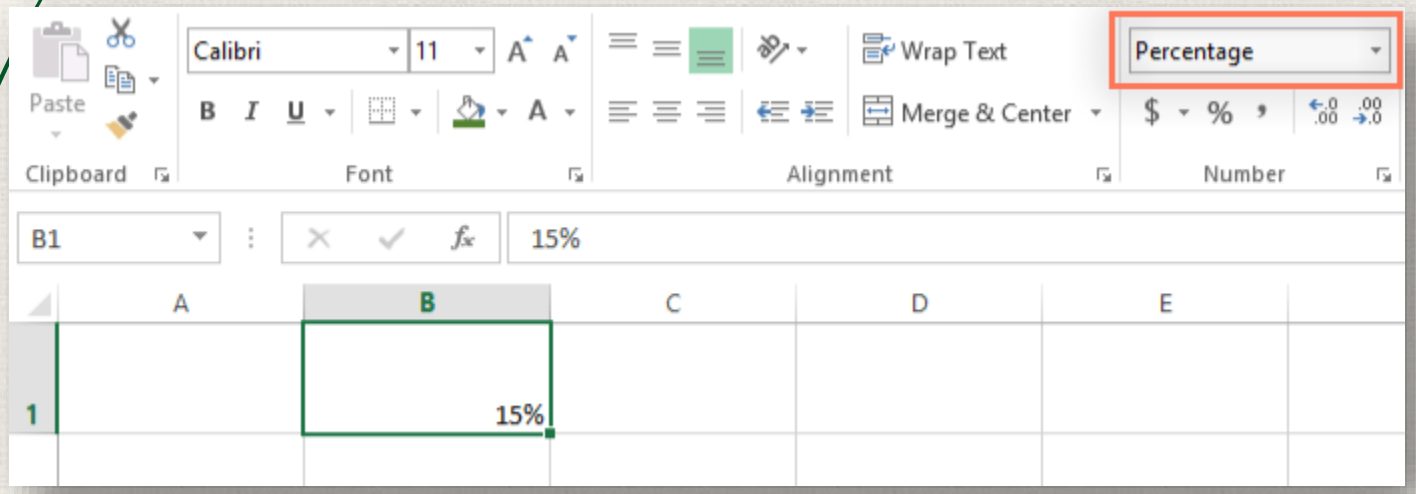
Using number formats correctly

- There's more to number formatting than selecting cells and applying a format. Spreadsheets can actually apply a lot of number formatting **automatically** based on the way you enter data. This means you'll need to enter data in a way the program can understand, and then ensure that those cells are using the proper number format. For example, the image below shows how to use number formats correctly for dates, percentages, and times:



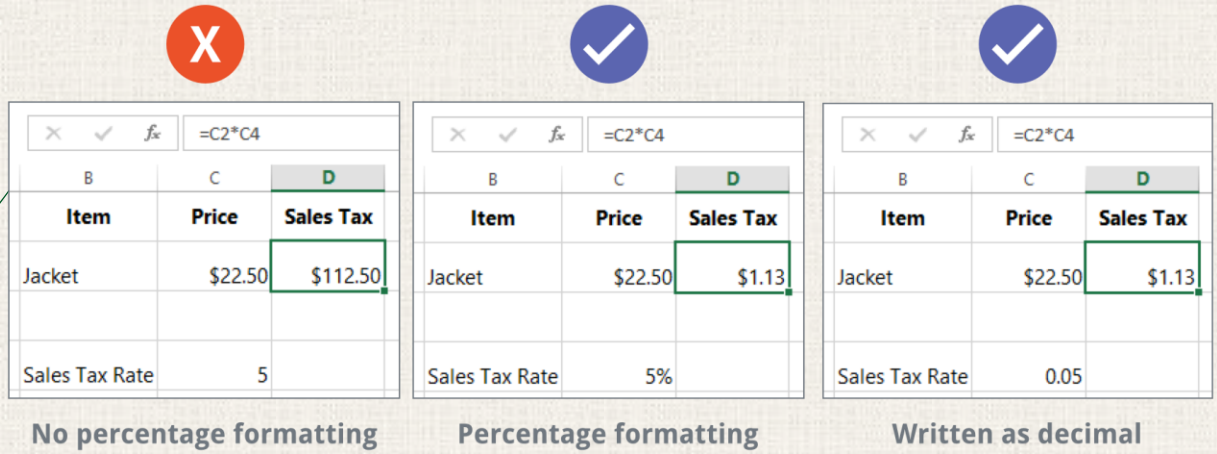
Percentage formats

- One of the most helpful number formats is the **percentage** (%) format. It displays values as percentages, such as **20%** or **55%**. This is especially helpful when calculating things like the cost of sales tax or a tip. When you type a percent sign (%) after a number, the percentage number format will be be applied to that cell **automatically**. *(As you may remember from math class, a percentage can also be written as a **decimal**. So 15% is the same thing as 0.15, 7.5% is 0.075, 20% is 0.20, 55% is 0.55, and so on.)*



Percentage formats

- There are many times when percentage formatting will be useful. For example, in the images below, notice how the **sales tax rate** is formatted differently for each spreadsheet (5, 5%, and 0.05):



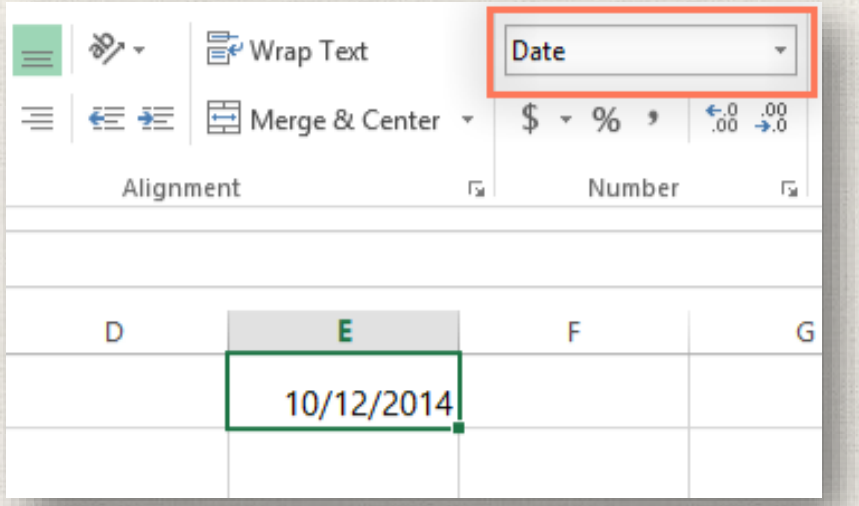
- As you can see, the calculation in the spreadsheet on the left didn't work correctly. Without the percentage number format, our spreadsheet thinks we want to multiply $22.50 by 5, not 5%. And while the spreadsheet on the right still works without percentage formatting, the spreadsheet in the middle is easier to read.

Date formats

- Whenever you're working with **dates**, you'll want to use a date format to tell the spreadsheet that you're referring to **specific calendar dates**, such as July 15, 2014. Date formats also allow you to work with a powerful set of date functions that use time and date information to calculate an answer.

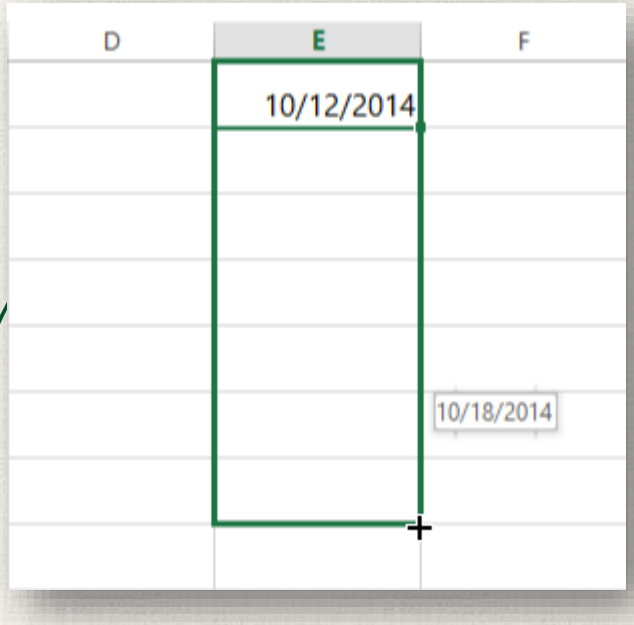
Date formats

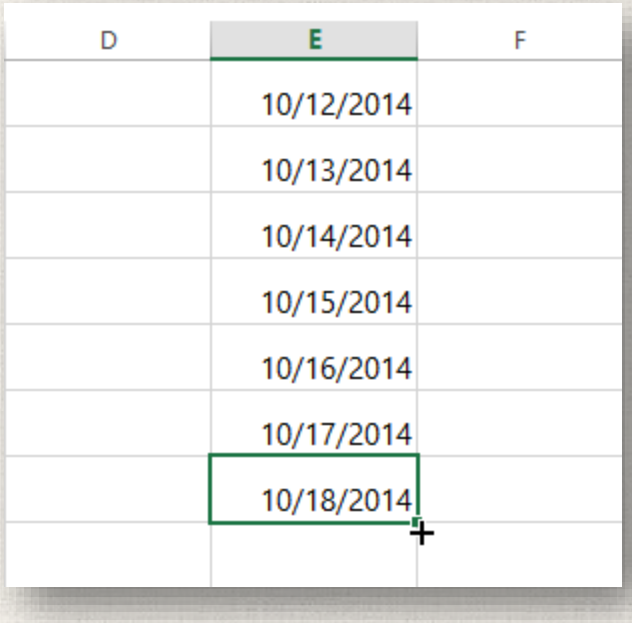
- Spreadsheets don't understand information the same way a person would. For instance, if you type **October** into a cell, the spreadsheet won't know you're entering a date so it will treat it like any other text. Instead, when you enter a date, you'll need to use a **specific format** your spreadsheet understands, such as **month/day/year** (or **day/month/year** depending on which country you're in). In the example below, we'll type **10/12/2014** for October 12, 2014. Our spreadsheet will then automatically apply the date number format for the cell.



Date formats

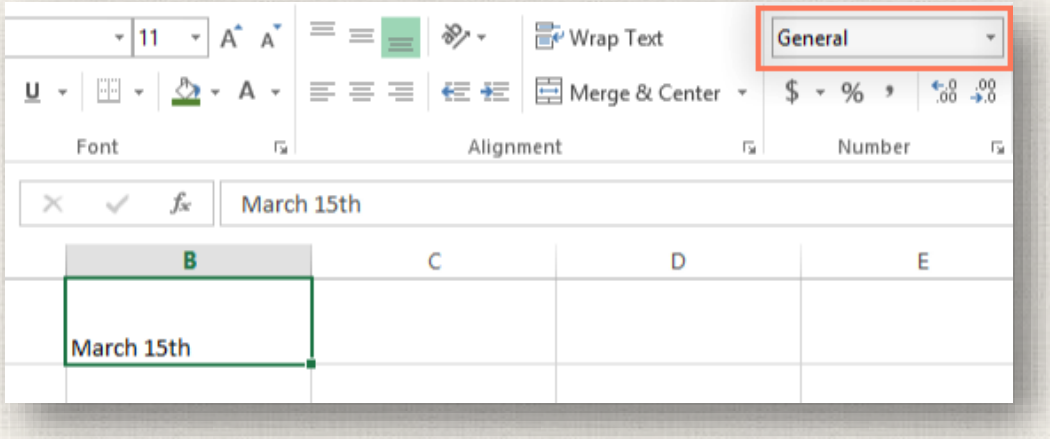
- Now that we have our date correctly formatted, we can do many different things with this data. For example, we could use the fill handle to continue the dates through the column, so a different day appears in each cell:





Date formats

- If the date formatting isn't applied automatically, it means the spreadsheet did not understand the data you entered. In the example below, we've typed **March 15th**. The spreadsheet did not understand that we were referring to a date, so this cell is still using the **general** number format.



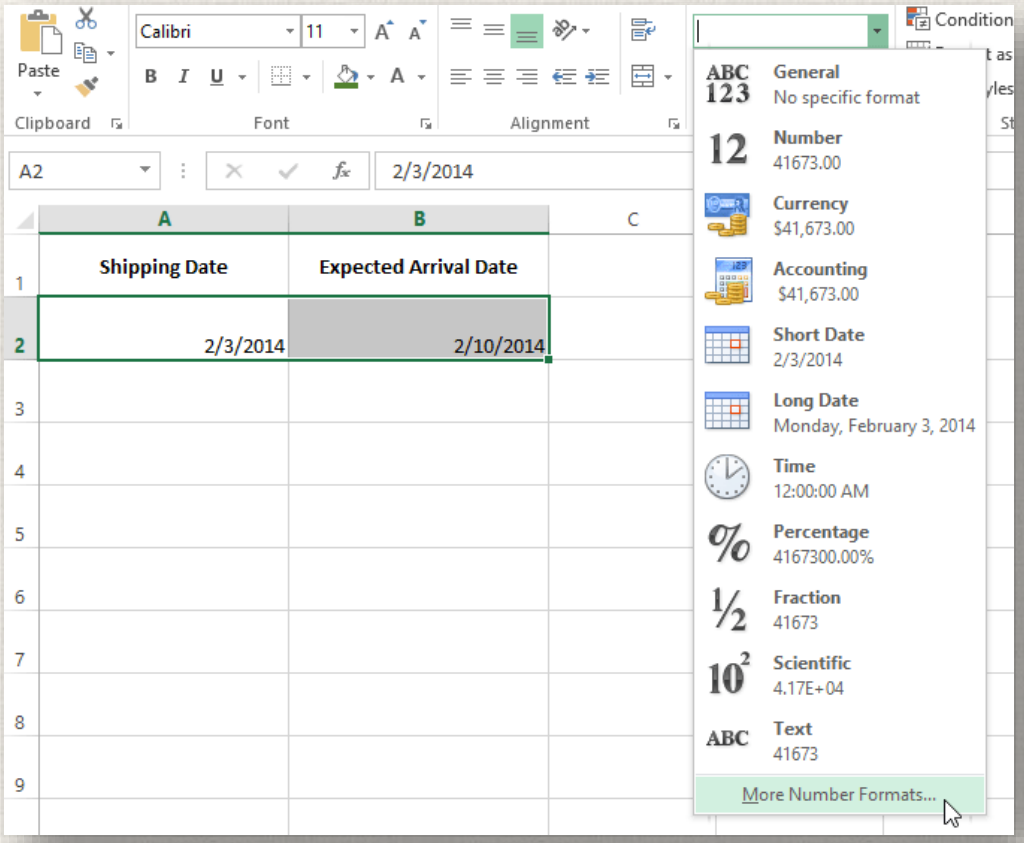
- On the other hand, if we type **March 15** (without the "th"), the spreadsheet **will** recognize it as a date. Because it doesn't include a year, the spreadsheet will automatically add the current year so the date will have all of the necessary information. We could also type the date several other ways, such as **3/15**, **3/15/2014**, or **March 15 2014**, and the spreadsheet would still recognize it as a date.

Date formats

- Try entering the dates below into a spreadsheet and see if the date format is applied automatically:
  - 10/12
  - October
  - October 12
  - October 2016
  - 10/12/2016
  - October 12, 2016
  - 2016
  - October 12th

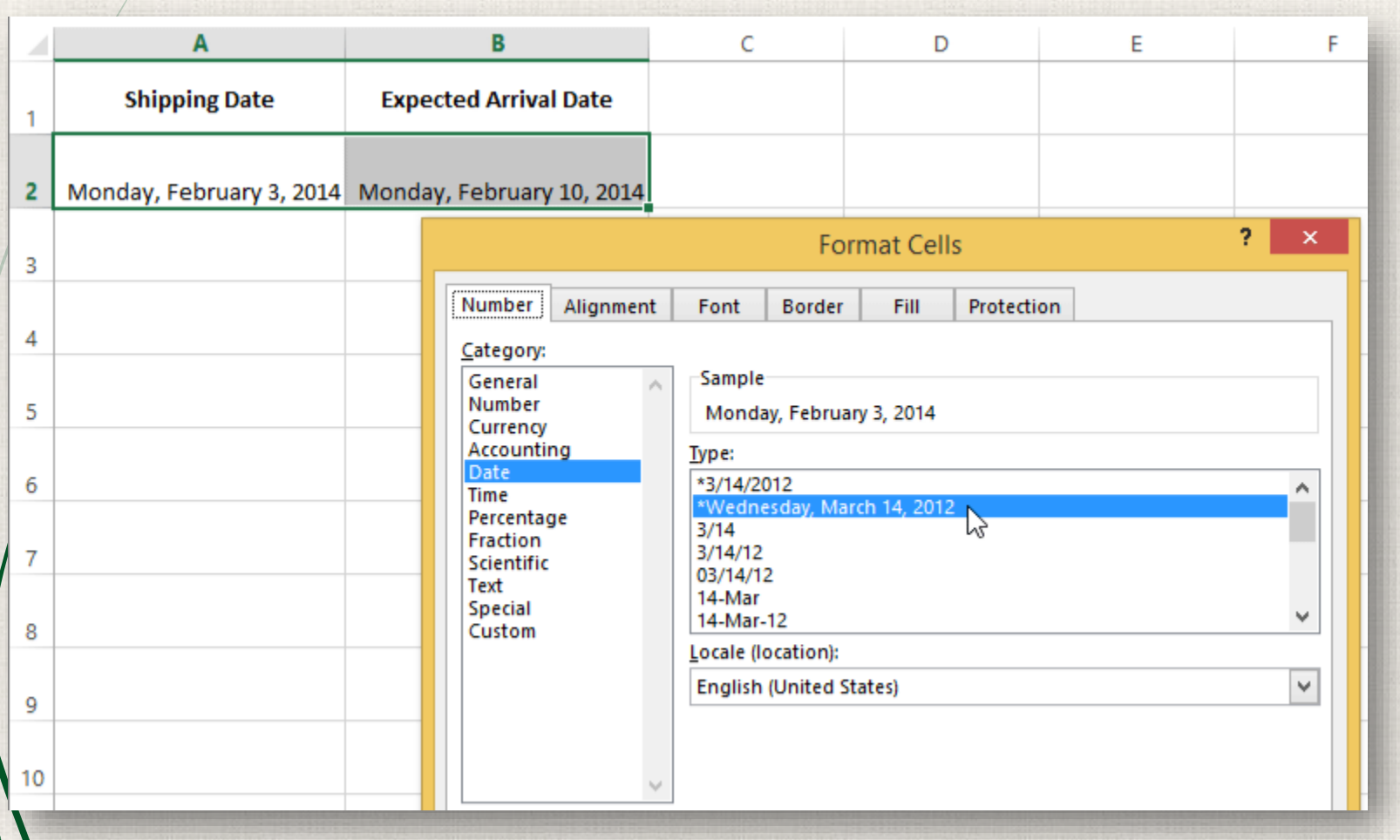
Other Date formats

- To access other date formatting options, select the **Number Format** drop-down menu and choose **More Number Formats**. These are options to display the date differently, like including the day of the week or omitting the year.



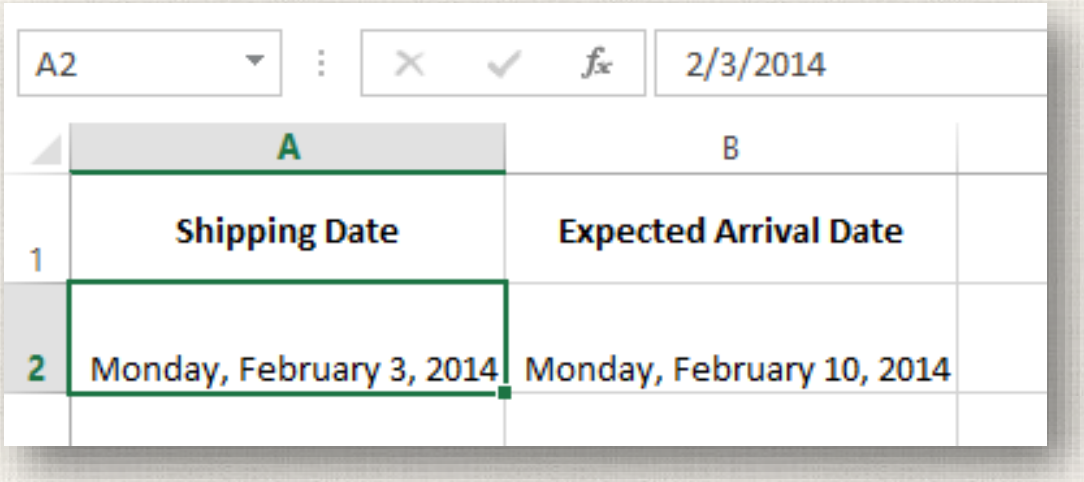
Other Date formats

- The **Format Cells** dialog box will appear. From here, you can choose the desired date formatting option.



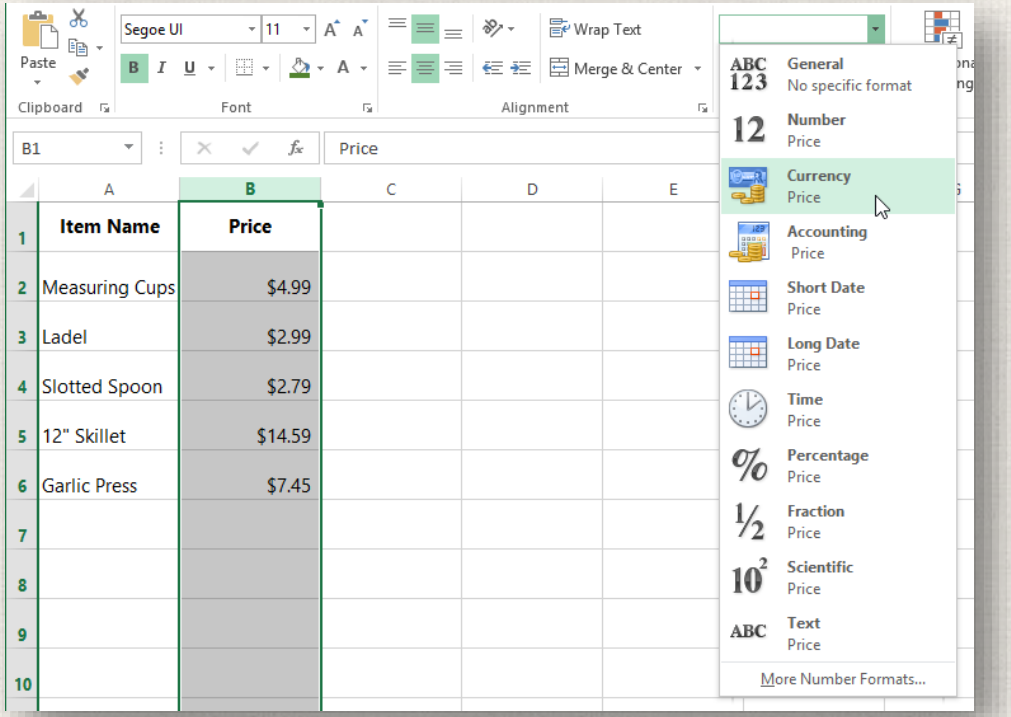
Other Date formats

- As you can see in the formula bar, a custom date format doesn't change the actual date in our cell—it just changes the way it's displayed.



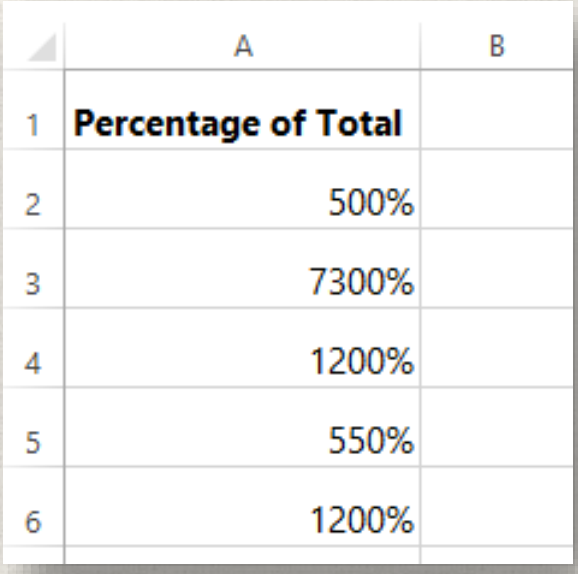
Number formatting tips

- **Apply number formatting to an entire column**: If you're planning to use one column for a certain type of data, like dates or percentages, you may find it easiest to select the entire column by clicking the column letter and applying the desired number formatting. This way, any data you add to this column in the future will already have the correct number format. Note that the header row usually won't be affected by number formatting.

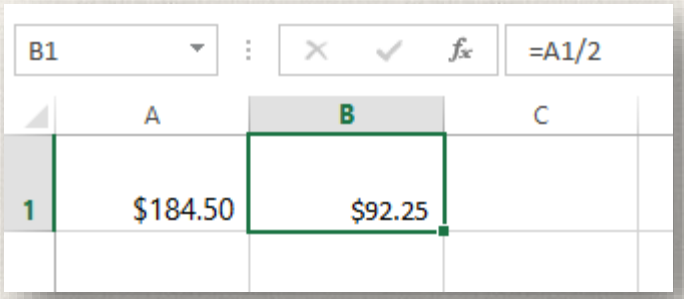


Number formatting tips

- **Double-check your values after applying number formatting**: If you apply number formatting to existing data, you may have unexpected results. For example, applying **percentage** (%) formatting to a cell with a value of 5 will give you 500%, not 5%. In this case, you'd need to retype the values correctly in each cell.
- If you reference a cell with number formatting in a formula, the spreadsheet may automatically apply the same number formatting to the new cell. For example, if you use a value with currency formatting in a formula, the calculated value will also use the currency number format.



	A	B
1	**Percentage of Total**	
2	500%	
3	7300%	
4	1200%	
5	550%	
6	1200%	

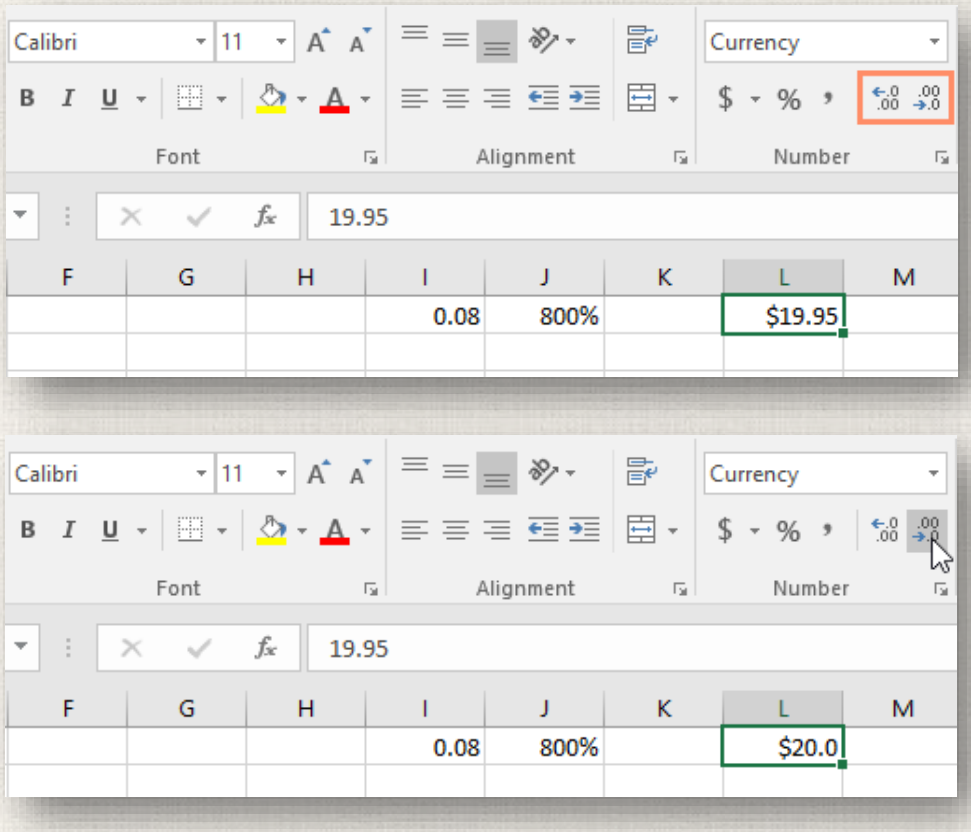


B1 =A1/2

	A	B	C
1	$184.50	$92.25	

Increase and decrease decimal

- The **Increase Decimal** and **Decrease Decimal** commands allow you to control how many decimal places are displayed in a cell. These commands don't change the value of the cell; instead, they display the value to a set number of decimal places.
- Decreasing the decimal will display the value rounded to that decimal place, but the actual value in the cell will still be displayed in the formula bar.



The **Increase/Decrease Decimal** commands don't work with some number formats, like **Date** and **Fraction**.

Using fractions

- If you've ever worked with Excel, chances are you've used it to store and calculate different types of values, such as whole numbers, decimals, and percentages. However, there may also be times when you want to work with **fractions** in Excel, such as **1/2** (one-half) or **2/3** (two-thirds), rather than use the decimal value.

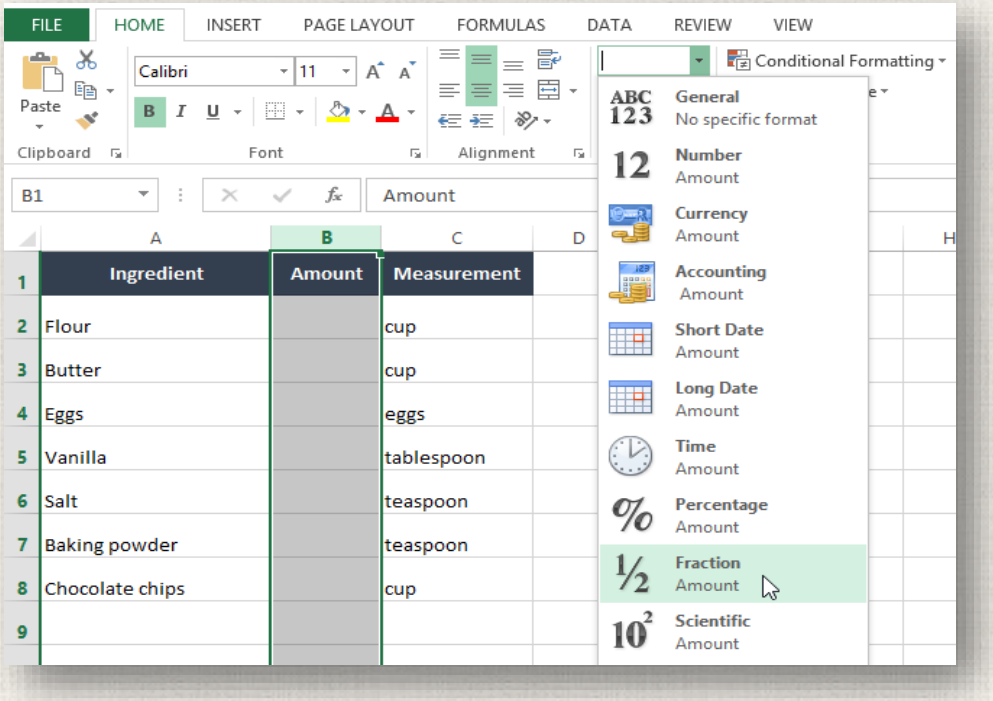
Using fractions

- For example, let's say you have a recipe for chocolate chip cookies and you'd like to enter it into Excel. The recipe calls for things like **1/4 teaspoon of salt**, so you'll want to enter these values as fractions in column B.

	A	B	C
1	**Ingredient**	**Amount**	**Measurement**
2	Salt		teaspoon
3	Flour		cup
4	Butter		cup
5	Eggs		eggs
6	Vanilla		tablespoon
7	Baking powder		teaspoon
8	Chocolate chips		cup
9			

Using fractions

- Before we enter the ingredients, we'll need to make a small change to the spreadsheet. You can apply a special kind of formatting—known as **number formatting**—to any cell. Excel has a **fraction number format** that will allow us to enter our values as fractions, so we'll select column B and then use the **Number Format** command on the **Home** tab apply the fraction number format.



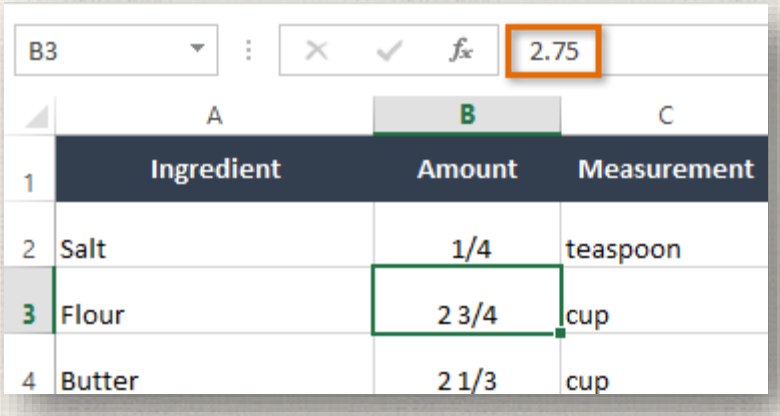
Using fractions

- Now that we've applied number formatting, we're ready to enter the fractions in column B.

	A	B	C
1	Ingredient	Amount	Measurement
2	Salt	1/4	teaspoon
3	Flour	2 3/4	cup
4	Butter	2 1/3	cup
5	Eggs	2	eggs
6	Vanilla	1/4	tablespoon
7	Baking powder	5/8	teaspoon
8	Chocolate chips	3/5	cup
9			

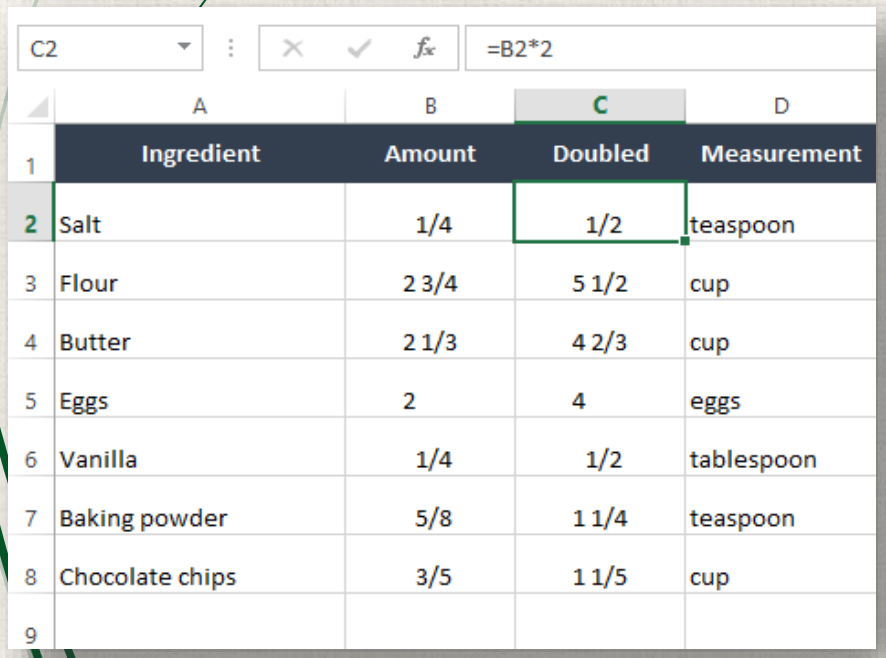
Using fractions

- Notice that it can also display **mixed fractions**, such as **2 3/4 (two and three-fourths)**. If you select any these cells, you'll see that Excel is actually treating the value like a decimal number in the formula bar—the fraction number format just changes the way the value is displayed in the spreadsheet. For example, 2 3/4 is the same as 2.75.



Using fractions

- You can even use fractions in formulas and functions. For example, let's say this recipe yields about two dozen cookies. If you wanted to make four dozen cookies, you could use Excel to **double the recipe**. If we wanted to double the amount of salt in our recipe, we would multiply the value in cell B2 by 2; the formula for this would be **=B2*2**. We can then use the fill handle to add the formula to the other cells in column C.



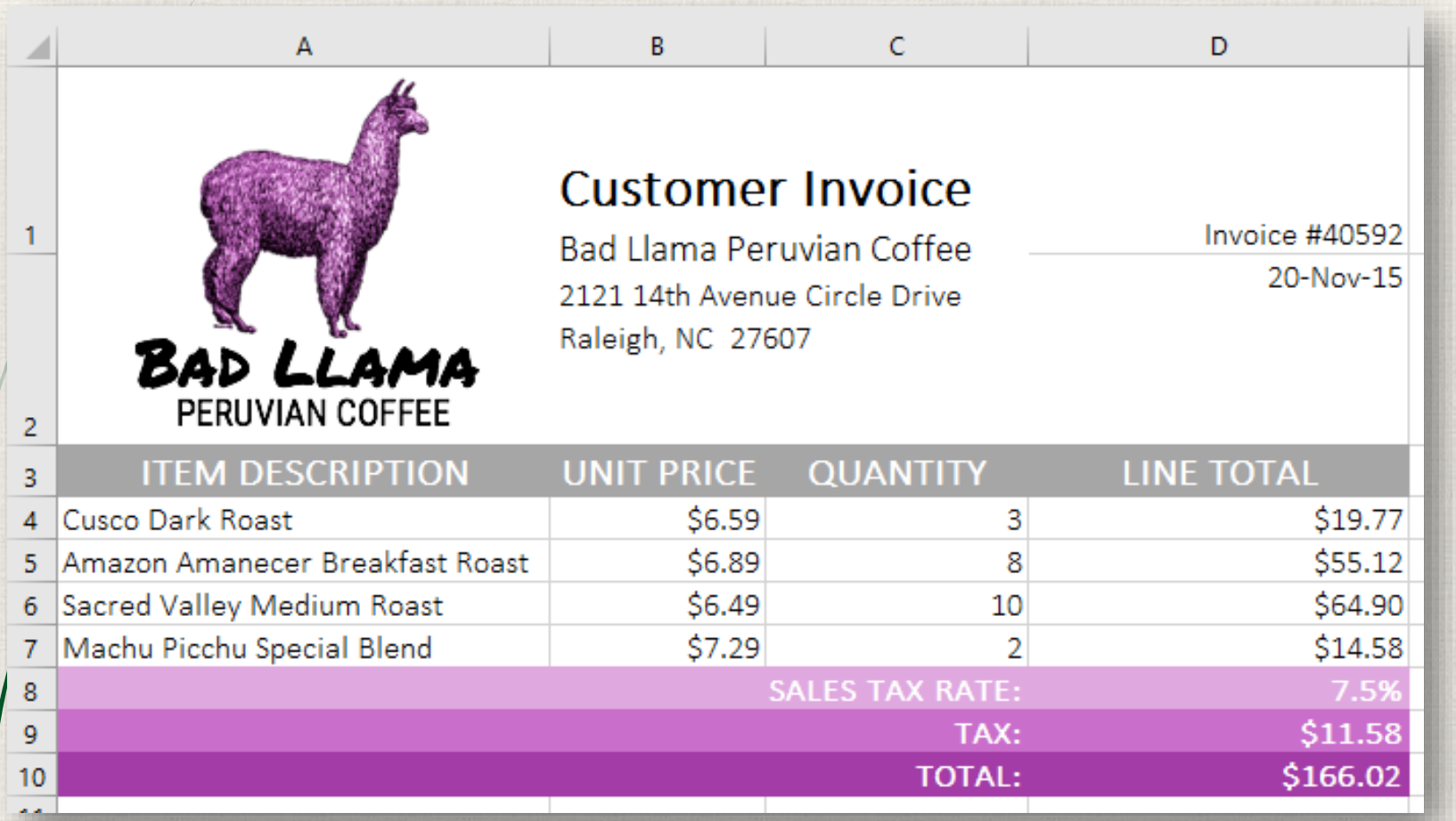
	A	B	C	D
1	Ingredient	Amount	Doubled	Measurement
2	Salt	1/4	1/2	teaspoon
3	Flour	2 3/4	5 1/2	cup
4	Butter	2 1/3	4 2/3	cup
5	Eggs	2	4	eggs
6	Vanilla	1/4	1/2	tablespoon
7	Baking powder	5/8	1 1/4	teaspoon
8	Chocolate chips	3/5	1 1/5	cup
9				

Here are the new fractions for our doubled recipe! As you can see, this number format makes it easy to work with fractions in Excel, especially if you don't want to convert your fractions into decimals.

Practice

- Open our **practice workbook**.
- In cell **D2**, type today's date and press **Enter**.
- Click cell **D2** and verify that it is using a **Date** number format. Try changing it to a different date format (for example, **Long Date**).
- In cell **D2**, use the **Format Cells** dialog box to choose the **14-Mar-12** date format.
- Change the sales tax rate in cell **D8** to the **Percentage** format.
- Apply the **Currency** format to all of **column B**.
- In cell **D8**, use the **Increase Decimal** or **Decrease Decimal** command to change the number of decimal places to **one**. It should now display **7.5%**.

Solution



	A	B	C	D
1	BAD LLAMA PERUVIAN COFFEE	**Customer Invoice**		Invoice #40592
2		Bad Llama Peruvian Coffee 2121 14th Avenue Circle Drive Raleigh, NC 27607		20-Nov-15
3	ITEM DESCRIPTION	UNIT PRICE	QUANTITY	LINE TOTAL
4	Cusco Dark Roast	$6.59	3	$19.77
5	Amazon Amanecer Breakfast Roast	$6.89	8	$55.12
6	Sacred Valley Medium Roast	$6.49	10	$64.90
7	Machu Picchu Special Blend	$7.29	2	$14.58
8			SALES TAX RATE:	7.5%
9			TAX:	$11.58
10			TOTAL:	$166.02

THE END