# Chapter 1: Spreadsheet Basics

## Instructor’s Manual Problem Set

Solutions can be found in the accompanying Excel files. Note that if you wish to see all of the formulas at once, you may use the CTRL+` (Control plus grave accent) shortcut key to toggle them on or off.

1. The following table contains closing monthly stock prices for Oracle Corporation (ORCL), Microsoft Corporation (MSFT), and NVidia (NVDA) for the first half of 2017.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Ticker | 6/30/2017 | 5/31/2017 | 4/30/2017 | 3/31/2017 | 2/28/2017 | 1/31/2017 |
| ORCL | 50.14 | 45.39 | 44.96 | 44.61 | 42.59 | 40.11 |
| MSFT | 68.93 | 69.84 | 68.46 | 65.86 | 63.98 | 64.65 |
| NVDA | 144.56 | 144.35 | 104.3 | 108.93 | 101.48 | 109.18 |

1. Enter the data, as shown, into a worksheet and format the table as shown.
2. Create a formula to calculate the monthly rate of return during the first semester of 2017 and for each company. Format the results as percentages with two decimal places.
3. Calculate the total return for the entire holding period, the compound average monthly rate of return, the average monthly rate of return using the AVERAGE function, and the average monthly rate of return using the GEOMEAN function.
4. Create a line chart showing the stock prices from January to June 2017 for these companies. Make sure to title the chart and label the axes. Also present the data from January to June and use Times New Roman for the title, labels, and numbers. Select a different dash type for each line representing each company.
5. The following table contains financial information for Intel Corp.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Intel Corporation** | | | | | |
| **Income Statement ($ millions)** | | | | | |
|  | **Dec-16** | **Dec-15** | **Dec-14** | **Dec-13** | **Dec-12** |
| Sales | 59387 | 55355 | 55870 | 52708 | 53341 |
| Cost of Goods Sold (COGS) incl. D&A | 23425 | 20651 | 20522 | 21418 | 20507 |
| **Gross Income** | **?** | **?** | **?** | **?** | **?** |
| SG&A Expense | 21149 | 19835 | 19693 | 18729 | 18117 |
| **EBIT (Operating Income)** | **14813** | **14869** | **15655** | **12561** | **14717** |
| Nonoperating Income - Net | 533 | -51 | 224 | 595 | 463 |
| Interest Expense | 733 | 337 | 192 | 244 | 90 |
| Unusual Expense - Net | 1677 | 269 | -114 | 301 | 217 |
| **Pretax Income** | **?** | **?** | **?** | **?** | **?** |
| Income Taxes | ? | ? | ? | ? | ? |
| **Net Income** | **10316** | **11420** | **11704** | **9620** | **11005** |

1. Enter the data, as shown, into a worksheet and format the numbers with a comma separating the thousands position and no decimal places.
2. Create the required formulas to calculate the missing variables, and format the results to match the other numbers.
3. Calculate the average tax rate, the gross profit margin, and the net profit margin for 2012-2016. Format the results as percentages with two decimal places.
4. Create a line chart showing the gross profit margin and the net profit margin for 2012-2016. Make sure to title the chart and label the axes.
5. Create a copy of the income statement and replace each item with a formula that shows it as a percentage of sales. You should only use one formula that can be copied and pasted to the rest of the income statement.
6. The following table contains financial information for Intel Corp.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Intel Corporation** | | | | | |
| **Balance Sheet ($ millions)** | | | | | |
|  | Dec-16 | Dec-15 | Dec-14 | Dec-13 | Dec-12 |
| **Assets** |  |  |  |  |  |
| Cash & Short-Term Investments | 17099 | 25313 | 14054 | 20087 | 18162 |
| Short-Term Receivables | 5074 | 5530 | 4427 | 3647 | 4699 |
| Inventories | 5553 | 5167 | 4273 | 4172 | 4734 |
| Other Current Assets | 7782 | 4346 | 4976 | 4178 | 3763 |
| **Total Current Assets** | **?** | **?** | **?** | **?** | **?** |
| Net Fixed Assets | 77819 | 62709 | 64226 | 60274 | 52993 |
| **Total Assets** | **?** | **?** | **?** | **?** | **?** |
| **Liabilities & Shareholders' Equity** |  |  |  |  |  |
| ST Debt & Curr. Portion LT Debt | 4634 | 2634 | 1604 | 281 | 312 |
| Accounts Payable | 2475 | 2063 | 2748 | 2969 | 3023 |
| Income Tax Payable | 329 | 272 | 443 | 542 | 711 |
| Other Current Liabilities | 12864 | 10698 | 11224 | 9776 | 8852 |
| **Total Current Liabilities** | **?** | **?** | **?** | **?** | **?** |
| Long-Term Debt | 20649 | 20036 | 12107 | 13165 | 13136 |
| Deferred Tax Liabilities | 1730 | 2539 | 3775 | 4397 | 3412 |
| Other Liabilities | 3538 | 2841 | 3278 | 2972 | 3702 |
| **Total Liabilities** | **?** | **?** | **?** | **?** | **?** |
| Preferred Stock (Carrying Value) | 882 | 897 | 912 | 0 | 0 |
| Common Equity | 66226 | 61085 | 55865 | 58256 | 51203 |
| **Total Shareholders' Equity** | **67108** | **61982** | **56777** | **58256** | **51203** |
| **Total Liabilities & Shareholders' Equity** | **?** | **?** | **?** | **?** | **?** |

1. Enter the data into a worksheet and format the table as shown. Format the cells as accounting numbers with no decimal places.
2. Create a formula to calculate the missing values in the table denoted by a question mark using the SUM function, and format the results to match the other numbers.
3. Use a formula to calculate total debt as a percentage of total assets, and a similar formula showing total shareholder’s equity as a percentage of total assets as of the end of 2016.
4. Create a pie chart showing the proportion of total debt and total equity that Intel used to finance its assets at the end of 2016. Make sure to title the chart and add data labels.
5. Create a chart showing how debt and equity as a percentage of total assets have changed over time. Be sure to title the chart, label the axes, and reverse the x-axis so that time flows from left to right.
6. Copy the balance sheet and express each item as a percentage of total assets.
7. Create a chart showing current assets, fixed assets, current liabilities, and long term liabilities for 2012–2016. Be sure to add a title and axis labels, and reverse the x-axis so that time flows from left to right.
8. Using the data from the previous problem:
9. Calculate the growth rate of each balance sheet item for Intel for each year from 2012 to 2016.
10. Calculate the compound annual growth rate during 2012–2016 and the average annual growth rate during the same period using the **AVERAGE** function of each item using the results you calculated in part a.
11. Calculate the ratio of each year’s data to the previous year for each of the above items. Also, calculate the average annual growth rate using the **GEOMEAN** and the standard deviation using the **STDEV.S** function for each item.

## Internet Exercise

1. Using MSN Money, get total revenue, net income, total assets, and total equity for Chevron (CVX) from <http://www.msn.com/en-us/money/stockdetails/financials/fi-126.1.CVX.NYS>. Plot the net profit margin, return on assets (ROA), and return on equity (ROE) for the last four years.

# Chapter 1: Multiple Choice

|  |  |
| --- | --- |
| 1. What is the result of the math operation in cell A4? |  |
| 1. -0.88 2. 7.86 3. 12.34 4. 16.43 5. 20.85 |
| *Solution: d* |  |

|  |  |
| --- | --- |
| 1. What is the result of the math operation in cell E4? |  |
| 1. 1.00 2. 0.111 3. 19.00 4. -13.00 5. -41.00 |
| *Solution: a* |  |

|  |  |
| --- | --- |
| 1. What formula in cell H7 will allow you to calculate Total Current Assets/Total Current Liabilities? |  |
| 1. =SUM(H1:H4)/H6 2. =(H1+H2+H3+H4)/H3 3. =H1+H2+H3/H4 4. =SUM(H1:H4)/4 5. =SUM(H1:H4)/H4 |
| *Solution: a* |  |

|  |  |
| --- | --- |
| 1. What is the formula on cell B12 that will allow you to calculate the total stock return from Jan 2017 to June 2017? |  |
| 1. =B11-G11/G11 2. =B11-(G11/G11) 3. =B11/G11-G11/B11 4. =B11/G11-1 5. =(B11/G11-G11)/B11 |
| *Solution: d* |  |

|  |  |
| --- | --- |
| 1. What is the formula in cell B16 that will allow you to calculate the compound annual growth rate from Jan 2017 to June 2017? |  |
| 1. =(B15/G15^1/4)-1 2. =B15/G15^1/4-1 3. =(B15/G15)^(1/5)-1 4. =(B15/(G15^1/4))-1 5. =(B15/G15)^(1/4)+1 |
| *Solution: c* |  |

|  |  |
| --- | --- |
| 1. What formula in cell B21 will allow you to calculate the average annual stock return using the GEOMEAN function from Jan 2017 to June 2017? |  |
| 1. =GEOMEAN(B19:F19) 2. =GEOMEAN(B20:F20)-1 3. =GEOMEAN(B20:F20) 4. =GEOMEAN(B19:F19)-1 5. =GEOMEAN(B20:F20)+1 |
| *Solution: b* |  |

|  |  |
| --- | --- |
| 1. What formula in cell B26 will allow you to calculate the arithmetic mean stock return from Jan 2017 to June 2017? |  |
| 1. =SUM(B25:F25)/5 2. =(B25+C25+D25+E25+F25)/5 3. =AVERAGE(B25:F25) 4. None of the above 5. a, b, and c |
| *Solution: e* |  |

|  |  |
| --- | --- |
| 1. What solution would you get in cell B31? |  |
| 1. 17.541 2. -4782.9 3. 2582.5 4. -2163.6 5. -5385.3 |
| *Solution: d* |  |

|  |  |
| --- | --- |
| 1. What solution would you get in cell B36? |  |
| 1. 3.333333 2. -1462.96 3. 123.703 4. -2453.85 5. 7606629.6 |
| *Solution: c* |  |

|  |  |
| --- | --- |
| 1. What is the result of the math operation in cell B41? |  |
| 1. 12.1560 2. 11.66667 3. 768393.53 4. 35.85792 5. 18404086.4 |
| *Solution: b* |  |

|  |
| --- |
| 1. Tiny charts that are intended to be presented as a “word” in a line of text or next to data in a table are called: |
| 1. Embedded charts 2. Column charts 3. Scatter charts 4. Sparkline charts 5. Pie charts |
| *Answer: d* |

|  |
| --- |
| 1. All of the following are rules that are common to good spreadsheet design, EXCEPT: |
| 1. Create an area specifically for the variables (inputs) in the model 2. Enter a number directly into a formula, especially when you know it will change 3. Your model should be well-organized and nicely formatted 4. If your formulas are long or use complex logic, make sure to document them 5. Always test your model thoroughly before declaring it finished. |
| *Answer: b* |

|  |
| --- |
| 1. Which of the following constitutes an absolute reference to cell B6? |
| 1. $B6 2. B$6 3. $B$6 4. #B#6 5. B6$ |
| *Answer: c* |

|  |
| --- |
| 1. The \_\_\_\_\_\_\_ must precede all formulas in Excel, otherwise it will treat the formula as text and will not calculate the result. |
| 1. hash tag 2. greater than sign 3. dollar sign 4. ampersand 5. equals sign |
| *Answer: e* |