

The Verhovek Company: A Financial Statement Introduction To The Systems Understanding Aid

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Abstract

This paper describes an original AIS project and relates several of its features to ongoing discussion of curricular issues in accounting education. The Verhovek Company is a spreadsheet-based AIS exercise that prepares students for the Arens-Ward Systems Understanding Aid. It introduces systems concepts and competencies such as documentation and structured design in the context of procedures and software that are relatively familiar to accounting students. The exercise uses several topics from Intermediate Financial Accounting to illustrate specialized spreadsheet functions and to provide students with an opportunity to build a carefully structured set of worksheets that control the flow of information from data and assumptions through calculations, adjusting entries and then into the financial statements. Upon successful completion of the project students have a financial statement template readily adaptable to the preparation of financial statements for the SUA.

Introduction

The Verhovek Company is a spreadsheet-based AIS exercise that prepares students for the Arens-Ward Systems *Understanding Aid* (SUA). It introduces systems concepts and competencies such as documentation and structured design in the context of spreadsheet software, and uses several topics from Intermediate Financial Accounting to illustrate specialized spreadsheet functions. The project and the Lab Quiz evaluation format motivate the need to build carefully structured & well-documented worksheets that accurately control the flow of information from data and assumptions through calculations, adjusting entries and then into the financial statements. The statements and accounts are modeled on those used by Waren Distributing in the SUA, so that the Verhovek project readily serves as a template for preparing SUA financial statements.

This paper is organized as follows: The next section describes the project and a third section discusses desired learning outcomes and other factors that motivated the design and content of the project. A fourth section describes classroom experiences with Verhovek. The project instructions appear in Appendix A.¹

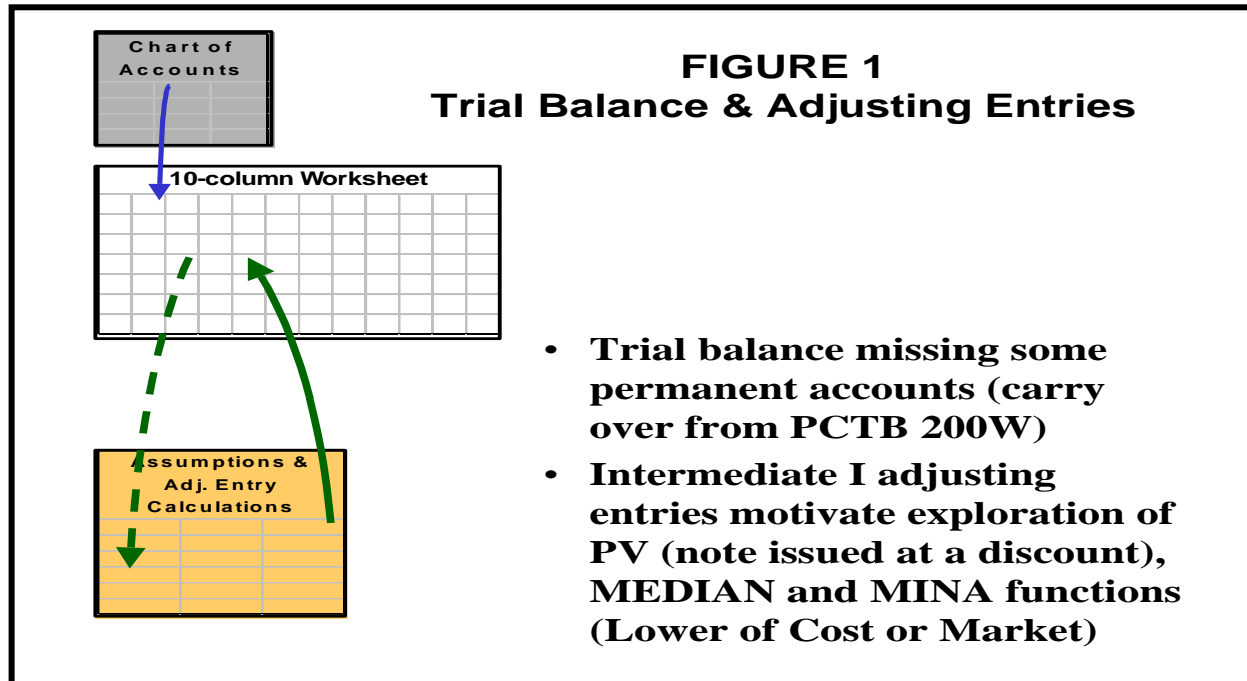
Project Description

Students are introduced to the project with a set of instructions and an Excel worksheet that contains four pages – a partially completed 10-column worksheet, a chart of accounts, a page of teaching material on documentation and structured design, and a standardized output page for diagnostic check figures. The instructions (see Appendix A) and support material in the Excel file guide students through the operations that include:

1. Documentation techniques (e.g. range names, lookup tables, color-coding cell contents, inserted comments, graphical tools, conditional formatting, etc.).

¹ The author would be happy to e-mail the student Excel file, instructions and the instructor solution file to any AIS instructor who asks for them. Contact Harry Howe at HoweH@Geneseo.edu

2. Best practice for writing formulas
3. Tips on structured spreadsheet design (using multiple pages, managing cell-reference chains, creating opportunities for independent verification of calculated amounts)
4. Use of specialized spreadsheet functions (e.g. PV for a note purchased at a discount, SLN for depreciation, or MIN and MEDIAN for the Lower-of-Cost-or-Market algorithm).

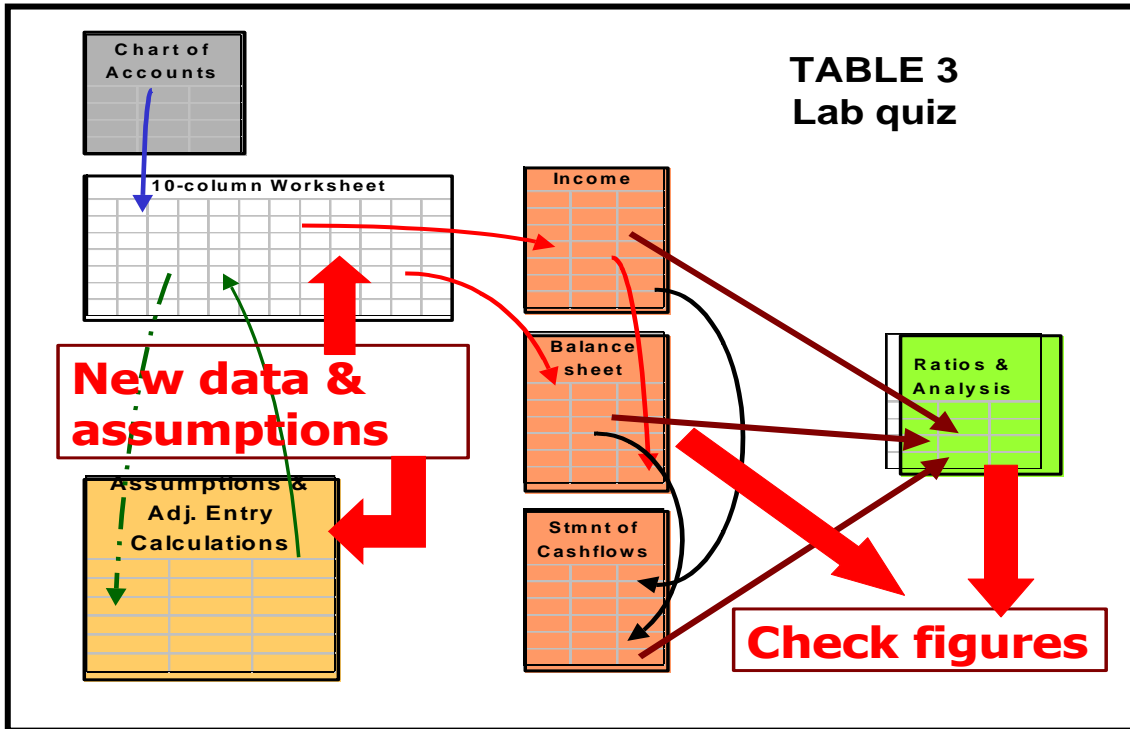
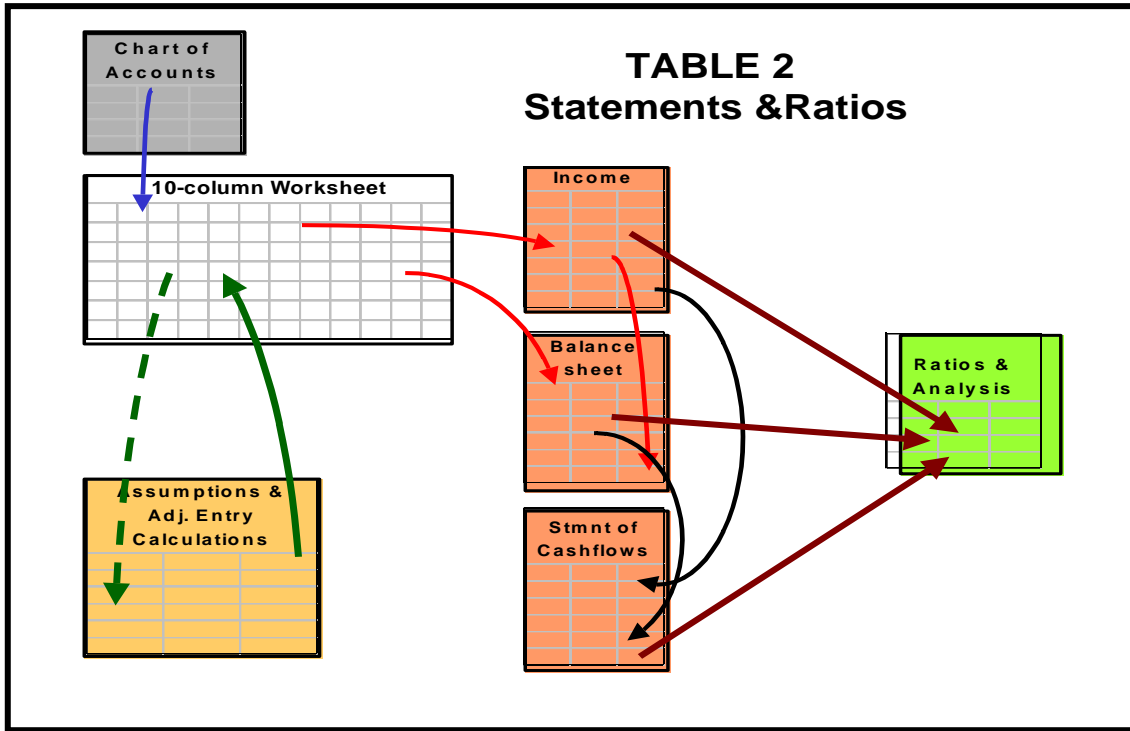


Students begin the project by linking account titles on one page to the worksheet on a separate page, using the VLOOKUP function. They next open up a new page and calculate a set of adjusting entries. The subject matter for these entries comes from the first half of Intermediate Financial Accounting, and this serves three purposes: (1) it forces students to explore and use several specialized Excel financial functions (2) it motivates a capstone/integrative role for the project and (3) it forces students into a thorough review of adjusting entries.²

Students have to create their own financial statements, linking accounts and line items back to the worksheet. This requirement reinforces the difference between a worksheet and the basic financial statements (the instructions ask for all assets to be netted out against allowances and contra assets). It is also a particularly good opportunity to force students to create a statement of cashflows, invariably the least well understood of the basic statements.

The last section of the student instruction handout describes the format for a “lab quiz”. In essence, this is simply a format for students to verify the accuracy of spreadsheet formulas and calculations by using new data (e.g. some new 200X trial balance figures, new rates for interest and doubtful accounts, etc.) If the worksheet has been carefully constructed and vetted against check figures students should receive 100% of the points assigned to the quiz

² The project was originally written for the Kieso-Arens-Ward Systems Understanding Aid for Financial Accounting. Users of the Arens-Ward Systems Understanding Aid 5th edition should use transaction set B with Verhovek.



In the author's experience, two weeks from initially assigning the project to scheduling the lab quiz seem to be adequate and appropriate for the exercise. The project is initially assigned in a lab setting, providing students with an opportunity to complete the first one or two instructions and to orient themselves to working from the instructions. While each student is responsible for his or her final project, the lab setting facilitates peer learning. A "problem solving lab" scheduled one week after initially assigning the project allows the instructor to meet individually with each student, assess progress and provide clarification. If several students have similar concerns or questions it is easy to share these with the whole class. At the end of this lab virtually all students have made substantial progress on the project and should have a clear conception of what their finished project will look like.

Whilst in theory the lab quiz should take no more time than that required to find half-a-dozen cells, key in new data, and then find half-a-dozen check figures and write them down, most students are uncomfortable with a three minute quiz. When returning work the author has provided opportunities for additional partial credit based on review and analysis of errors.

Motivation, Desired Learning Outcomes & Classroom Experience

This section describes some of the factors that motivated *Verhovek*, learning outcomes that it is designed to achieve, and classroom experience from use of the project in five sections of AIS.

- ***Leveraging familiarity with financial statements:*** Students' knowledge of articulation relationships provides a framework for systems concepts that include the need to document and manage information flows, and to distinguish data (e.g. trial balance figures & assumptions), calculated amounts (e.g. annual depreciation) and information (e.g. financial ratios, debt covenant information).
- ***Need for review and capstone experiences:*** Higgins & Mooney (2000) comment on the need for capstone experiences. Early in the author's AIS teaching experience students commented that a financial statement assignment represented the first time since introductory financial accounting that they had had to create a full set of financial statements. This provoked thoughts about ways in which AIS might offer an integrative experience for the financial accounting sequence, where the great quantity of procedural detail that must be mastered can obscure an appreciation of the big picture. Additionally, bringing material from one course into another may encourage a more holistic appreciation of the links between apparently unrelated areas of study in the accounting curriculum.
- ***Prepare students for SUA:*** Most AIS students at the have limited or zero experience with the documents and transaction processing routines used in the SUA. Lack of recent experience with statement preparation, adjusting entries and other accounting procedures increases the perceived difficulty of completing the SUA. *Verhovek* provides a thorough review of accounting mechanics and familiarizes students with "the final product" of the SUA. At the minimum
- ***Motivating the importance of documentation and worksheet structure:*** Calculations for the adjusting entries create a complex set of information flows, one that appears baffling to many students by the time that they have set up several dozen cell reference formulas between the 10-column worksheet, the page with assumptions and calculations, and the financial statements. *Verhovek's* intentional lack of highly specific procedural guidance (e.g. "enter 35% into cell C46") means that students are free to create a variety of mistakes: incomplete or incorrect cell references, faulty formulas, circular references, etc. Sorting these out can be a tedious process, though one made significantly easier if the student has followed the documentation guidelines. Experiencing the way in which a systematic approach to creating and documenting a worksheet resolves the confusion and frustration of a project that seems to be out of control can be an eye-opening experience. The "sudden-death" lab quiz format concentrates the student's mind on creating a reliable and manageable tool.
- ***Motivating the importance of transaction processing:*** In the author's experience most accounting students are oriented to "getting the right number" and fail to appreciate the importance of transaction processing (TP). *Verhovek* focuses as much on the way in which a particular number is calculated as the number itself, a lesson that should carry over to a consideration of TP. In keeping with the theme of using Intermediate Financial Accounting as a resource for AIS, the author has found it useful to review the Conceptual

Framework principles of relevance and reliability and to note to contribution that accounting information systems make to each.

- **Encourage contact between student and faculty:** Frequent contact between students and faculty motivates students and promotes active learning (Cunningham 1999; Chickering and Gamson 2001). Verhovek encourages students to work at their own pace and also to seek help when needed. This facilitates a teaching style of teacher-as-resource rather than teacher-as-lecturer.
- **Promote active learning:** Borthick (1996) describes a shift in the AIS course from an encyclopedic approach to one featuring active learning of tasks that professionals perform. For instance, Verhovek combines specific instructions with broad suggestions for using MS help features, forcing students to teach themselves advanced spreadsheet skills. This is a very different approach than that used in highly programmatic software instruction (e.g. Shelly et al. 1997), and, arguably, one that more closely resembles the actual workplace learning environment that students will move into upon graduation.
- **Emphasize high level thinking skills valued by employers:** Bonita and Barkman (2000) surveyed approximately 100 accounting executives and ranked employer preferences for specific skills. Logical thinking, ability to work independently and technical knowledge of accounting finance were all ranked in the first quartile of employer preferences. By requiring students to manage a network of linked cells, complex financial calculations and several interrelationships between financial statements, Verhovek emphasizes each of these skills. The design intent has been to provide sufficient structure so that students
- **Introduce basic software skills that prepare students for entry-level jobs:** “Accounting educators are concerned that their graduates have computing skills that will prepare them for the tasks they will face in their future accounting positions.” (Higgins & Mooney, 2000) Whilst Verhovek introduces students to several spreadsheet features that may be immediately useful to them in entry-level jobs, surely the most important skill is learning how to learn (Francis et al., 1995). The somewhat open nature of the Verhovek instructions attempts to create an experience that encourages this.

Classroom Experience

Student feedback and lab quiz results indicate that Verhovek is successful for most students in addressing most of the learning issues discussed in the previous section. Actual classroom experience with this project has yielded some additional experiences:

- **Multiple solutions:** The Verhovek instructions make it relatively likely that students will develop similar but not identical solutions to the problem. Whilst this will make it somewhat more difficult for the instructor to help troubleshoot it also cuts down on mindless copying. Additionally, to the extent that students help each other, creative differences between student projects will require student helpers to concentrate on the underlying structure and formulas rather than supplying a ready-made answer.
- **Intermediate review:** For students in the accounting program at the author’s school there is typically a one- or three- semester gap between coverage of the adjusting entry topics and Verhovek. Students typically have many questions about some of these topics, and find that the review promotes a sense of “ownership” of the material from earlier courses.
- **Computer literacy:** All students in the AIS course have a strong background in basic spreadsheet skills, and many are quite sophisticated. In the author’s experience, however, virtually all students learn something about spreadsheets that they had not known previously.

Appendix A

Verhovek Co. - Articulated Worksheet & Financial Statements

The file titled “Verhovek Co – Public File” contains a partially complete worksheet. By completing the instructions set out below you will create a worksheet and a linked set of financial statements that you can easily

“recycle” into the form required for your Systems Understanding Aid submission. This project guides you through several important Financial Accounting and AIS topics, including:

- structured spreadsheet design, with proper separation of data and formulas
- advanced spreadsheet techniques, including formulas which use specialized functions
- documentation techniques, including range names, color coding, named pages and a clearly labeled assumptions page
- financial statement preparation and account relationships

Before you begin the project, take a few minutes to acquaint yourself with the worksheet and, especially, the page labeled “Techniques”.

1. On the page labeled CoA there is a boxed range that contains numbers and titles for accounts used in this project. **Name the range** ChartOfAccounts. (Note that a named range in Excel operates as an absolute cell reference.) If you are not familiar with naming cells, you should research this topic in the on-line help menu by clicking Help and then Contents and Index. Select the Index tab and type in “name”.
2. Supply titles for all the worksheet accounts, using the VLOOKUP functions. Refer to section 1.01 in the Techniques page for an example of how this function works. Pay special attention to the three required arguments (pieces of information) for this function. Note the use of a range name: what part of the worksheet does the name LittleChart refer to? Once you write a formula for one account, you can copy the formula to other cells.
3. The worksheet contains a correct and almost-complete post-closing trial balance (PCTB) from the previous year (200W). (Interpret “almost complete” as “all balances shown are correct, but some amounts may be missing”.) When Alice, the new bookkeeper hired on Sep 5, 200W, got to the credit side of the balance, she forgot to review fixed assets and owners' equity. Use the information on fixed assets from ¶ 5 (a) below and the accounting equation to calculate these missing amounts.

Once you have determined appropriate values for these cells, convert any formulas to values (use the Edit Copy / Edit Paste Special / Values). The reason for this is that you will be altering some of the data and key assumptions in your Lab Quiz, and you want these changes to affect only the year 200X.’

As you work on the worksheet you will find it convenient to freeze the title and header information, so that you can readily identify the contents of each cell. Set your cursor on cell C9 of the worksheet and click on Window Freeze Panes.

Check Figure: The 200W Post Closing Trial Balance columns should total 255,500

4. The worksheet contains a correct and almost-complete trial balance for the **current year (200X)**. Unfortunately, a junior accountant did not post information to five accounts, including 10600, 31000 and three other accounts. **As before, you can assume that all account balances shown are complete and correct.** Use the following information to calculate the appropriate amounts, and enter into the 200X trial balance columns:
 - On Feb 21 the company bought 500 shares of LQM Corp. for \$20,000, and sold all shares for a total of \$26,500 on September 15.
 - On December 31 it purchased \$100,000 face value of zero-coupon bonds from the American Superconductor Corporation. These mature in ten years, were priced to yield 10.6161%, and have been designated as short-term AFS marketable securities. **Use the PV function** to calculate the purchase price of these bonds. Use this information to record the investment and any associated discount in accounts 10600 and 10610. Use the ROUND function to round amounts to the nearest dollar. Note that you need to

enter a zero for any cashflow amount that is zero. Excel will not interpret an empty cell as a zero value. (You should set out all data inputs for this calculation on a separate page of your file – see ¶ 5 below.)

- Consider the accounting cycle in order to determine the other three missing values.

Use the SUM function to total each column in the trial balance and check to see that debit and credit balances equal each other. (Unfortunately, the junior accountant who prepared the trial balance left work early to go snowboarding, and may have omitted one or more permanent accounts from the 200X trial balance.) Consider the accounting cycle and carefully compare the 200W Post Closing Trial Balance to the 200X Trial Balance. When you have made any needed changes and balanced the columns, proceed to the next step. Note that Verhovek uses a **periodic inventory** system.

CHECK FIGURE: The Trial Balance columns should total 1,289,308

5. Use the information provided below to post adjusting entries. **Open a new page in your file for assumptions & calculations**, and label it Calculations. Imagine that a co-worker will sometimes need to use this worksheet: make life easy for her by placing key amounts and rates in separate and clearly labeled cells, such that changing the value in any of these cells will result in the correct updating of all dependent cells. See the illustrative example on the page headed “formula writing” if you are not familiar with this principle. Using separate cells for data and calculations is a **best practice** in spreadsheet design.

The adjusting entry material comes from the first half of Intermediate Financial Accounting. You may find it useful to review various topics covered in that course.

- Verhovek’s Fixed Assets consists of its office and warehouse facility at TJ Park. Verhovek purchased the building at the beginning of 200U (i.e., four calendar years prior to 12/31/200X). At the time of purchase Alice Verhovek (the controller) estimated a twenty-five-year life and \$45,000 salvage value. Verhovek uses straight-line depreciation. Name the cells containing values for cost, salvage and life C,S and L, respectively. Write the formula $=SLN(C,S,L)$.
- Verhovek calculates the required balance in Allowance for Doubtful Accounts as a percentage of Accounts Receivable. Alice Verhovek expects that the company will collect on the same proportion of its receivables as it has in the past.
- Verhovek uses a periodic inventory system. A physical inventory count revealed \$58,000 of inventory at cost. Close all appropriate accounts to account 30400, Cost of Goods Sold. Complete this work before you adjust inventory for LCM. (See the SUA reference guide for an example of an adjusting entry for COGS).
- The \$30,000 note payable was issued on 9/1/200X and bears simple interest at 9.50%, payable annually on the anniversary of the note. (Use a 30/360 year.)
- Verhovek uses accounts 10410 and 41000 to record inventory at LCM. On 12/31/200X the net realizable value of the inventory on hand was \$56,000, and the estimated replacement cost was \$57,000. Verhovek’s target profit rate is 30.00%. **Use a MEDIAN function to compute DMV and a MIN function for LCM.**
- Verhovek pays income tax at the statutory 35% rate. Hint: You will find it convenient to calculate this using the adjusted trial balance columns.

Check Figure: The balance in the adjustments column should equal \$803,048.75. There should be ten Dr. and nine Cr. entries.

6. Write formulas for the adjusted trial balance, income statement and balance sheet columns in the worksheet. (For instance, account 30100, Sales, should appear in the ATB column as the sum of its TB amount, plus any credits in the adjustments column and minus any debits.) **These formulas should allow changes to either the trial balance or adjustments column to flow through to the correct columns cells** – in other words, if you change the amounts posted from an adjusting entry, the values in the appropriate (Balance Sheet or Income Statement) columns of the worksheet should automatically change.

Time saving tips:

- You will find it useful to split the windows and freeze panes as you navigate around the worksheet. Place your cursor on cell C9 of the worksheet and invoke these two options from the Window menu on the toolbar. Use **File Page Setup** to format the worksheet to print on one page in landscape orientation.
 - Build formulas by **pointing** and **left clicking**; do not waste time and encourage errors by typing in lengthy cell references.
 - You can considerably reduce the amount of formula writing that you need to do by copying. Pay careful attention to the debit and credit balances when you do this! All accounts in this problem should have normal balances.
7. When you have finished the worksheet, open new pages in the file for the Income Statement, Balance Sheet and Statement of Cashflows, and use cell reference formulas that refer back to the appropriate cell in the worksheet page. For example, the cell on the balance sheet that contains the value of Cash for the year 200X you should contain the formula “=Worksheet!O11”. Format the statements to print on one page in portrait orientation. Review **File Page Setup** if you are not familiar with fitting the print range to one page.

Review the discussion of financial statements in the SUA reference guide, and consider the difference between Statements and the Worksheet. Follow these stylistic guidelines in creating your statements:

- Show balance sheet accounts for both 200W and 200X, with the current year to the left of the earlier year. Note that (a) this will make it easier for you to prepare your statement of cashflows and (b) that virtually all GAAP-compliant financial statements present multi-year information.
- Use two columns for the figures in your Income Statement and Statement of Cashflows. See your Intermediate textbook for examples of best practice and good form. Use the Indirect Method for the Statement of Cashflows.
- Classify the Note Receivable as a long-term investment. Consider that it was purchased at the end of the year 200X and that you should not accrue interest income for it in the current year.
- On your Statement of Cashflows use an IF statement to control the labeling of the net increase or decrease in cash. See section 1.08 for an example of an IF statement.

8. On the page labeled “LabQuiz” write formulas that calculate:

- Asset turnover
- Current ratio
- Debt to Equity
- Gross profit margin
- Working capital

9. Your completed Verhovek spreadsheet should have the following pages:

- Year End Worksheet (provided)
- Chart of Accounts (provided)
- Techniques (provided)
- LabQuiz (provided)
- Income Statement (new)
- Balance Sheet (new)
- Statement of Cashflows (new)
- Calculations, key assumptions and ratios.
- Label the page tabs with appropriate descriptive names.

Lab Quiz

On [date] there will be a short (five minute) lab quiz of your work on this project. The format of this quiz will be as follows:

- The instructor will hand out a sheet with check figures, and ask you to open your completed worksheet. When everyone is ready the instructor will announce some new data for the trial balances and/or the adjusting entries. Key this into the worksheet and/or the page that contains your assumptions and calculations.
- You will have time to look up and write down the check figures from your Verhovek file, but **you will not have time to manually recalculate them, nor will you be permitted to use a financial calculator**. Thus you should expect a relatively high score on the quiz if your worksheet is properly structured, and a relatively low score if it is not.
- Turn in your disk and the answer sheet. **Please do not turn in a disk that contains any other important files**. Save your **file with the new check figure** in the following format: LAST FIRST VLQ.xls – i.e. SMITH JOAN VLQ.xls. Make
- **Eight** of the thirty points available for the quiz will be awarded for timely completion; **eight** will be awarded for using best-practice techniques (the documentation, formula writing and structure requirements described in the Verhovek file); the remaining **fourteen** points will be awarded for correct check figures.



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Notes