

Module 8

Discovering Spreadsheets

You will complete an activity that requires you to develop your spreadsheet skills to create a product that is useful in your role as a classroom teacher. The product you create may improve your productivity, and completing the activity will give you direct experience with 21st century teaching and learning skills and approaches.

Pair and Share: Reflecting on Module 7

Share your answers to the Take-Home Exercise: Reflecting on Module 7 with a colleague and the whole group as directed. Record any new and good ideas on the lines that follow.

Focus

- Spreadsheet software

Outcomes

- Discover spreadsheets by beginning with a technology introduction, exploration, and discussion
- Complete the required spreadsheet activity: Grade Book
- Reflect on professional practices

Exercise 1: Exploring Spreadsheet Software

What types of mathematics problems do you solve in your everyday life? How do you find answers to the problems? In the same way that word processing software can help you with writing projects, spreadsheet software can help you solve mathematics problems—especially complicated problems about money and other quantities. One helpful feature of spreadsheet software is that it can automatically calculate new answers if you change any numbers used in the calculations. Spreadsheet software can also be used to make charts and graphs.

Several spreadsheet software applications are available, including Microsoft Excel* and OpenOffice.org Calc*. Sharing one computer, work with a partner to start the spreadsheet software. Notice that spreadsheets have boxes that are organized in tables with columns and rows. The **columns** are named with **letters**, and the **rows** are named with **numbers**. The box located where a column and a row cross is called a **cell**. Each cell is identified by its column letter and row number, such as A1. Spend 10 minutes completing the tasks that follow.

1. Type three different words in cells A1, A2, and A3.
2. Type three different numbers in cells B1, B2, and B3.
3. Click cell B4. Then, click the button that can find the sum of the numbers and press **Enter**.



4. Change the width of the columns and the height of the rows.
5. Use the remaining time to discover what else you can do with spreadsheet software.

Exercise 2: Discussing Spreadsheet Skills

- 1.** What happened in cell B4 when you clicked the button that finds the sum of the numbers?
- 2.** What is your favorite feature of spreadsheet software?
- 3.** When might you use spreadsheet software? What other types of calculations do you think you could do in a spreadsheet?

Exercise 3: Identifying Spreadsheet Resources

Step 1

To learn more about spreadsheet skills, check the *Help Guide* as you complete the exercises, activities, and action plan. The Spreadsheets section consists of nine skill groups. [**Note:** This group name will change depending on the version of the Help Guide being used.]

- **Spreadsheet Group 1:** Getting to Know Spreadsheet Software
- **Spreadsheet Group 2:** Selecting Cells, Rows, and Columns
- **Spreadsheet Group 3:** Using Worksheets
- **Spreadsheet Group 4:** Adding and Working with Information
- **Spreadsheet Group 5:** Changing the Look of Information and Worksheets
- **Spreadsheet Group 6:** Organizing Information
- **Spreadsheet Group 7:** Doing Math
- **Spreadsheet Group 8:** Making Charts
- **Spreadsheet Group 9:** Printing Worksheets

Step 2

What is one spreadsheet skill that you would like to learn how to do? In which skill group might you begin looking to learn how to do that skill?

Exercise 4: Using Spreadsheet Skills

You will have an opportunity to learn and use spreadsheet skills as you complete one required activity and at least one elective activity from the following list:

- **Required Activity:** Grade Book
- **Elective Activity:** Classroom Inventory
- **Elective Activity:** Seating Chart
- **Elective Activity:** Pictograph
- **Elective Activity:** Roll Book

Now you will learn about the required spreadsheet activity, Grade Book. You will develop spreadsheet skills to create a product that may improve your productivity, and you will gain direct experience with 21st century teaching and learning skills and approaches. In the following section, see the Grade Book activity, and wait for further direction.

Grade Book

Many teachers keep track of their students' grades in a grade book. Typically teachers record the scores for different assignments and then use a calculator to calculate students' grades in a class or subject area. How might you be able to use a computer to make this process easier?

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Plan It

Create a spreadsheet grade book based on the assignments and grading practices used in your classroom. Look at the following example:

	A	B	C	D	E	F	G	H
1	Ms. Pickering's Mathematics Grade Book							
2								
3	Student Name	Fractions Homework 1	Fractions Homework 2	Fractions Quiz	Decimals Homework 1	Decimals Quiz	Total Score	Average Score
4	Brown, Danielle	78	85	92	72	81	408	81.60
5	Gomez, Marisol	92	88	94	100	95	469	93.80
6	Jones, Michael	49	72	52	80	75	328	65.60
7	Kim, Asha	85	90	87	86	79	427	85.40
8	Thomas, Zachary	72	79	81	75	68	365	73.00

Grade Book Example

Think about the following questions, and if working with a partner, discuss your ideas. Writing your ideas on a sheet of paper and drawing a table that shows how you might put the information in order might be helpful.

- What school subjects do you teach? For which subject (or subjects) do you need to keep scores? Pick one subject for your grade book worksheet.
- What are the names of five students that could be used in the grade book?
- What are some possible scores that the students might have received for five different assessments or assignments?
- How might you organize the information so it is easy to read and understand?

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For help on how to do certain tasks, look at the following groups in the *Help Guide*:

- **Spreadsheet Group 2:** Selecting Cells, Rows, and Columns
- **Spreadsheet Group 3:** Using Worksheets
- **Spreadsheet Group 4:** Adding and Working with Information
- **Spreadsheet Group 5:** Changing the Look of Information and Worksheets
- **Spreadsheet Group 7:** Doing Math

Do It

1. Start the spreadsheet software, and open a new, blank spreadsheet.
2. Rename Sheet 1 with the name of the school subject you selected.
3. In cell A1, type a title for the worksheet. Change the look of the title.
4. Now you will add the column headings to your worksheet. Type "Last Name" in cell A3 and "First Name" in cell B3. Then in cells C3 through F3, type information that identifies four of the five assessments and/or assignments that you want to include in the grade book. Lastly, type "Total Score" and "Average Score" in cells G3 and H3.
5. Change the look of the headings in row 3.

Challenge: Consider rotating the column headings in cells C3 through H3 so they are placed at an angle. Then, add borders around the column heading cells. (See the Grade Book Mathematics Worksheet Challenge Example at the end of this section.) (For help, refer to Spreadsheet Skill 5.7: To change the alignment of information within a cell or cells.)

6. Change the width of columns B through H to fit the information. If your columns are still too wide, change the text wrapping so the information fits on two lines.
7. In cells A4 through A9, type the last names of the five students. Then in cells B4 through B9, type the students' first names. Change the column width if needed.
8. Type the scores for each assessment or assignment in the four cells to the right of each student's name.
9. In cell G4, insert a **Sum** function that will calculate the first student's total score. Then, fill the **Sum** function into the four cells below.

Step 2: You may be inclined to overlook this step, but as you learn to complete spreadsheet projects with multiple worksheets, naming your worksheets becomes increasingly useful. You can rename worksheets in two main ways.

Step 4: Make sure that you only include four of the five assignments in the grade book at this time. You will add the fifth item in **Step 14**, which will allow you to see how calculations are automatically updated when information is changed.

Steps 4 and 7: You may want to add more than five graded assignments or more than five students. Complete the activity as written first. Then if time permits, you can add columns and rows of information later.

Step 8: When you enter the scores, you need to type the actual numerals and not the words for those numeric quantities. (For example, you should type the numeral *80* instead of the word *eighty*.) If you do not type numerals, the formulas and functions will not work properly in Steps 9–11.

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- 10. In cell H4, insert an **Average** function that will calculate the first student's average score. Make sure the cell range includes only the cells with assignment scores (cells C4 through F4) and *not* the total score (cell G4).
- 11. Fill the **Average** function into the four cells below cell H4.
- 12. Change the average scores so they all have two decimal places. Change the column width as needed.
- 13. To make sure the grade book will work as it should when new grade scores are added later, insert a column between columns F and G.
- 14. In cell G3, type the name of the fifth assessment or assignment. Then, type the grade scores that each of the five students received on the fifth assignment.

Notice that each student's total score and average score changes automatically when new information is added.

Step 15: The process of sorting information may be challenging. When you sort, do not select the rows containing the title and column headings. Also, explore various options until you achieve the desired results. If you do not sort correctly the first time, you can always use the **Undo** function to put the rows back in the previous order and try again.

- 15. Use the students' last names in column A to put rows 4 through 8 in alphabetical or ascending order. (For help, see Spreadsheet Skill 6.7: To sort or change the order of rows based on certain information.)
- 16. Add borders around the worksheet cells. (For help, see Spreadsheet Skill 5.8: To add borders to cells, rows, columns, and worksheets.)

Challenge: You might want to make another grade book worksheet for a second school subject. To do this, duplicate the worksheet you just created and give it a new name. (For help, see [Spreadsheet Skill 3.6: To make a copy of a worksheet.]) Then, change the worksheet title, and put in new assessment or assignment scores for the students. You should also rename the worksheet's tab. (See the Challenge Examples at the end of this section.)

- 17. Delete any unused worksheets.
- 18. Save your work as directed.

Ms. Pickering's Mathematics Grade Book								
Last Name	First Name	First-Quarter Assessment 1	First-Quarter Assessment 2	First-Quarter Quiz	Second-Quarter Assessment 1	Second-Quarter Quiz	Total Score	Average Score
Brown	Danielle	78	85	92	72	81	408	81.60
Gomez	Marucio	92	88	94	100	95	469	93.80
Jones	Michael	69	74	62	83	75	363	72.60
Kim	Aasha	85	90	87	88	79	429	85.80
Thomas	Zachary	72	70	81	70	68	361	72.20

Grade Book Mathematics Worksheet Challenge Example

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Room 6 Inventory					
Category	Item	Product Number or Description	Quantity	Cost per Item	Item Subtotal
book	All About Dinosaurs	1-898722-35-7	1	\$14.95	\$14.95
book	Dictionary	1-365564-59-8	2	\$19.95	\$39.90
equipment	printer	223443-59C	1	\$250.00	\$250.00
equipment	monitor	1344-50CN-45	1	\$200.00	\$200.00
equipment	computer	893-54CPX	1	\$800.00	\$800.00
furniture	desks	wood top with metal legs	30	\$100.00	\$3,000.00
furniture	chairs	brown plastic	30	\$50.00	\$1,500.00
supplies	paper	packages of lined writing paper	2	\$7.50	\$15.00
supplies	pencils	yellow pencils with erasers	33	\$0.35	\$11.55
Grand Total					\$5,833.10

Review It

Look over your grade book worksheet. Make sure it has the following elements:

- A title that explains the type of information in the worksheet
- The names of five students sorted in alphabetical order
- Formulas that calculate each student's total score and average score
- New names on all used worksheets, with all unused worksheets deleted

If any elements are missing, add them to the worksheet now. You should also make other desired changes. Remember to save your work when you are finished.

Share It

Be prepared to discuss your answers to the following questions during sharing time:

- How might this grade book improve your ability to calculate your students' grades? How would you modify the spreadsheet you created today for your own use?
- What is the most useful spreadsheet feature that you used today? Why?
- For what other types of activities might you use a spreadsheet's **Sum** and **Average** functions?

Take-Home Exercise: Reflecting on Module 8

Reflect on the exercises, activities, skills, and approaches addressed in this module. Record your answers to the following questions and be prepared to share your answers at the beginning of the next module.

- 1. Read and review the four elective spreadsheet activities in Appendix C. Which one or two activities interest you the most and might best enhance your productivity as a teacher? Why?

- 2. What resources would you want available for use as you complete the one or two activities that interest you most? How could the resources help? Remember to bring the resources with you to the next course session.

Module 8 Summary

Step 1

What did you accomplish in this module? List your ideas and those of others as directed on the lines that follow.

Step 2

What key points are addressed in this module? List your ideas and those of others as directed.

Step 3

Ask any questions and share any comments. Learn about and prepare for Module 9: Applying Spreadsheets.