There are five Excel workbooks named GradeK, Grade1, Grade2, Grade3, and Grade4 which exhibit examples of how one CAN incorporate spreadsheets into mathematics lessons. There is no claim that one SHOULD incorporate spreadsheets in these ways. One should NOT infer that Excel is only good for mathematics lessons. The author just happens to be a math teacher, so he used math examples.

# Grade K

1. Open the Grade K workbook and look at the K.OA.A.3 worksheet. K.OA.A.3 deals with decomposing numbers less than ten into addend pairs.
   1. Use the mouse and the paint bucket to shade blocks in row 13 into 1 red block and 6 yellow blocks.
   2. Create a new problem: Use the mouse and the paint bucket to shade columns A through G blue in row 17. Use the borders icon to emphasize seven cells in rows 17 and 18.
2. Look at the K.G.B.6 worksheet. Use the borders icon to subdivide the blue rectangle into 9 smaller equal-sized rectangles.

( Shading cells, creating borders between cells )

# Grade 1

1. Open the Grade 1 workbook and look at the 1.OA.C.5 worksheet. This is an addition standard. Find a partner, and decide which of you is the coach and which is the learner. The coach should use the worksheet and challenge the learner to add pairs of numbers. After two or three sums, trade roles. Notice that you cannot enter data in cells other than the yellow and blue ones.
2. Open the 1.OA.C.5\_subtract worksheet. This being first grade, we do not have negative numbers yet. Try to enter 2 in a yellow cell and 5 in the blue cell on the same row. Try to delete an equals sign.
3. Glance at the Fact Family worksheet. The idea here is that the student will have done the fact family for two addends by hand, and will then will check her work with the spreadsheet.

( Coach/learner pair, protecting cells/worksheets [we do not usually put the unlock code on the worksheet – that is a STEM Center workshop thing] )

# Grade 2

1. Open the Grade 2 workbook and look at the 2.NBT.A.2by5s worksheet. This is the skip-counting standard. In a coach/learner pair, the coach asks the learner to count by 5s from 75 and then from 235. Now change “235” to “400” and press ENTER. What happens? Next there are two different ways to do the same thing.
   1. One way. In cell B19, type “**=a19+5**” and press ENTER. Select the cell, and use CTRL-C to copy the contents of the cell. Use the mouse and the left mouse key to select cells C19 through W19. Use CRTL-V to copy the contents of B19 into these cells. What happens?
   2. Second way. In cell B19, type “**=a19+5**” and press ENTER. Click on the cell B19 again. Grab the little square in the lower right of cell B19 with Left-click and hold. Move the cursor a few cells to the right and let go of the left mouse button. What happens?
2. Look at the 2.NBT.A.4 worksheet.
   1. Use the less than [SHIFT-,] and greater than [SHIFT-.] symbols to compare the numbers in the columns. (It is unlikely that two numbers are equal, but if they are, use the equals sign). Deliberately get a few wrong. Notice the immediate feedback. Click on cell E7 and notice the nested IF statements.
   2. Left-click on column G. SHIFT and left click on column K. Right click and select “Unhide.” You should see two new columns of numbers. Select cell H6 and observe the random integer formula. Change one of the inequality symbols in column B to the opposite symbol. The entire worksheet recalculates, changing the random numbers. Left-click and scroll with the mouse to select the new values in cells H6 through H21. CNTRL-C. Right-click on cell A6 and select Paste-special Values (the icon is a little clipboard with the numbers 1 2 3 on it). Select columns H through J and re-hide them.

( copy/paste a cell with a relative reference, use IF statements to provide feedback, use random numbers to quickly modify worksheets, hiding cells, paste-special )

# Grade 3

1. Open the Grade 3 workbook and glance at the 3.OA.A.1 worksheet. Enter 3 in the green cell and then enter 20 in the green cell. Now look at the 3.OA.A.4 worksheet. Enter your name in the yellow cell. Now answer fill in the blue cells with right and wrong answers. Select cell F13. Notice the IF statements and the absolute cell reference to $F$4.

( Use cell shading and borders, absolute cell reference, customize feedback if that helps a student )

# Grade 4

1. Open the Grade 4 workbook and glance at the 4.MD.C.5 worksheet on angle measure. Type a number between 0 and 360 into the yellow cell E9.
2. Look at the 4.MD.B.4 worksheet. One can answer the questions here using the list itself and SORT. However, the standard is about reading the line plot with fractional values. Reading the plot makes sense even before students are familiar with decimals. Select cells H30 and J32 and notice the IF statements. These are written so that the data set can be changed, as long as the data values are not entered in cells outside the range from A7 to A24. Notice the COUNTIF function.

( Pie chart to show angles, Scatterplot, COUNTIF )

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