

GED 534 – Excel Exercises

Following are descriptions of 11 Excel activities, adapted from the book “How to use the Spreadsheet as a Tool in the Secondary School Mathematics Classroom,” by William J. Masalski. This book is no longer in print.

You will be assigned (or volunteer for) a presentation of one exercise for next week, Monday, November 3, 2008. Files are located at www.hubmub.com/534Excel – you may right-click on any file name and copy that file to your local computer for exploration.

The remainder of this assignment (the written part), as described below, is due in two weeks, on Monday, November 11, 2008.

The Presentation

Investigate and present your assigned or volunteered spreadsheet to the class. Be sure to include:

1. An overview of the mathematics behind the activity.
2. The usefulness of the activity for the school mathematics classroom (how or when could you see yourself using it?).
3. The perceived interest level for students.
4. Possible contexts or extensions of this activity, either involving technology or not.

The Written Assignment (files should be emailed to your instructor before class on November 11)

1. You must use Excel to design a gradebook sheet. Half of a marking period (five weeks) have passed, so progress reports must be sent, and you have collected the following work:

Five homework assignments – the first two are worth 10 points each, and the last three are worth 15 points each. The total value of homework is 20% of the final grade for the progress report.

Three quizzes – the first one is worth 25 points, the second is worth 20, and the third is worth 30. The total value of quizzes is 25% of the progress report grade.

One project – this is worth 50 points, and constitutes 20% of the progress report grade.

A midterm exam – this is a 100 point test, and worth the final 35% of the progress report grade.

Your spreadsheet should, as much as possible, fit on a single page (using landscape orientation). Also, you should create a couple of students (Andrea and Zachary) to test your spreadsheet's accuracy

2. Complete the following problem:

A college athlete needs to take a special medication for allergies. She takes an initial dose of 30 ml and then an additional 21 ml dose of the medication every 4 hours. Assume that the human body eliminates 20% of the medication every 4 hours through normal bodily functions.

Create a spreadsheet model of the above situation and answer the following questions. Your spreadsheet should also graph the results.

- a) What will be the concentration of the drug in her bloodstream after 24 hours?
- b) What will be the concentration of the drug in her bloodstream after 3 days?
- c) What if her initial dose was 75 ml? How do the answers to a) and b) change?
- d) Going back to the original problem, what if her additional dose was 12 ml every four hours? How do the answers to a) and b) change?
- e) Suppose she will be banned from competition if a blood test finds a concentration of the drug in her bloodstream of greater than 50 ml. However, she needs to take as much of the medication as possible to control her allergies. Assume the competition is to take place in three days. If you were her coach, what would you recommend she do, based on the spreadsheet analysis? (How could she get as much medication as possible while staying under the 50 ml screening cutoff.)
- f) What if she found out that her body actually eliminated 50% of the medication every 4 hours due to her increased body metabolism. How does this change your recommendation from part e)?

3. Blood Alcohol Model

Data and assumptions:

An average college-age male in good shape weighing K kilograms has about $.68K$ liters of fluid in his body. An average college-age female in good shape weighing K kilograms has about $.65K$ liters of fluid in her body. One kilogram equals 2.2046 pounds. Thus a 160 lb. male would weigh $160/2.2046 = 72.58$ kilograms. Therefore a $72.58 K$ male would have about $(72.58)(.68) = 49.35$ liters of fluids.

Factoid: The human body eliminates about 10 grams of alcohol per hour.

Threshold for legal driving: If your body fluids contain more than one gram of alcohol per liter of body fluids (or 0.1 gm/100 ml, which is the usual way of reporting it), then you are too drunk to drive legally in most states. In New York State, this threshold was recently lowered to 0.8 gram/liter (or .08 gm/100 ml).

A blood alcohol concentration of 4.0 gm/l is likely to result in a coma. A blood alcohol concentration of 4.5-5.0 gm/l is likely to result in death.

Alcohol content of various beverages:

Type of Drink	Grams of Alcohol
12 ounce regular beer	13.6
12 ounce light beer	11.3
4 ounce port wine	16.4
4 ounce burgundy wine	10.9
4 ounce rose wine	10.0
1.5 ounce 100-proof vodka	16.7
1.5 ounce 100-proof bourbon	16.7
1.5 ounce 80-proof vodka	13.4
1.5 ounce 80-proof bourbon	13.4

The Project:

Construct a spreadsheet model from the information above. Pick an appropriate time step. I suggest using time steps of 30 minutes. (Technically this would be a continuous model, but we'll model it in discrete time steps.) Start with a given weight and sex (e.g., 160 lb. male).

1. Assume that your person arrives at a party and instantaneously downs a six-pack of regular beer (i.e., high initial alcohol level, no additional input). Model this on a spreadsheet. Graph blood alcohol concentration as a function of time. Plot the legal driving level on the same graph. Be very careful of the scales. a) How long will it be before your hypothetical student can drive home legally? b) How many regular beers downed instantaneously would put the person in danger of coma or death?
2. Construct a more realistic manner of consuming six regular beers (i.e., one beer initial alcohol level and then assume the student consumes the remaining 5 beers one every half-hour). Again, plot blood alcohol concentration against time and include the legal driving level on the graph. When is it safe for the student to drive?

3. Try some other variations – vary sex, weight, type of alcohol consumed, and pattern of alcohol consumption. Analyze the outcome patterns. Graphs should include the legal driving level. Include at least 4 variations, and notate what you find. You might consider varying one feature at a time to be able to analyze its unique contribution to the overall pattern.
4. What have you learned about the effects of drinking patterns and variables on blood alcohol concentration? Come up with several “bullet points” you could use if you were asked to prepare a presentation to other students about responsible drinking (and driving). These points should refer specifically (at least) to the variables of sex, weight, types of alcohol and patterns of consumption.

Exploring Magic Squares – Exercise 1

(Use file Magic Squares.xls)

This will allow students to experiment with creating a 3x3 magic square and discover some important properties about them. As a result, they can extend these discoveries to larger matrices. Students who need practice with basic arithmetic skills will also have that available.

Student Grade Level

This exercise will be most appropriate for middle level or pre-algebra students.

File Description

In the Excel file, a 3x3 magic square is shown, and a digit from 1 through 9 should be entered in each cell shaded green. The cells outside the square will show the totals along each respective row and column.

Formulas in Cells

E6 =SUM(A6:C6)
E9 =SUM(A9:C9)
E12 =SUM(A12:C12)
A15 =A6+A9+A12
B15 =B6+B9+B12
C15 =C6+C9+C12

Ideas for Student Exploration

1. Using the digits 1 through 9 once and only once in each of the nine boxes, see if you can complete the magic square so that the sum of each row and column is the same. How many different ways can you accomplish this?
2. Using any sequence of nine consecutive numbers once and only once in each of the nine boxes, try to complete the magic square so that the sum of each row and column is the same. How many ways can you accomplish this?
3. After finding a magic square, try adding the same number to each box in the square. What happens when you finish this?
4. After finding a magic square, try subtracting the same number from, multiplying or dividing the same number by (one operation at a time) each box in the square. What happens then?
5. Write a formula in cell E3 that will calculate the sum of the three numbers in that diagonal of the square. Do the same in cell E15 for the other diagonal. Now, try completing this new “ideal” magic square so that all rows, columns, and both diagonals have the same sum.
6. Repeat items 1-4 with the “ideal” magic square from number 5. In each case, the sum of the diagonals must be the same as the sum of all rows and columns.
7. Try using an Excel spreadsheet to write a 4x4 magic square, and a 5x5 magic square. Try the operations mentioned in item 4 for these larger squares, and describe what occurs.

Finding Square Roots through Successive Approximation – Exercise 2

(Use file Square Roots.xls)

This spreadsheet will allow students to see the usefulness of the divide and average method for finding square roots.

Student Grade Level

This exercise will be most appropriate for middle level or pre-algebra students.

File Description

The file displays the formula $r = \sqrt{S}$, and has green shaded cells in which to enter the number for which the square root is desired (cell D4), and the first student estimate for the square root (cell D6). Upon entry, the remainder of the spreadsheet's values are automatically updated.

Cell Formulas

C10	=D6	D10	=\$D\$4/C10	E10	=AVERAGE(C10,D10)
C11	=E10	D11	=\$D\$4/C11	E11	=AVERAGE(C11,D11)
C12	=E11	D12	=\$D\$4/C12	E12	=AVERAGE(C12,D12)

And so on...

Ideas for Student Exploration

1. Determine how this spreadsheet works. Click on the cells displaying numbers to reveal how those numbers are generated.
2. What happens to the quotient if your first estimate for the square root is too large? Too small?
3. How many divisions were needed to find $\sqrt{144}$ using an initial estimate of 5?
4. Change the value of S to 383. How many divisions are needed to find $\sqrt{383}$ when our estimate for x is 5?
5. Use the arrow keys to move up and down column E to see additional approximations for the square root of the number listed in cell D4.
6. Use this spreadsheet to find the square root of 12,345,678. What would be a good starting estimate for x ?
7. What is the minimum number of divisions that must be made to determine the actual square root of a number? Under what conditions would that occur?
8. How can we minimize the number of divisions needed to come very close to, or to determine the actual square root of, any number?

Multiples and Prime Numbers – Exercise 3

(Use file Primes.xls)

This spreadsheet will allow students to investigate the multiples of any number entered and to develop a listing of the prime numbers using the method of the sieve of Eratosthenes.

Student Grade Level

This exercise will be most appropriate for middle level or pre-algebra students.

File Description

This spreadsheet displays a ten-column wide, fourteen-row long grid of the counting numbers from 2 to 140 – when opened, the multiples of 11 greater than 11 have been replaced by 0s. It also indicates to the user to enter a 1 to reset the file or a number to try – when opened the number 11 has been entered. As written, the file will replace each multiple of the number entered with a 0.

The columns are not wide enough to display the entire formula. However, as in any spreadsheet, by placing the cursor on a cell, we can read the entire formula in the strip at the top of the screen.

Cell Formulas

C5 =IF(\$E\$3=1,2,IF(AND(\$E\$3<>C5,C5/\$E\$3=INT(C5/\$E\$3)),0,C5))
D5 =IF(\$E\$3=1,2,IF(AND(\$E\$3<>D5,D5/\$E\$3=INT(D5/\$E\$3)),0,D5))
E5 =IF(\$E\$3=1,2,IF(AND(\$E\$3<>E5,E5/\$E\$3=INT(E5/\$E\$3)),0,E5))

And so on...

Note that these formulas contain circular references, and therefore may cause error windows to pop up in Excel. Iterative setting changes may be required.

Ideas for Student Exploration

1. Reset the file by entering a 1 in cell E3. Then, enter the number 3 in cell E3 and press Enter. What happens? How are the cells that have 0 in them related?
2. Reset the file, then enter a 2 in cell E3. How are the zero cells related?
3. Reset the file, then enter consecutive counting numbers in cell E3 (without resetting between) until no more numbers become 0.
4. Which numbers do not cause any numbers shown to become 0?
5. What was the last number you entered that made some cells become 0?
6. What is the largest counting number you need to try to be certain that the file has zeroed out all numbers that are not prime?
7. How are the cells left with numbers related?
8. This file uses the process called the sieve of Eratosthenes. Investigate other sources to read more about the sieve.

Compound Interest – Exercise 4

(Use file Compound.xls)

This spreadsheet shows the effect of compound interest over a period of years, using information entered.

Student Grade Level

This exercise will be appropriate for students in algebra through pre-Calculus.

File Description

In this spreadsheet, a person can enter the original principal, the interest rate, and the number of compounding periods per year. As they are entered, the sheet will update the results showing the balance at the end of each passing year, for a period of 50 years. These calculations are based on the

formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$ for compound interest: P is the principal, r is the annual interest rate (as a decimal), n is the number of compound cycles per year, and t is the number of years.

Cell Formulas

D7	1	E7	=\$A\$7*((1+(\$B\$7/\$C\$7))^((\$C\$7*D7)))
D8	=D7+1	E8	=\$A\$7*((1+(\$B\$7/\$C\$7))^((\$C\$7*D8)))
D9	=D8+1	E9	=\$A\$7*((1+(\$B\$7/\$C\$7))^((\$C\$7*D9)))
D10	=D9+1	E10	=\$A\$7*((1+(\$B\$7/\$C\$7))^((\$C\$7*D10)))

And so on...

Ideas for Student Exploration

1. At interest that is only compounded once per year (annual compounding), how long will it take for an investment of \$100 to double in value if the annual interest rate is 6%? What if you invest \$38.50 under these conditions?
2. If interest at 6% is generated twice per year (compounded semiannually), how long will it take for an investment of \$100 to double in value?
3. How many times per year would you have to compound the interest at 6% to have the investment double in value in eleven years?
4. Suppose you wanted to double your investment of \$100 in six years. At what interest rate would you have to invest the money if the interest was compounded annually?
5. The effective annual yield is the actual increase in value of an investment in one year. What is the effective annual yield if \$1 invested at 8%, compounded quarterly?
6. Use this spreadsheet to explore other questions like those above.

Volume – Exercise 5

(Use file Volumes.xls)

This file will illustrate the use of spreadsheets as a problem solving tool for problems of optimization.

Student Grade Level

This exercise will be appropriate for students in algebra through pre-Calculus.

File Description

The file shows a word problem involving a box that is created by cutting out congruent squares from each corner of a square piece of paper, and folding up the sides. Initially, the paper is assumed to be 12 inches on each side, and the first squares cut out of the corners are 1 inch. We then incrementally increase the cutouts by 0.1 inch.

Cell Formulas

C18	=D11	E18	=C18*(\$D\$9-(2*C18))*(\$D\$9-(2*C18))
C19	=C18+\$D\$13	E19	=C19*(\$D\$9-(2*C19))*(\$D\$9-(2*C19))
C20	=C19+\$D\$13	E20	=C20*(\$D\$9-(2*C20))*(\$D\$9-(2*C20))

And so on...

Ideas for Student Exploration

1. The original size of a square of paper is 12 units on a side. What is the volume of the resulting box if a 1-unit square is cut from each corner of this 12-unit square and the sides are folded up at right angles to the base?
2. If we cut a 1.5 unit square from each corner of the 12-unit square piece of paper, what will be the volume of the box?
3. What happens if we cut a 6-unit square from each corner of the 12-unit square piece of paper?
4. What is the maximum volume for a box made from the 12-unit square piece of paper?
5. What is the maximum volume for a box made from a 10-unit square piece of paper? Experiment with different values for the increment.
6. What if you had a square piece of cardboard 16 inches on a side and you wanted to make a box that would hold exactly 300 cubic inches of sand? What size square would you have to cut out from each corner of the cardboard to create this box?
7. Determine the maximum volume of boxes obtained from different sizes of large paper squares. Vary the increment for the sizes of small squares to be cut from the corners.
8. Suppose you had a rectangular piece of paper, say, a units by b units. What formula could you use to help you find the maximum volume of a box obtained by cutting out squares of x units on a side from each corner? Use this formula to develop a spreadsheet similar to this one.
9. Find a good problem and try to develop a spreadsheet file that would help solve that problem!

Completing the Square – Exercise 6

(Use file Completing.xls)

This file will help students explore the method of completing the square to solve quadratic equations.

Student Grade Level

This exercise will be appropriate for students in algebra through pre-Calculus.

File Description

The file has cells requesting input to display the quadratic equation $ax^2 + bx + c = 0$. When first opened, the file will be displaying $2x^2 + 4x + 6 = 0$ by default. The remainder of the file shows the process of completing the square to determine solutions to the equation.

A graph is also shown below the process of completing the square.

Cell Formulas

A7	=A5	C7	=C5/A5	G7	=-E5
A9	=A5	C9	=C7	E9	=(.5*C9)^2
		G9	=-E5	I9	=A5*E9
A11	=A5	C11	=0.5*C9	G11	=-E5+I9
		C13	=0.5*C9	G13	=G11/A11
		C15	=0.5*C9	G15	=SQRT(G13)
				I15	=-SQRT(G13)
				G17	=G15-C15
				I17	=I15-C15
A31	-10	B31	=\$A\$5*A31^2+\$C\$5*A31+\$E\$5		
A32	=A31+0.5	B32	=\$A\$5*A32^2+\$C\$5*A32+\$E\$5		

And so on (up to A71)...

Ideas for Student Exploration

For each of 1-6 below, refer to the file as it is set up with the equation shown above.

1. What is the constant term in row 5? The equation in row 5 is transformed into the equation in row 7 by subtracting the constant term, -6 , from both sides of the equation. Then, the coefficient of the x^2 term is factored from the expression on the left side of the equals sign. What is the coefficient of the x^2 term?
2. What is half of the coefficient of the x term in row 7? The equation in row 7 is transformed into the equation in row 9 by squaring half of the coefficient of the x term and adding it within the parentheses – to become part of the expression that is multiplied by the coefficient of the original x term. In order to maintain balance on both sides of the equation, the product of these two numbers is added to the right side of the equation.

3. How is the equation in row 11 transformed from the equation in row 9?
4. How is the equation in row 13 transformed from the equation in row 11?
5. How is the equation in row 15 transformed from the equation in row 13?
6. How is the equation in row 17 transformed from the equation in row 15?
7. What happens to the solution if you change the constant term to 2?
8. What happens to the solution if you change the constant term to 5?
9. Try changing the constant term to numbers between 2 and 5. To a number greater than 5. What happens?
10. Try changing the constant term to numbers between -6 and 2. To a number less than -6 . What happens?
11. Explain what happens as you try different values for the coefficient of the x term. Of the x^2 term.
12. Will this algorithm always work? If so, why? If not, why not?

Solving a System Using Determinants – Exercise 7

(Use file Determinants.xls)

This spreadsheet will allow students to explore the method of solving a system of two linear equations with two variables by using determinants.

Student Grade Level

This exercise will be appropriate for students in intermediate algebra through pre-Calculus.

File Description

The sheet shows two linear equations with two variables, x and y :

$$-1x + 2y = 4 \quad \text{and} \quad 1x + 6y = 8$$

The user is asked to enter new coefficients and constant values for each one, then uses Cramer's rule, making use of determinants to solve the system of equations.

A graph is also shown so users can view the relationship visually.

Cell Formulas

C9	=A5	D9	=D5	J9	=G5
K9	=D5	Q9	=A5	R9	=G5
C11	=A6	D11	=D6	J11	=G6
K11	=D6	Q11	=A6	R11	=G6
C14	=(A5*D6)-(A6*D5)		J14	=(G5*D6)-(G6*D5)	
		Q14	=(A5*G6)-(A6*G5)		
D17	=J14/C14		K17	=Q14/C14	
A31	-10		B31	=(\$A\$5*A31-\$G\$5)/-\$D\$5	
		C31	=(\$A\$6*A31-\$G\$6)/-\$D\$6		
A32	=A31+0.5		B32	=(\$A\$5*A32-\$G\$5)/-\$D\$5	
		C32	=(\$A\$6*A32-\$G\$6)/-\$D\$6		

And so on (up to A71)...

Ideas for Student Exploration

1. This file makes use of Cramer's Rule, using 2×2 determinants to solve a system of two equations with two variables. How are the determinants D , D_x , and D_y determined?
2. Study this file along with your textbook to develop a stronger understanding of determinants and Cramer's Rule.
3. Will this algorithm always work? If so, why? If not, why not?
4. Use this file to solve other systems of two equations with two variables.

Data Collection and Analysis – Exercise 8

(Use file Data.xls)

This spreadsheet will allow students to explore the collection and analysis of data by making use of tables and graphs.

Student Grade Level

This exercise will be appropriate for students in middle levels through pre-algebra.

File Description

The file displays a table for inserting data of heights and reach for ten students. It then calculates the average height and reach for the data, and determines the number of students whose height is less than, equal to, and greater than their reach. The results are also shown in a scatter plot.

Cell Formulas

L5 =AVERAGE(B5:K5)

L7 =AVERAGE(B7:K7)

B9 =IF(B5>B7,1,0) . . . K9 =IF(K5>K7,1,0)

L9 =SUM(B9:K9)

B11 =IF(B5=B7,1,0) . . . K11 =IF(K5=K7,1,0)

L11 =SUM(B11:K11)

B13 =IF(B5<B7,1,0) . . . K13 =IF(K5<K7,1,0)

L13 =SUM(B13:K13)

Ideas for Student Exploration

1. Measure the height without shoes of ten students in your class.
2. Record the students' heights from shortest to tallest in the spreadsheet table.
3. Measure the reach from fingertip to fingertip of the same ten students. To be sure they are each reaching as far as possible, take the measurement as they put their backs against a wall and hold their arms out parallel to the floor and touching the wall.
4. Record their reaches in the spreadsheet table.
5. Which student has the shortest reach? The longest reach? Which students have a longer reach than height? A shorter reach than height? The same reach as height? What is the average reach and height of these ten students?
6. Repeat the activity for ten other students and compare your results.
7. What observation can you make about the average height and reach of students in your class?
8. Repeat the activity with a class of ten students in a younger grade level; and older grade level. Compare the results.

Coin Toss – Exercise 9

(Use file Toss.xls)

This spreadsheet allows students to explore probability through large numbers of trials of tossing a single coin.

Student Grade Level

This exercise will be appropriate for students in grade 7 through intermediate algebra.

File Description

The sheet simulates the tossing of a single coin. When first opened, the coin has not been tossed, so all data shows as 0. The file asks the user to enter 0 to reset or 1 to start. Then, every time the user presses Ctrl =, a new piece of data will be collected and shown. The sheet will accumulate results until a 0 is entered to reset.

Cell Formulas

C7 =IF(C3=0,0,INT(2*RAND()))
C10 =IF(C3=0,0,C10+1)
C12 =IF(C3=0,0,IF(C7=1,C12+1,C12))
C14 =IF(C3=0,0,C12/C10*100)
C16 =C10-C12
C18 =IF(C10=0,0,100-C14)

Ideas for Student Exploration

1. After the file has been reset, use it to simulate the tossing of one coin 10 times. How many heads and how many tails result? What is the percentage for each?
2. Reset the file and toss the coin 100 times, again recording the number of heads, the number of tails, and the percentage for each.
3. Reset the file, and toss the coin 100 times again. Compare the results with the previous results.
4. If a coin is tossed 1000 times, what do you think the number of heads should be?
5. Examine each of the formulas in column C by placing the cursor on each cell. How are the numbers generated?
6. What generalizations can you make about tossing one coin?

Rational Root Theorem – Exercise 10

(Use file Synthetic.xls)

This spreadsheet allows students to explore the method of synthetic division to find rational roots to a polynomial equation.

Student Grade Level

This exercise will be appropriate for students in intermediate algebra through pre-Calculus.

File Description

The file has the user enter the desired coefficients for an equation that is a third degree polynomial equation. When opened, the equation is $2x^3 + 1x^2 + 5x + -3 = 0$. The user is asked to check each possible $\frac{p}{q}$, where p is a factor of the constant term, and q is a factor of the first nonzero coefficient (in this case, the coefficient of the x^3 term). Then, the file will use the synthetic division procedure to test the number provided. A remainder of 0 indicates a root, and a nonzero remainder indicates it is not.

A graph is also constructed to visualize the corresponding equation.

Cell Formulas

A13	=A5	C13	=C5	E13	=E5	G13	=G5
A14	0	C14	=C11*A16	E14	=C11*C16	G14	=C11*E16
A16	=A13+A14	C16	=C13+C14	E16	=E13+E14	G16	=G13+G14
A31	-10	B31	=A\$5*A31^3+C\$5*A31^2+E\$5*A31+G\$5				
A32	=A31+0.5	B32	=A\$5*A32^3+C\$5*A32^2+E\$5*A32+G\$5				

And so on (up to A71)...

Ideas for Student Exploration

1. List all of the p and q values for the given equation and test each possible quotient $\frac{p}{q}$ to determine if it's a root of the equation.
2. If we test all the factors of the constant term, why can we be sure that we have tested for all possible integral roots of the equation in question?
3. Enter new coefficients and constant term for the equation at the top of the screen to obtain the following, and follow the indicated procedure to determine its rational roots:
$$2x^3 + 1x^2 - 10x - 5 = 0$$
4. How does this file work? Study it along with your textbook to see that it uses the standard procedure for synthetic division and the rational roots theorem, except that it does most of the arithmetic for you.
5. Use this file to help you find roots to other second- and third-degree polynomial equations.

Mixture Problems – Exercise 11

(Use file Mixture.xls)

This file shows how a spreadsheet can be a helpful tool for problem solving.

Student Grade Level

This exercise will be appropriate for students in algebra through pre-Calculus.

File Description

The file displays a word problem involving coffee mixtures – the cost per pound of the mixture must be determined based on the percentages and costs of the coffees separately.

Cell Formulas

		C8	=1-B8
B11	=B8*B9	C11	=C8*C9
		C13	=B11+C11

Ideas for Student Exploration

1. Examine this file and change the percent for coffee A. How does the percent chosen for coffee A determine the percent used for coffee B?
2. Without using this file, predict what the final cost would be for 5 pounds of a 50%-50% blend of the two coffees if coffee A costs \$5.00 per pound and coffee B costs \$4.00 per pound. What if you wanted a 60%-40% blend with the same individual costs? Use the file to check your work.
3. If the cost for the blend is \$4.00 per pound and coffee A costs \$3.80 per pound, what percent of coffee A is used in the blend if the cost of coffee B is \$4.20 per pound?
4. If the cost for the blend is \$4.10 per pound and coffee A costs \$4.00 per pound, what percent of coffee A is used in the blend if the cost of coffee B is \$5.00 per pound?
5. Use this file as a guide to create other spreadsheet files that consider problems of this type.