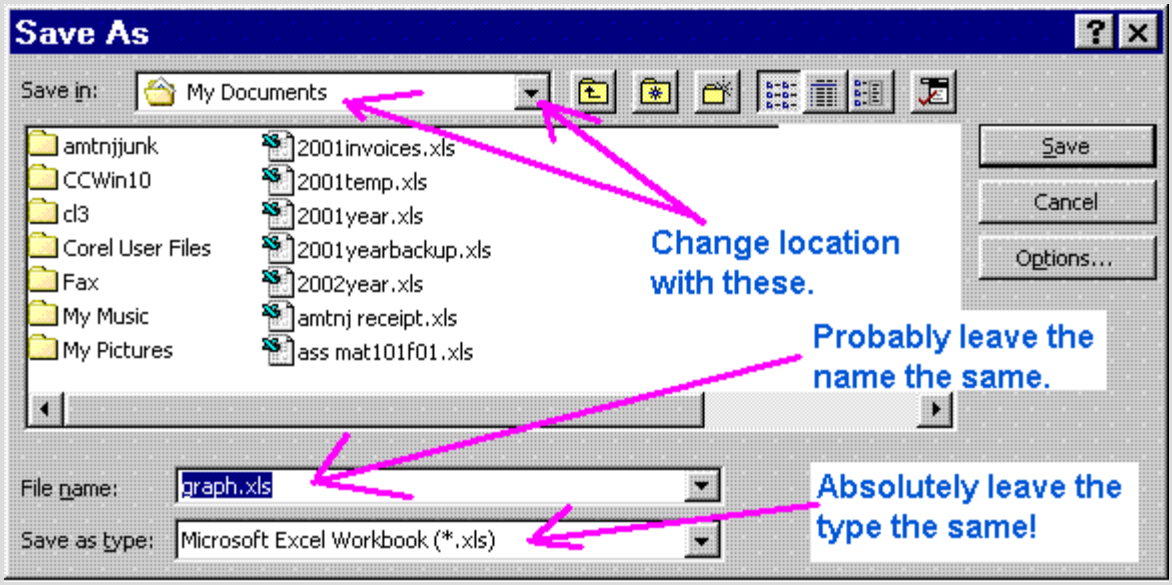
Spread Sheet (.xls) & Digital Manipulatives (token) Home Page

Storage

These spread sheets are stored on your computer by your browser (as is any web page) before they are "run."

You may wish to save a spread sheet to a location for your later use. You are hereby granted permission to do that for not-for-profit purposes.



To save a spread sheet,
Press File, then
Press Save As, (or Alt + F, then A) then
Save it SOMEWHERE YOU CAN FIND IT --
Desktop, My Documents, etc.

Spreadsheet Notes

The Spreadsheet Notes & Index is a page (linked at left through button) containing notes and instructions on how to do things like create a formula in a cell, sort data, and use a funtion.

Ready-Made Spreadsheets

area.xls

- Perimeter of rectangles, parallelograms, triangles, trapezoids, circles.
- Area of rectangles, parallelograms, triangles, trapezoids, circles, and figures with mixed areas.
- Volume of prisms, pyramids, cylinders, cones

compute.xls

- Designed with a game- and puzzle- and test-writing teacher in mind. This is what I, Agnes Azzolino, use to generate problems, and
  complete computation for answer keys and games and puzzles.
- Contains pieces of other spreadsheets.
- Includes, arithmetic, prealgebra, algebra, some geometry, trig and triangles, statistics.

ConDots.xls

- Same as compute.xls but with completed puzzles

cramers.xls

- Properties of determinants.
- EVALUATE A DETERMINANT.
  2 by2 determinant - graphic and hot determinant
  3 by 3 determinant by augmented columns - graphic and hot determinant
  3 by 3 or higher determinant evaluated by minors - graphic
- Solve Linear System in Two Unknowns by Cramer's Rule.
- Solve Linear System in Three Unknowns by Cramer's Rule.
- Compute each of the 6 possible ways of computing the 3x3 determinant by minors.

curve.xls

Given a set of test scores:

- Sorts scores.
- Computes mean.
- Computes standard deviation.
- Computes curved cut off scores.
- Compute z-scores.

exp2.xls

- Compute yearly, semiyearly, quarterly, monthly, daily, and every minute given initial principal, rate, and time.
- Solve for P, P_0, r, t, but not n, for instantaneous and non-instantaneous interest.
- Graph two exponential curves w/user entry of parameters.

gradet.xls (grade test)

- Input number correct , total number, and grade range and the % and letter grades are stated.
- Using mean and standard deviation, curve a set of tests.
- Enter 3 raw 2nd quarter grades, the 1st quarter grade, and the midterm and get the 1st semester grade.

graph.xls

- Provides the user with a table of 10, 20, or 30 cells and a graphed function.
- The user must edit the function then paste it to the other y-cells to draw a new graph.

heron.htm

- See pyth3.xls below.

Hypothesis.Tests.2022.xls

- See: the Hypothesis Tests web page

pica.xls

- Convert inches, picas, points, and millimeters for use in printing and page layout and design.

maytrix.xls

- Add 1x3, 2x3, 2x2, 3x3, or up to 5x5 arrays using matrix rules. Subtract up to 5x5.
- Multiply a 1x3 times a 3x1, a 2x3 times a 3x1, a 2x2 times a 2x2, a 3x3 times a 3x3, and conformable m by n times a n by p

- Multiply a 1x3 by a 3x2, a 2x3 by a 3x2, and a 2x3 by a 3x3 with color-coding to show the origin of each factor.
- Compute inverse of 2x2 or 3x3. Contains notes & worksheet.
- Answer key to worksheet and notes on computation of 3 by 3 inverse.
- UNDER CONSTRUCTION 3x3 inverse derivation
- Row transformation to find inverse
- Solve system by inverse, 2x2, 3x3
- Matrix vs. Cramer's Rule to Solve a 3x3
- UNDER CONSTRUCTION Solve system, Gauss-Jordan elimination
- User & Spread sheet jointly use row transformation to find inverse

linear.xls

- Graphs line given m, b, starting x, increment in x.
- Does the above and also graphs a line given 2 points & computes the slope and y-intercept given the 2 points.

poly.xls

- Graph a polynomial defined by degrees and coefficients.
  $y= a_n x^n + a_{n-1}x^{n-1} + a_{n-2}x^{n-2} + a_{n-3}x^{n-3} + a_{n-4}x^{n-4} + a_{n-5}x^{n-5} + a_{n-6}x^{n-6} + a_{n-7}x^{n-7}$
- Graph a polynomial displayed in factored form.
  $y = A(x - b)^B(x - c)^C(x - d)^D$
- Synthetically divide and then view the quotient polynomial and remainder.
  Divide $(a_n x^n + a_{n-1}x^{n-1} + a_{n-2}x^{n-2} + a_{n-3}x^{n-3} + a_{n-4}x^{n-4} + a_{n-5}x^{n-5} + a_{n-6}x^{n-6} + a_{n-7}x^{n-7})$ Ã· (x-c)
- Solves linear or quadratic equations. Multiplies 2 binomials or 3 binomials.

prime.xls

- The prime factorization of whole numbers from 2 to 122 in two displays.
- Whole numbers from 1 to 1000 with primes highlighted.
  This page is arrange to show that:
  ALL PRIMES, OTHER THAN 2 AND 3, MUST BE ONE MORE OR ONE LESS THAN A MULTIPLE OF 6.
- Whole numbers from 1 to 1002 with primes highlighted.
- The times tables up through 50 x 30

pyth3.xls

- Examine Pythagorean Triangles -- triangles with "nice" sides, generated because:
  If p > q, then p and q may be used to generate the right triangle with
  leg a = $p^2 - q^2$,
  leg b = 2pq, and
  hypotenuse c = $p^2 + q^2$.
- For Heronian triangles see: Pythagorean Triples graphics
- Heronian Triangles -- 2 right triangles butted up together and sharing a common side.
  for all x, generate triples
  for all even x, generate triples
  Heronian triangles are a pair of right triangles with a "shared side."

quadratic.xls

- Enter h, k, and a to generate general form and x-intercepts.

- Multiply 2 binomials to find the product, vertex, discriminant.
- Solve a quadratic equation by entering the required constants and coefficients.
- Write general form in quadratic form.

ratl.xls

- Graph and table of $(Ax^m)/(Bx^n)$
  Watch the power of the top or bottom equal or dominate the other.
  Examine hoirzontal asymptotes or infinite increase or decrease.
  Think endbehavior and explore.
- Graph and table of rational function, polynomial A(x) divided by B(x).
  Examine asymptotes.
  Examine the role of factors A(x) and 1/B(x).
- Graph and table of rational functions written as A(x) / B(x) + C(x)
  Really play with C(x), the asymptote
- Complete synthetic division and rewrite of quotient and remainder.

sine.xls

- Graphs y=Asin(Bx-C) +D, where A, B, C, D are input values.
- Scatter-Plots y=Atan(Bx-C)+D, where A, B, C, D are input values.
- Graphs two sine functions where A, B, C, D are input values.
- Graphs one sine function and one cosine function where where A, B, C, D are input values.

solvtrg.xls

- Solve a right triangle.
- Solve a 45-45-90 triangle.
  Input leg a. Seek a leg and hypotenuse.
  Input side c. Seek two legs.
- Solve a 30-60-90 triangle.
  Input leg a. Seek a leg and hypotenuse.
  Input leg b. Seek a leg and hypotenuse.
  Input side c. Seek the hypotenuse.
- Use Pythagorean Theorem and arithmetic and basic trig.
  Input leg a and leg b. Seek the hypotenuse and the angles.
  Input hypotenuse c and leg a. Seek a leg and the angles.
  Input angle A and side a. Seek a leg, side, and hypotenuse.
- Solve any triangle.
  Use the Sine Law, if a side and the opposite angle are given.
  Input angles A , B, side a. Seek two sides and an angle.
  Input angle A , side a, side b. Seek two angles and a side.
- Use the Law of Cosines.
  Input sides a, b, c. Seek each angle.
  Input angle A , sides b,c. Seek no solution, 1 solution, or 2 solutions.

stat.xls

Compute.

- mean and (by spread sheet and table) the standard deviation.
- z-score and stanine.
- area under standard normal and normal curves above or below a z-score or x-score or within an interval.
- the x-score or z-score given a probability.

synthetic.xls

- Completes synthetic division on a quadratic or a higher order polynomial divided by a linear binomial.

vector.xls

Compute.
- resultant given 2 vectors automatically and manipulatively.
- polar coordinates given rectangular coordinates.
- rectangular coordinates given polar coordinates.
- ALSO SEE polrect.xls, a Digital Manipulative

pdf of this page **videos of digital manipulative topics**

Digital Manipulatives

Digital manipulatives are now available as movable graphics (digital tokens) on a spreadsheet. They are ideal for the teacher to use as a model even without the student using them as manipulatives. They are useful for writing tests (including graphics), and for students to complete projects or labs.

Save and edit a copy for yourself (for not-for-profit purposes), but keep the original copy right, author and source page on the table of contents where you also might add note.

Learn how to insert a picture in a spread sheet or use or write a DIGITAL MANIPULATIVE spread sheet or just use these.

- "Hundreds Board for Web and Classroom Projection" -- both the traditional board and the integer board are available.
- 100s.xls -- Hundreds Board
- abacus.xls -- Chinese, Japanese, Roman, etc.
- areaf.xls -- Area formulas for a rectangle, parallelogram, triangle, trapezoid, circle.
- coins.xls -- Heads and tails of penny, nickel, dime, quarter, half- and silver dollars, imprinted with cent value or plain.
- bases.xls -- cubes for the 0, 1st, 2nd, 3rd powers of 2, 3, 4, 5, and 10 and coins (0, 1st, 2nd, powers of 5 and base 10).
- fract.xls -- Movable fraction bars from 1/1 to 1/15 on multiple sheets.
- deck.xls -- A deck of cards.
- dice.xls -- A single die, or pair of dice, sample space and "rollable."
- hands.xls -- shekels, tokens, in one or two hands.
- hyro.xls -- contains glyphs, cartuches, a column, and pre made phrases with which to create "hyroglyphic" messages.
- jig1.xls -- UNIT CIRCLE JIG SAW PUZZLE
- napierb.xls -- Napier's Bones for multiplication, division, square roots, with instructions.
- nomogrf.xls -- Nomograph for whole, signed, fraction, decimal computation.
- polrect.xls -- Vector addition with moveable vectors and with spread sheet computations.
- sinelaw.xls -- sine law digital manipulative
- slide.xls -- slide rules for decimal and fraction addition and subtraction and for log computation (unfinished).
- strips.xls -- Multiple strips & fraction bars.
- 42.xls -- Game for 2 Players, uses mental computation and words like multiple, reciprocal, cube, double, prime, ...
- sumelse.xls -- Sum Thing Else Game, keep a match and go again. The most matches wins the game.
- Term Tiles & Tokens

  create.xls -- for students, though it includes no active hot cells and only some of the "manipulative graphics."

hot.xls -- for students, and includes active hot cells of tiles.xls and only some of the "manipulative graphics."
tiles.xls -- for the parent, teacher, professional educator contains ALL "manipulative graphics" and active hot cells.

- trans.xls -- contains symbols of phonetic transcriptions and index of sounds.
- signalf.xls -- signal flags and Morse Code