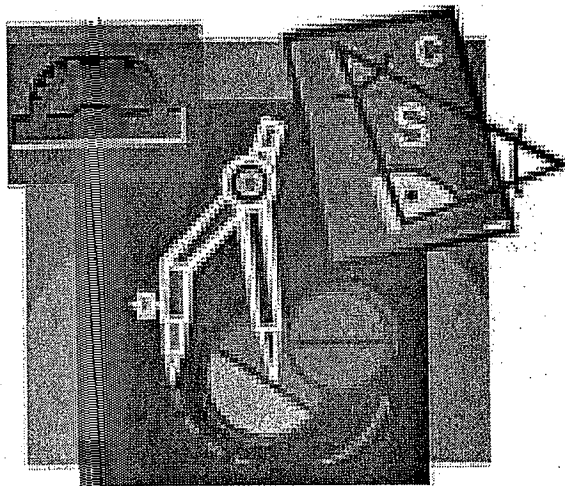


Far West Region G-REAT Center

Mathematics Academy 2007

Part II : Focus on Algebra Computer Lab and Activities



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Directions: The following activities use sites from the Internet. Explore the sites and complete each activity. Be prepared to share your findings with the group.

Activity 1: Create a Worksheet

Access one of the following website and create an algebra worksheet appropriate for a GED-level math class. Print the one page worksheet or save it to a disk.

http://www.math.com/students/worksheet/algebra_sp.htm

<http://www.aplusmath.com/Worksheets/index.html>

Activity 2: Using the Balance Beam to Solve Algebraic Equations

Access the following websites and use the balance beams to complete the following problems. Did you get the beams to balance and then solve the problem? Write down your answers.

http://nlvm.usu.edu/en/nav/frames_asid_201_g_4_t_2.html?open=instructions

http://nlvm.usu.edu/en/nav/frames_asid_324_g_4_t_2.html?open=instructions

$$3x + 2 = 4x - 5$$

$$2x - 2 = x - 6$$

$$x + 3 = 4x - 7$$

$$4x - 5 = 8x = 14$$

Activity 3: It's Just a Game!

Planning Your Move

Select one of the following three games and check your thinking skills! Can you get your moves right?

The Frog Puzzle – Can you get the frogs across the lake on the lilly pads?

<http://www.hellam.net/math2000/frogs.html>

Peg Move – If you prefer pegs, try the following site to see how many times it takes you to move the pegs from one side of the board to the other.

http://nlvm.usu.edu/en/nav/frames_asid_182_g_3_t_2.html

Towers of Hanoi – Solve the tower problem and test your theory by varying the number of disks.

http://nlvm.usu.edu/en/nav/frames_asid_118_g_4_t_2.html

Want to play another game? See what you think of the following.

Maths File. Spin the wheel and select the game!

<http://www.bbc.co.uk/education/mathsfiler/gameswheel.html>

Play Arithmetic Four! – Yes it's that game!

<http://www.shodor.org/interactivate/activities/ArithmeticFour/>

An Old Fashion Puzzle – It's time for the old fashioned puzzle game. Spend a few minutes seeing if you can get the puzzle completed!

http://nlvm.usu.edu/en/nav/frames_asid_327_g_4_t_2.html

Number Cruncher – Mathematical arcade game where you use the arrow keys to guide the number cruncher around the screen, collecting multiples as you move. Spend a few minutes checking on your multiples by seeing how quickly you can “crunch” them!

<http://www.hellam.net/math2000/cruncher.html>

Activity 4: Let's Look at a Lesson

Go to the Lesson Plan Site at the New York Times

<http://www.nytimes.com/learning/teachers/lessons/mathematics.html>

or

Illuminations

<http://illuminations.nctm.org/Lessons.aspx>

Explore the site and select one lesson plan that you want to use in the classroom. Print the lesson plan or save it to a disk. Answer the following questions:

1. Name of Lesson Plan
2. Topic of Lesson
3. Why did you select this lesson?

Go to The Futures Channel.

http://www.thefutureschannel.com/algebra_real_world.php

Select a movie dealing with algebra. Watch the movie and then answer the following questions:

1. Topic of the movie
2. Would you use the movie in your geometry class? Why or why not?

Activity 5: There Are So Many Choices!!!

Go to the Website section of your Algebra Manual or access the websites from the PowerPoint presentation. Spend some time exploring the different algebra sites, including the virtual manipulatives sites. Select one site that you find particular interesting or useful.

Write 30 second commercial to persuade your peers to use this site in their algebra classroom and the reasons it would be beneficial to their students.

Build-A-Pattern 11

Build this pattern from counters or coins!

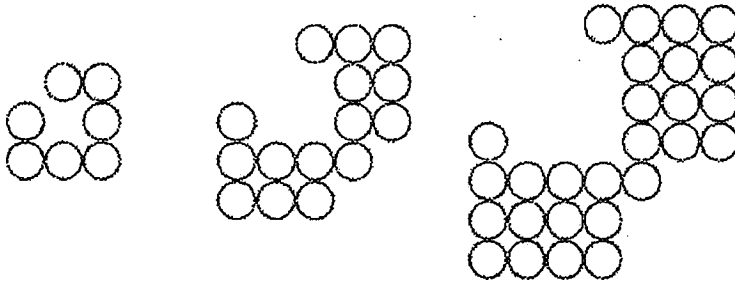


Figure 1 needs 7 chips.

Figure 2 needs 15 chips.

Figure 3 needs 27 squares.

How many chips will you need for figure 4? _____

figure 5? _____

What patterns do you see? Explain.

figure #	chips

How about figure 10? _____

figure 30? _____

How did you decide? Explain.

Build-A-Pattern 3

Build this toothpick train!



1 square needs 4 toothpicks.

2 squares need 7 toothpicks.

3 squares need 10 toothpicks.

How many toothpicks will you need for 4 squares? _____ 5 squares? _____

What patterns do you see? Explain.

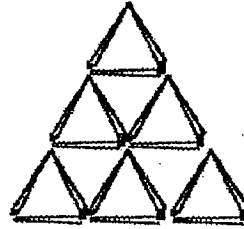
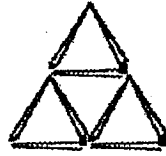
squares	toothpicks

How about 30 squares? _____ 100 squares? _____

How did you decide? Explain.

Build-A-Pattern 7

Build this pyramid from toothpicks or pattern blocks!



1 high makes 1 triangle.

2 high makes 4 triangles.

3 high makes 9 triangles.

How many triangles will you make for "4 high"? _____ "5 high"? _____

What patterns do you see? Explain.

how high	triangles

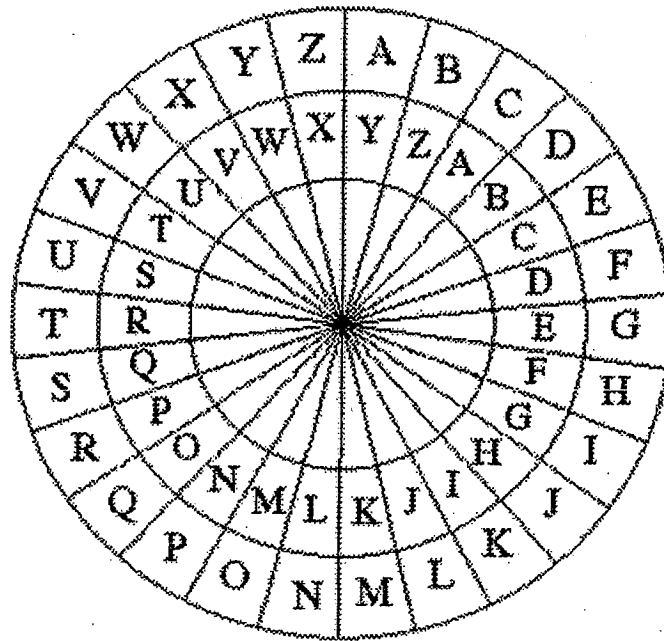
How about "30 high"? _____ "100 high"? _____

How did you decide? Explain.

Code Wheel: Encoding Letters to Other Letters

Centre for Innovation in Teaching Mathematics. Code wheel retrieved from the World Wide Web on at:
http://www.cimt.plymouth.ac.uk/projects/mepres/book7/bk7i16/bk7_16i1.htm

Look at the code wheel below. Each letter on the outer ring can be *encoded* by looking at the corresponding letter on the inner ring. A letter can be *decoded* by finding it on the inner ring and looking at the corresponding letter on the outer ring. Decode the sentence below.



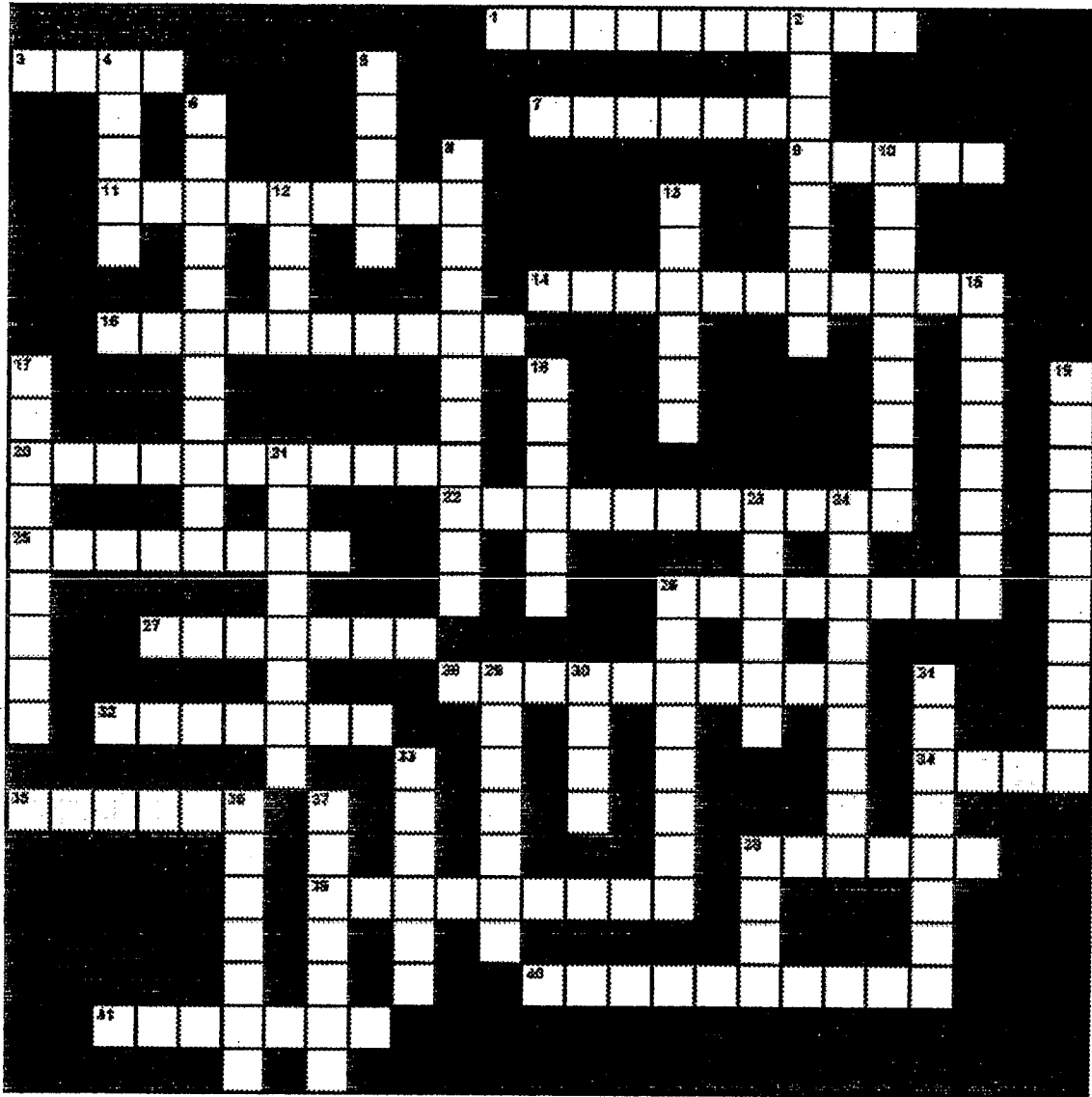
YJECZPY RFGLIGLE GQ JGIC ZPCYIGLE Y AMBC.

APCYRC Y QCLRCLAC MP NFPYQC SQGLE RFGQ AMBC YLB EGTC GR RM RFC
 NCPQML QGRRGLE LCVR RM WMS.

x^2	x^2	x	x	x	x
x^2	x^2	x	x	x	x
x	x	1	1	1	1
x	x	1	1	1	1
x	x	1	1	1	1
x	x	1	1	1	1

x

Algebra 1 Crossword Puzzle



Algebra 1 Crossword Puzzle Clues

Across

1. A type of notation used to express very large or very small numbers.
3. A number or expression that is raised to a power.
7. Polygon with 10 sides.
9. A unit for measuring volume.
11. Distance around the outside.
14. To use given data to estimate a value beyond the known values.
16. A monomial or sum of monomials.
20. A probability based upon an event that has already occurred.
22. To use given data to estimate a value between known values.
25. Another name for the y coordinate.
26. Polygon with 5 sides.
27. In a right triangle, the ratio of the opposite side to the adjacent side.
28. A set of data involving one variable.
32. An equation that contains more than one variable.
34. A solution to an equation $f(x)=0$.
35. A region of a circle often called a pie slice.
38. The middle of an arranged data set.
39. A polynomial with exactly three terms.
40. The longest side in a right triangle.
41. Polygon with six sides.

Down

2. A relation where each x value has only one y value.
4. The ratio of vertical change to horizontal change.
5. An angle whose measure is less than 90 degrees.
6. Statistical measure that shows how pairs of variables are related.
8. The likelihood of an event occurring.
10. Data involving two variables.
12. The average.
13. Set of points equidistant from a given point.
15. A sentence stating two expressions are equal.
17. The mathematical symbol designated by an exclamation mark.
18. A notation for listing all the elements of a set using brackets and commas.
19. The elements of a universe not contained in a given set.
21. $\{\dots-3,-2,-1,0,1,2,3,\dots\}$
23. A first degree equation.
24. A quadrilateral with exactly one pair of parallel sides.
26. Coplanar lines that do not intersect.
29. Polygon with 9 sides.
30. A type of diagram showing relationships among sets.
31. A quantity whose value changes.
33. In a right triangle, the ratio of adjacent side to hypotenuse.
36. Polygon that is both equilateral and equiangular.
37. Polygon with 8 sides.
38. Data that occurs most frequently in a data set.



Shops at the Mall

1. You are planning to lease space for a new mall that has one million square feet of leasable space. Determine how much space you would allocate for each type of specialty shop by completing the table below.

<u>Type of Shop</u>	<u>Percent of Mall</u>	<u>Allocated Leasable Space</u>
Women's clothing	25	_____
Men's clothing	10	_____
Food	15	_____
Service	5	_____
Shoes	10	_____
Jewelry	3	_____
Family items	7	_____
Gifts	17	_____

2. Using the guidelines, about how much of the mall's available space would NOT be leased? _____

What would you do with the remaining space? Discuss your decision here. _____

3. Make a scale drawing of your mall, showing how you will allocated leasable space. Be prepared to share your drawing with the class. Consider the following:

- Some stores will be bigger than others.
- Stores competing for the same business must not be located next to each other.
- A written or visual plan for dealing with traffic flow, or walking, in the mall must be included.
- A mall will have two stories, and both floors must be included in your drawing.
- A food court should be located on the mall's second floor.