Abacus

From the desk of the Abacus editor

Welcome back. I hope you, like me, had a refreshing summer and are happy to be back in the classroom. In this issue of the Abacus, you will find a variety of interesting, useful activities. There is something for every level, K through 8. Of special note: the Halloween pages. These were prepared by one of the students in a fourth year child studies practicum course at the University of Guelph. The students in this course created activities for use in several Wellington County schools.

Let me turn now to my annual plea. Please send for possible inclusion in the Abacus those activities you have created for your classroom. Too many of us hesitate to do this because we feel our material isn't good enough to share. Often, this hesitancy is totally unjustified.

When you submit an activity, please include the level, skills, materials, and any other relevant notes to help a teacher use your ideas. The ABACUS desktop publishers will prepare the layout and artwork but what you send in should be as close as possible to what you would like to see as final copy. Send one page, or two pages, or send an entire unit. Please share with your colleagues and help make the ABACUS a truly effective teaching aid.

Until next time,
Amy Parker

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Primary Problem Solving

LEVEL: K-2

OBJECTIVE: To provide an opportunity for problem solving.

ACKNOWLEDGEMENTS:
Marilyn Philbrick, Co-ordinator of Primary Education, Waterloo County Board of Education.

Where do I sit?

Four old friends are gathered under the shade of an old oak tree for their weekly card game. The owl, rabbit, raccoon, and bear like to play cards with the same partners. The partners sit across from each other. The only player without paws is always the bear's partner. The raccoon always gets mad because the bear keeps bumping her left paw. Where is each animal sitting?

Sundaes

Sammy is buying a sundae at the Ice Cream Parlour. He wants one scoop of ice cream, one kind of sauce, and one kind of topping. Here are the flavours of ice cream and the kinds of sauces and toppings Sammy can choose from:

Ice Cream	Sauces	Toppings
peanut butter	caramel	nuts
chocolate	chocolate	coconut
	strawberry	

What are all the different sundaes Sammy could order?

A Number Puzzle

Charlene came home with a puzzle for her brother Jeffrey. She gave him three cards. One card had a 2 on it; one card had a 4 on it; and one card had an 8 on it. Charlene asked Jeffrey how many 2-digit numbers he could make with the three cards. Jeffrey made 6 different 2-digit numbers. What numbers did he make?

A Publication of the OAME/AOEM • Volume 32 • Number 1 • September 1993

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"IDEAS RUNNING RAMPANT"

Design and Technology from Kindergarten to Grade 6

ACKNOWLEDGEMENTS: These activities were submitted by Peter Saarimaki, chair of the Early Years/Formative Years Committee. Ideas and materials were suggested by the committee members: Carmen Durbacz, Ralph Connelly, Shirley Fairfield, Barry Onslow, Ron Sauer, and Lorna Wiggan.

INTRODUCTION: Children come to school with an innate curiosity about life and their environment, both natural and artificial. We can build on these interests while helping the students develop good learning techniques. With this as a goal, here are some design and technology activities that are appropriate for students in the Primary division, with some extensions suggested for the Junior division.

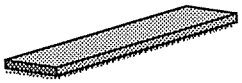
"FAR, FARTHER, FARTHEST"
"LOIN, PLUS LOIN, LE PLUS LOIN"

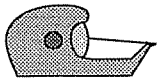
Here is an activity involving ramps for those who are so "inclined".

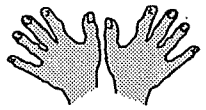
LEVEL: K-1 **SKILLS:** Comparison, measurement, ordering

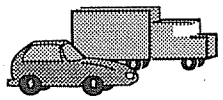
What you need: / Tu as besoin de:


books/livres


board/planche


tape/ruban gommé

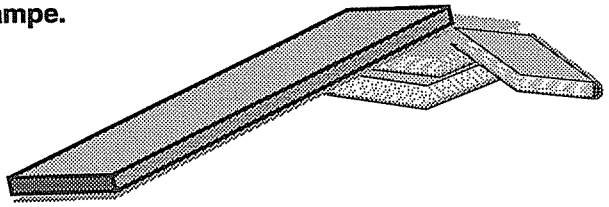

your hands/tes mains


toy vehicles/véhicules jouets

What to do / Fais ceci:

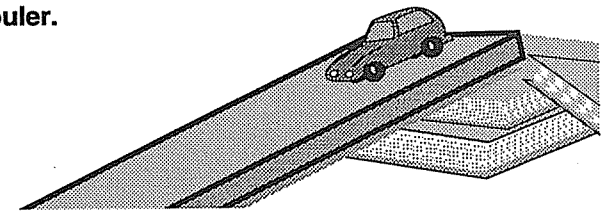
1. Use the books and board to make a ramp.

Utilise les livres et la planche pour faire une rampe.



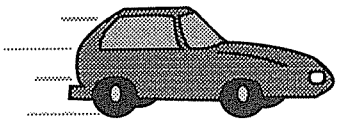
2. Put a vehicle at the top of the ramp. Let it go.

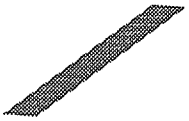
Mets un véhicule en haut de la rampe et laisse-le rouler.



3. Use the tape to mark where the vehicle stops.

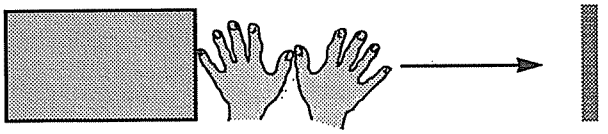
Utilise le ruban gommé pour indiquer où le véhicule s'arrête .





4. Use your hands to measure from the bottom of the ramp to the tape.

Utilise tes mains pour mesurer du bas de la rampe au ruban gommé.



5. Try this with all the vehicles.
Répète avec tous les véhicules jouets.

6. Which one went the farthest?
Lequel a roulé le plus loin?

"THE PAPER TOWER"

LEVEL: K-6

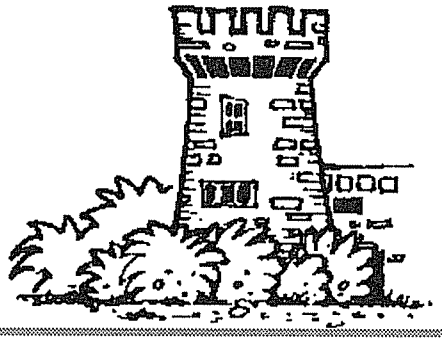
OBJECTIVE: To encourage children to create and experiment with structures in a problem-solving activity.

MATERIALS: sheets of regular 8.5" x 11" paper, several 1 kg masses, pieces of cardboard

THE PROBLEM: Using ONLY one sheet of regular paper (8.5" x 11"), make the STRONGEST tower you can that will support a 1 kg mass 11" above the floor. There are many ways this can be done, so discover and record as many as you can. (Note: Use one piece of cardboard on which to place the tower and another piece to hold the mass on top of the tower. This cardboard should not be attached to the tower.)

Which tower design is the STRONGEST?
Why do you think this happens?

Which tower design is the WEAKEST?
Why do you think this happens?



Notes to the teacher:

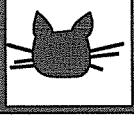
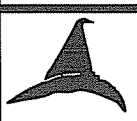
1. Younger children may just tackle the problem of supporting any weight, at any height.
2. The floor is probably the safest place to do this work as the kilogram mass will fall off the structures a number of times.
3. The materials listed above are all they should need (i.e., no sticky tape, no glue, no paper clips). Part of the problem may be to fix together the free edges of the paper.
4. The children can record their successes as plan drawings that show a top-down view. Older students may want to show other views as well.
5. They should be encouraged to lower the kilogram mass slowly on to the tower, watch what happens, and analyze what is wrong with a tower that collapses. They may notice, for instance, that the walls buckle at a particular point. If this is so, they should try to remedy the defect, perhaps with an extra fold in a different place. Analyzing what is wrong with a 'solution' to a problem is an essential part of the problem solving process and is a point at which many children give up easily if they are not encouraged. Initial failure is not a reason for giving up.
6. Evaluation of each child's performance will include the product as well as group discussions of conclusions with their classmates. Much of this can be recorded in their math journals. You will be able to evaluate aspects of measurement, geometry (shapes, 2D from 3D, perspective), probability and chance, graphing, and mathematical communication skills.



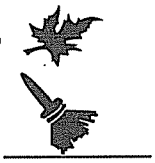
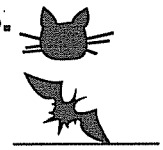
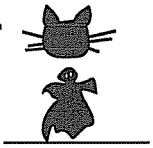
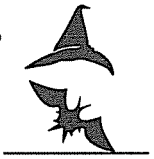
BEWITCHIN' MATH

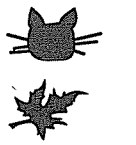
ACKNOWLEDGEMENTS: This activity was created by Lory Giesbrecht. A child studies graduate from the University of Guelph, Lory is now attending Niagara University for teacher education.

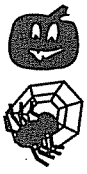
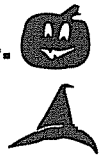
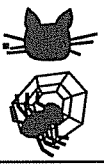
LEVEL: Grades 2-3 **SKILLS:** Addition, multiplication

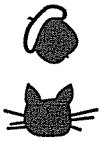
0	1	2	3	4	5	6	7	8	9
									

First do these as addition questions. Then do them using multiplication.

1. 
2. 
3. 
4. 
5. 
6. 

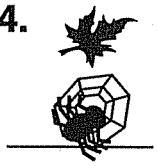
7. 
8. 
9. 
10. 
11. 

12. 
13. 
14. 
15. 
16. 
17. 

18. 
19. 
20. 
21. 
22. 

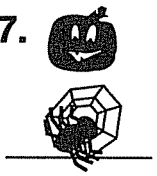
0	1	2	3	4	5	6	7	8	9
									

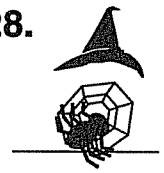
23. 

24. 

25. 

26. 

27. 

28. 

Make two number questions of your own using the code.
Draw and answer them.

29.

30.

31. As a surprise for your friends, you decide to make them Halloween costumes. You start on October 1. Marla's Catwoman costume will take you 7 days to make. Jamie's Batman costume will take 6 days. You will need 7 days for a Ninja Turtle costume for Karim. Megan's witch costume will take 6 days. Finally, your ghost costume will take you 5 days to finish. On what day will you have all the costumes ready? Draw pictures of these and other costumes and use your drawings for a Halloween display in the classroom.

HAPPY HALLOWEEN!



Problem Solving Using Pattern Blocks

**Acknowledgements: Ron Sauer, Co-ordinator of Mathematics,
Waterloo County Board of Education**

Level: 4-8

Instructions: These materials can be used to provide individual, small group or whole class activities.

Arctic Designs

MEMO TO: Design Team

	D	
I		C

FROM: Head Office,
Innovative Design Corp.

RE: Arctic Modules

We have been contracted by a company to design the floor plan for a new arctic research station. It is to consist of 5 square modules. Our challenge is to:

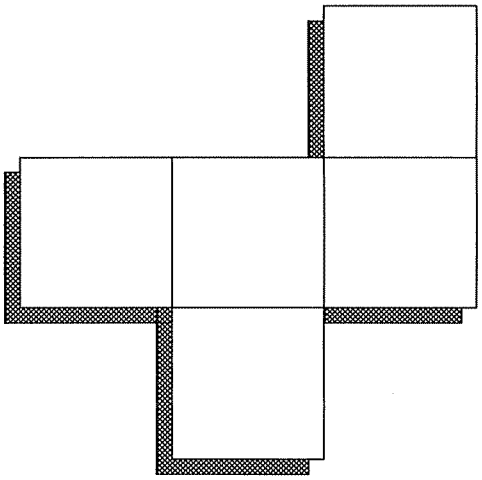
- Design as many different configurations as possible using 5 squares. They want all sides to touch fully edge-to-edge.
- Identify the design(s) which has the least amount of exterior wall space so that temperature loss is reduced.

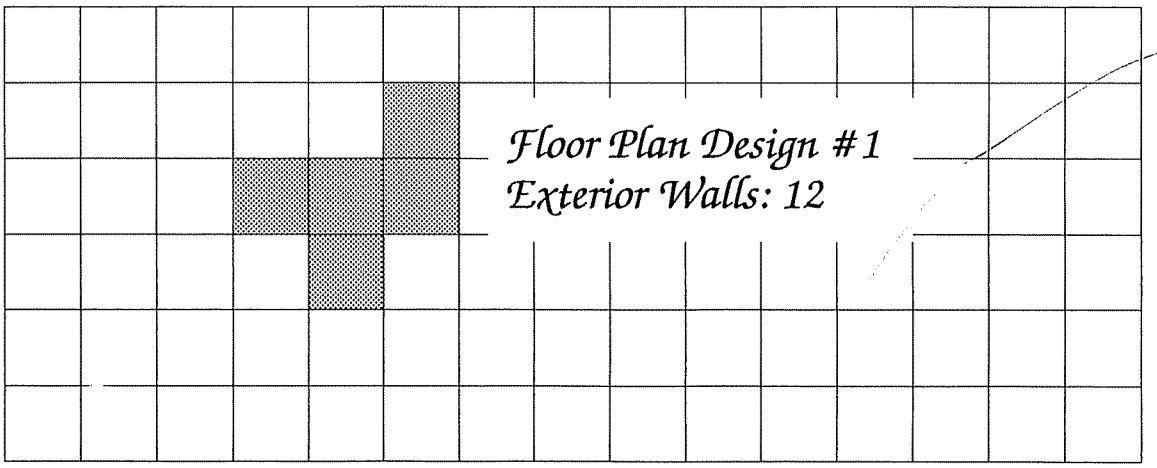
Use five wooden or plastic squares to find the different floor plans, then copy each using our company grid paper.

Send all drawings to head office by FAX no later than Monday p.m.

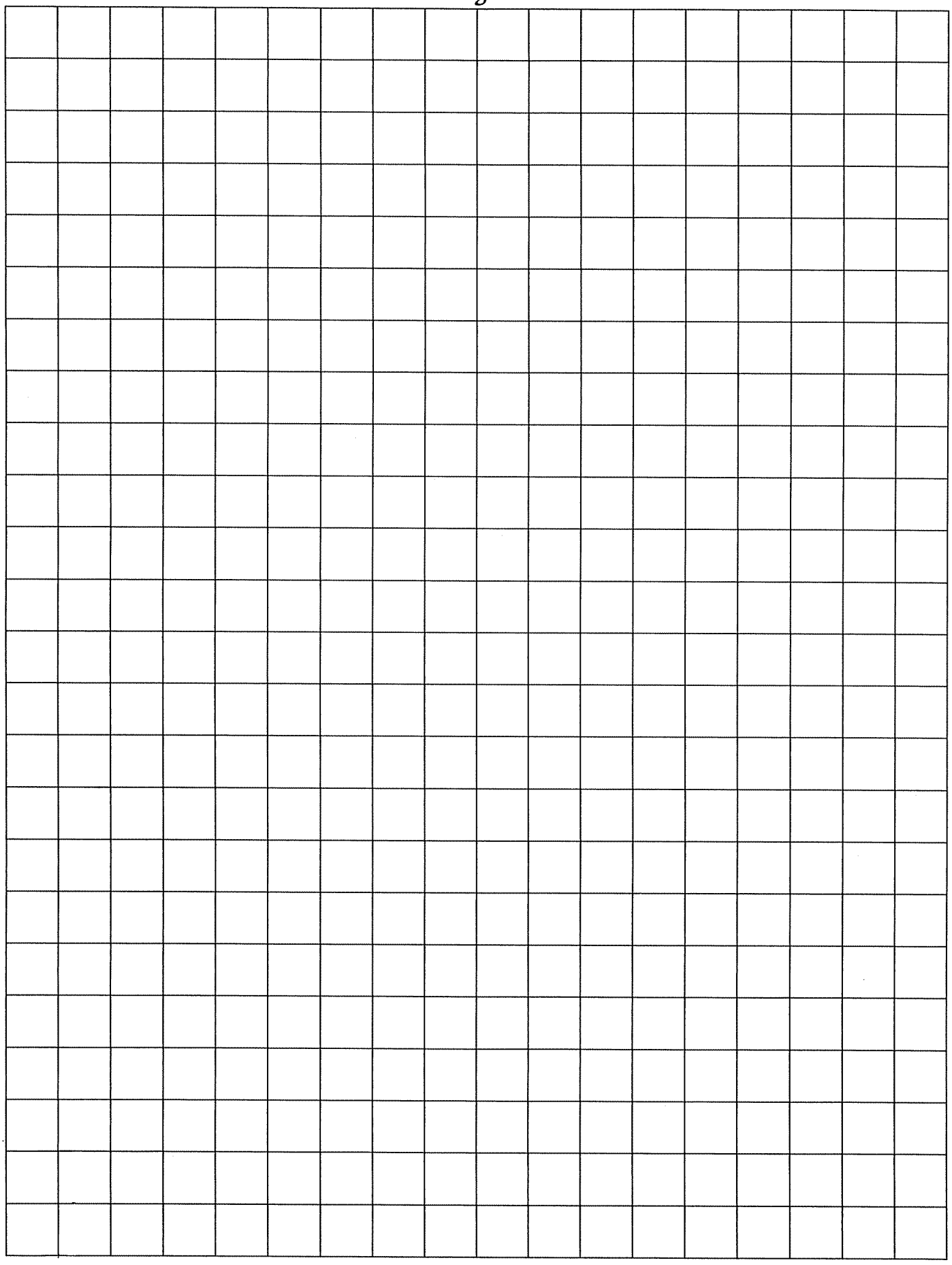
Design Team Materials

- 5 orange squares
- centimetre grid paper
- pencil



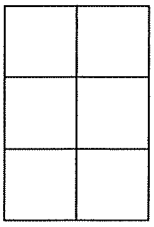


1 cm grid

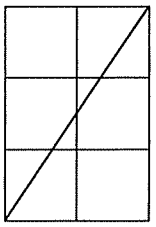


Diagonals & Discoveries

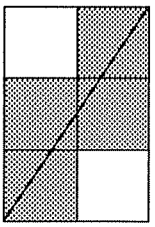
If you have a rectangle like this,



and you draw a diagonal,



the diagonal goes through 4 squares.



- Investigate this diagonal pattern for other rectangles.
- Use the squares on grid paper to draw rectangles.
- Use a ruler to draw the diagonals.

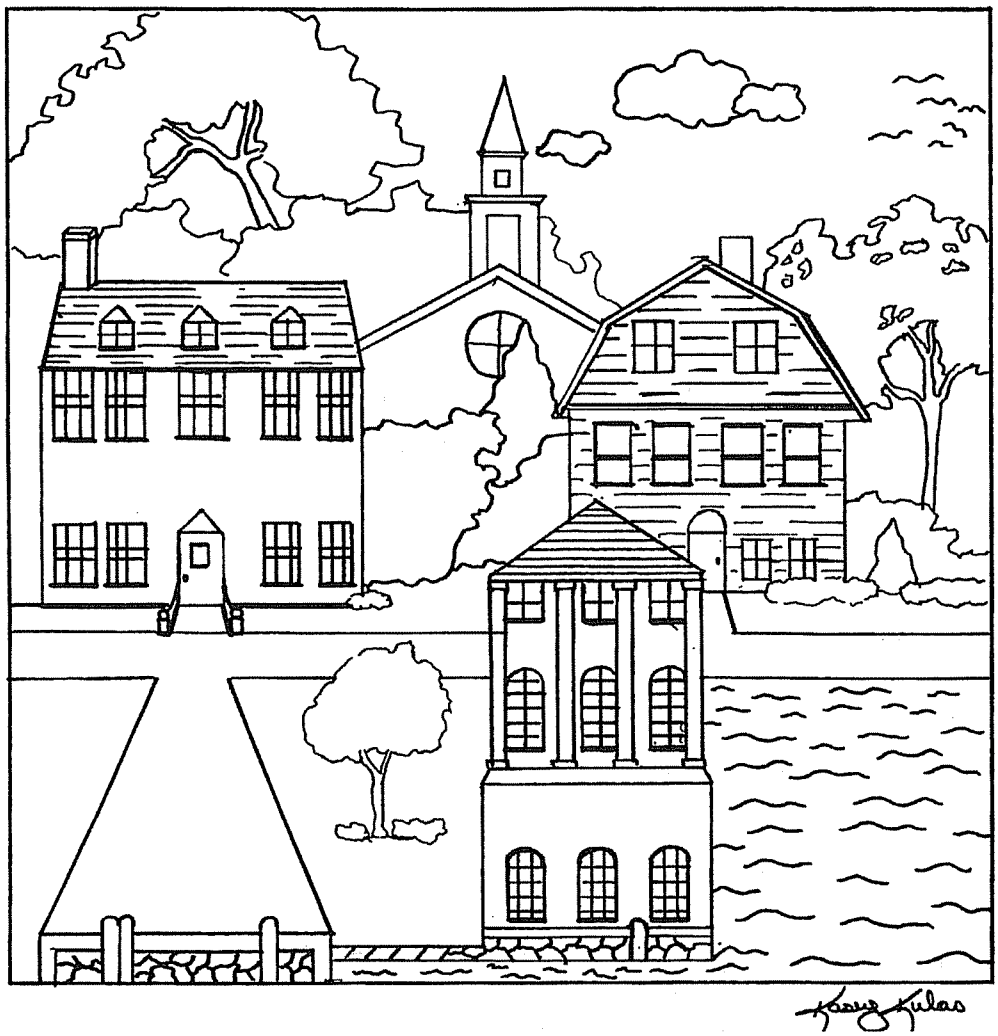
Dimensions of Rectangle	Squares Cut with Diagonal

GEOMETRIC SHAPES EVERYWHERE

ACKNOWLEDGEMENTS: The following activities were submitted by Ron Willson, Peel Region Board of Education.
Graphic Art by Kasey Kulas, a graduate of the Graphic Design program at George Brown College.

LEVEL: Grades 7-9 **SKILLS:** Understanding geometrical terms, shape recognition

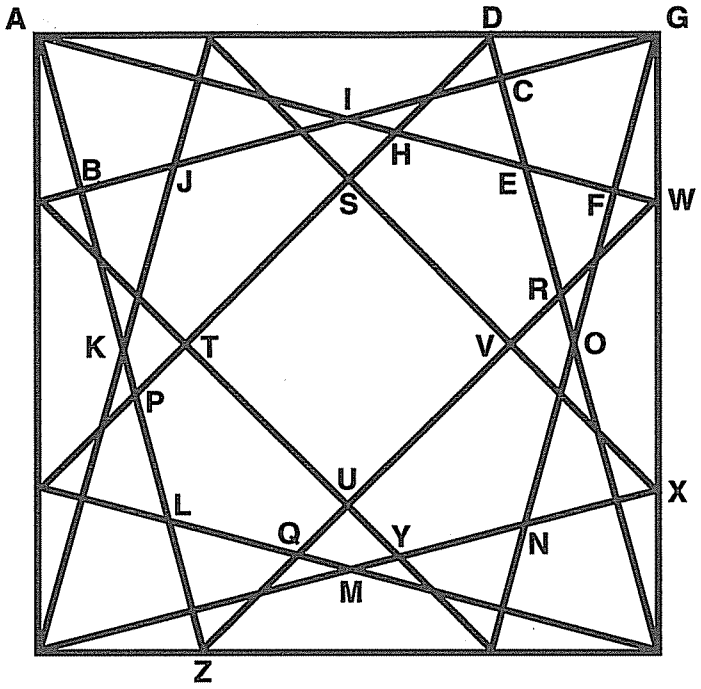
"SHAPES IN PICS!"



In the picture above, locate the following shapes and then describe where the shape occurs in the diagram:

a. an isosceles triangle with an acute vertical angle
b. an isosceles triangle with an obtuse vertical angle
c. a very small parallelogram
d. a large trapezoid
e. a pentagon with a vertical axis of symmetry
f. a sinusoidal curve
g. two alternate angles between parallel lines
h. a reflex angle
i. two congruent figures
j. one angle which reflects another angle in a vertical line
k. a closed figure formed from curves

"FIND THE FIGURE"



Complete the information below giving the name, description, whether equally angled or sided, and the number of axes of symmetry:

	Name	Description	Equiangular?	Equilateral?	# of Axes?
1.	SHERV				
2.		Quadrilateral	No	No	1
3.		Hexagon	No	No	0
4.	AZW				
5.	AERZ				
6.			Yes	Yes	4
7.	PHERQL				
8.	JIEONMLK				
9.	THWXY				

10. Make up 6 of your own and try them on your friend.