Abacus

Welcome back for another school year. This is my first issue of the *Abacus*. I look forward to presenting activities that will motivate, entertain and challenge your students in the classroom or at home.

Thank you to Jennifer Weiner who provided a potpourri of activities to teach children to LOVE mathematics while she was editor. A special thank you to those who submitted ideas for this issue. Appreciation is also extended to my daughter Anita Schatz for her assistance with technical details and proofreading.

This issue focuses on giving the *Abacus* a new title page and on making sense of numbers in a variety of ways. Here is an opportunity for your students to participate. Details are given on **Abacus Contest Entry Form**. Design a title page and enter the Pentomino Sum 20 challenge. A committee will be set up to choose the best entries for publication. All entries will be acknowledged. Entry deadline is December 31, l996. The new title page will introduce the March, l997 issue.

This issue will focus on number sense and numeration. The learning outcome for this strand is that students will be able to solve problems through the application of numerical representations and operations.

I remember Mother's button drawer from my early school days. She did a lot of sewing and put miscellaneous buttons in a drawer which entertained me for hours during my childhood. My own children and private students have also enjoyed the same collection. At an early age we learn numbers by exploring, inquiring, collecting and counting. **Button Numbers** is a sample of what I have observed children doing with small buttons. For this activity you need a collection of shirt/blouse size buttons in all colours and a few large coat buttons. Time should be allowed for the child to 'play' with the buttons to gain familiarity with them. Introduce the number shapes and observe the process the child uses to discover more about numbers.I recommend the button drawer for early childhood to grade six. Listen to the descriptions of the button creativity you observe during this informal experience.

During my talks to classes about braille I find children are very interested in knowing about numbers in braille. **Numbers in Braille** gives braille symbols for numbers and examples of some arithmetic expressions in braille. Braille gives the blind a tactile approach to numeration.

Judi Waters, Northdale Public School, London, Ontario uses math journals in the primary division. Math journals give students the opportunity to reflect on experiences and organize their thoughts in order to communicate clearly. These cognitive processes help children move beyond the mere performance of techniques and toward a deeper understanding. Writings can be broken up into three categories: Learning Logs, Pre-Learnings and Auto-Biographical Entries. **All About Three** provides examples of pre-learning writings that occur in conjunction with the introduction of multiplication at the grade three level.

Before the children are introduced to 'groups of numbers' or 'times', they are asked to write

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in their journals all the things that come in three's. The lists tend to be very comprehensive, divergent and thought provoking. Judi suggests taking the students' written and oral ideas and making a big book for the class to illustrate and share at home. **All About Three** will enhance curiosity and will lead to your new unit about multiples of three.

Shirley Fairfield, Scarborough Board of Education, Scarborough, Ontario brings 'Pentominoes to the Rescue' to tie numeration with spatial sense and geometry. This grade four to nine activity builds skills in reasoning/critical thinking and gives experience with manipulatives.

This concludes number sense and numeration activities for this issue. Do remember to send your contest entry as soon as possible.

Frances Schatz

ANSWERS:

Numbers in Braille

$$\begin{array}{r} 42 \\ 35 \\ \hline 77 \end{array} \qquad \begin{array}{r} 4391 \\ +\ 81 \\ \hline 4472 \end{array} \qquad \begin{array}{r} 27 \\ \times\ 6 \\ \hline 162 \end{array} \qquad 6\overline{)72}\ 12$$

Pentominoes Exercise 1

6	9	5	3	2	1
1	2	4	5	4	4
7	3	1	7	3	1
2	9	1	2	6	7
5	3	8	1	5	3

ABACUS CONTEST ENTRY FORM

Deadline: December 31,.l996

Mail or Fax: Frances Schatz, Editor
56 Oxford Street,
Kitchener, Ontario, N2H 4R7 **FAX:** (519) 578-5144

1. On a separate piece of paper, design a title page for the *ABACUS.* Your design must include the word ABACUS, a picture to illustrate this word, and in 50 words or less answer the question:
   What is an Abacus?

2. Colour code your solution to **Pentominoes Sum 20** on the following grid. Please note that your solution cannot be the same as the sample given in the introduction to this issue.

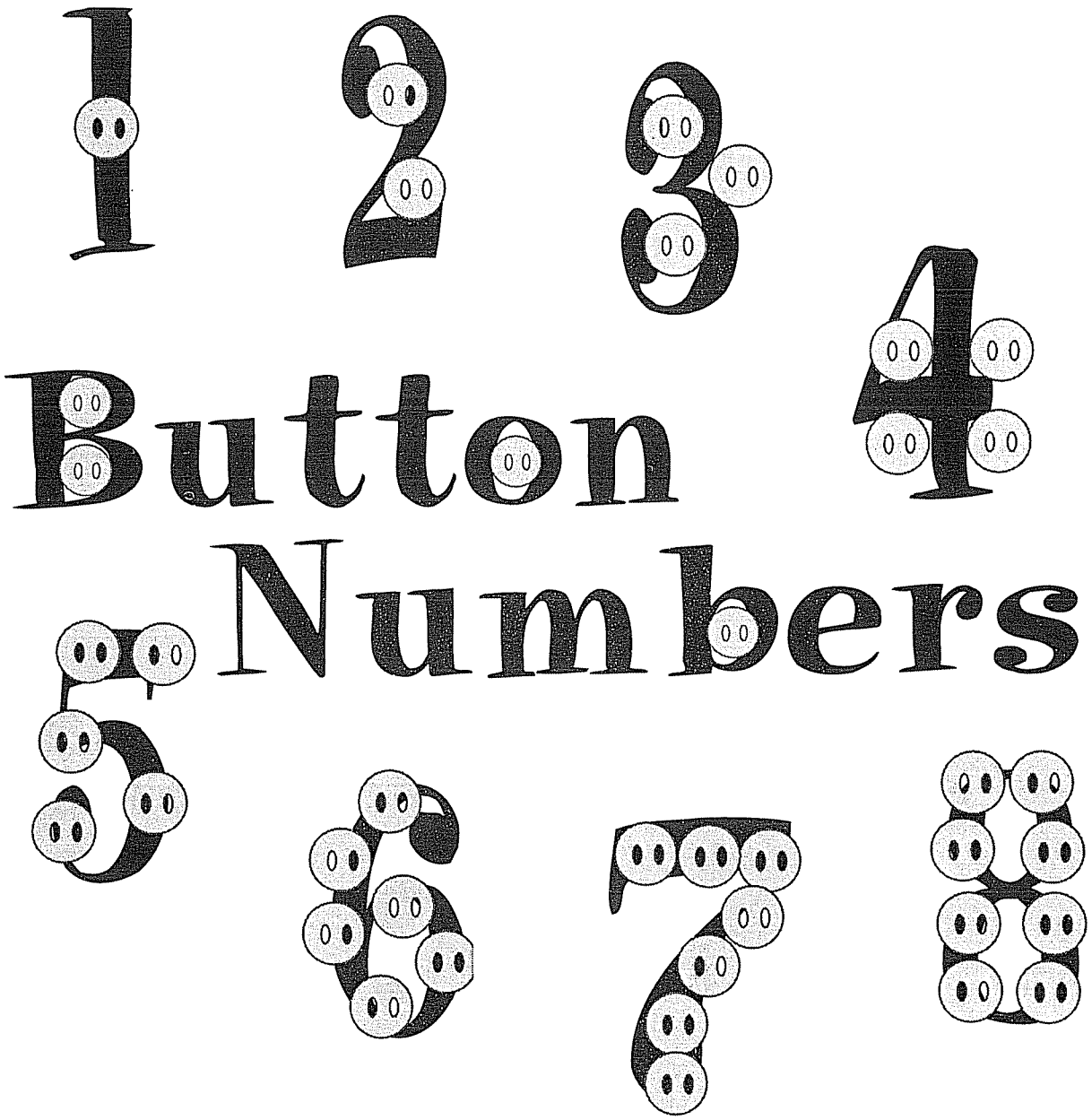
6	9	5	3	2	1
1	2	4	5	4	4
7	3	1	7	3	1
2	9	1	2	6	7
5	3	8	1	5	3

Please include the following information.

Name _____

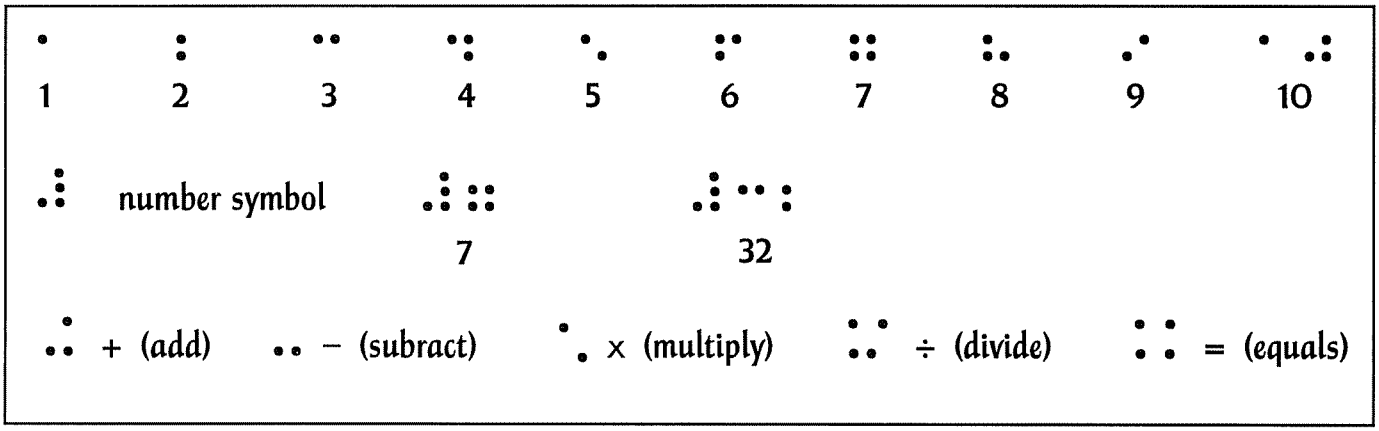
School _____ Grade _____

Address _____ City _____ Postal Code _____

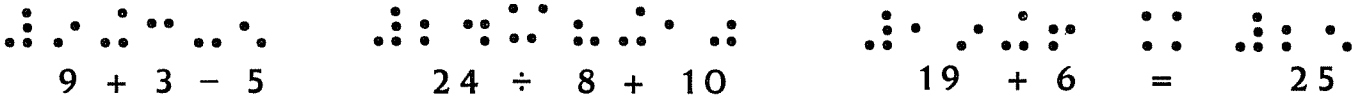


1. Make button sets to show
   9 10 11 12
2. Let 1 large coat button = 10 small buttons.
   Use this idea to show
   9 10 11 12 13 14 15

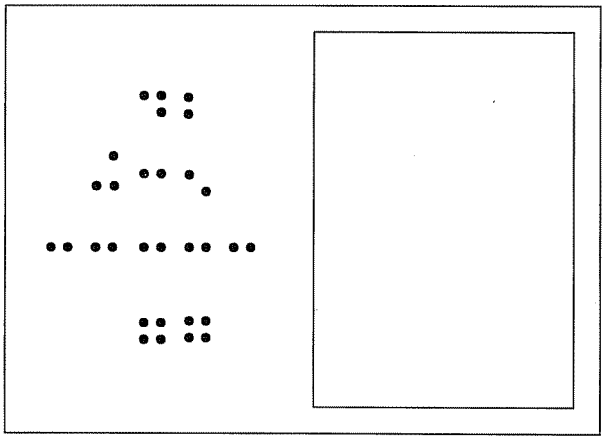
NUMBERS IN BRAILLE

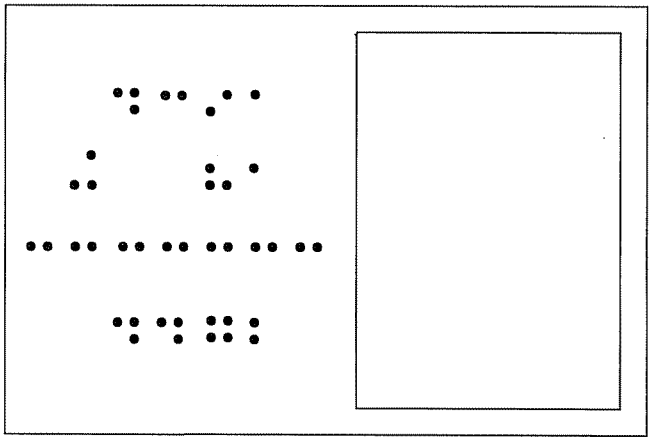


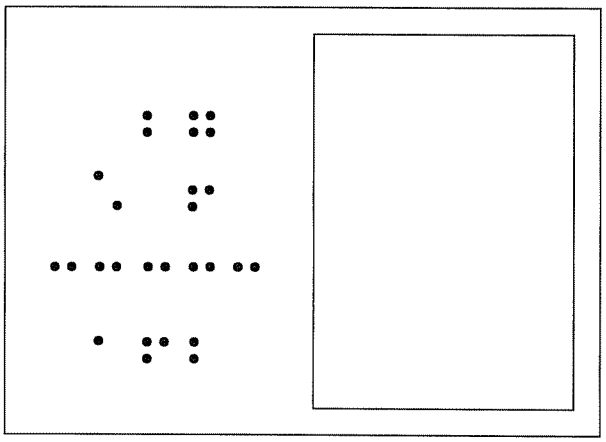
Examples

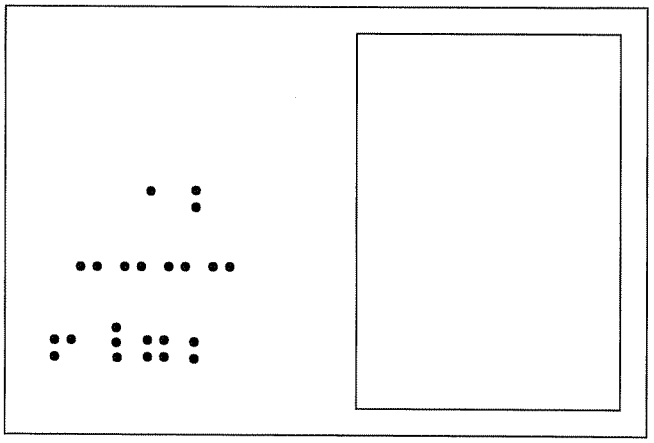


Write the following arithmetic expressions









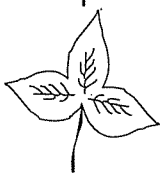
All About Three

Oddly enough and usually . . .
These are the things that come in three.

Cut out and illustrate one of the following in your journal.



Always and absolutely
Triangles come in three.
Sides and corners
As you can see
Always come in three.



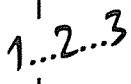
And if you feel
particularly itchy.
It is probably because
of the poison ivy.
The leaves come in
threes.



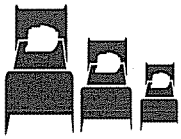
And traffic lights usually
Come in three.
Red, yellow and green.



Usually sizes . . .
Medium, large and small,
There are three in all.

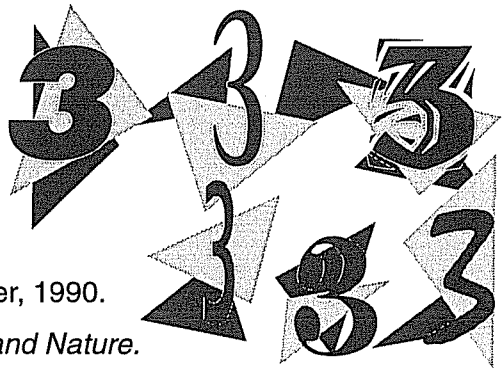


And when you wish
To start a race.
It's 1..2..3..
That sets the pace.



Goldilocks bears,
Their beds and chairs
Have come in threes.
Now do you see?

Write in your journal all the things you know about 3.



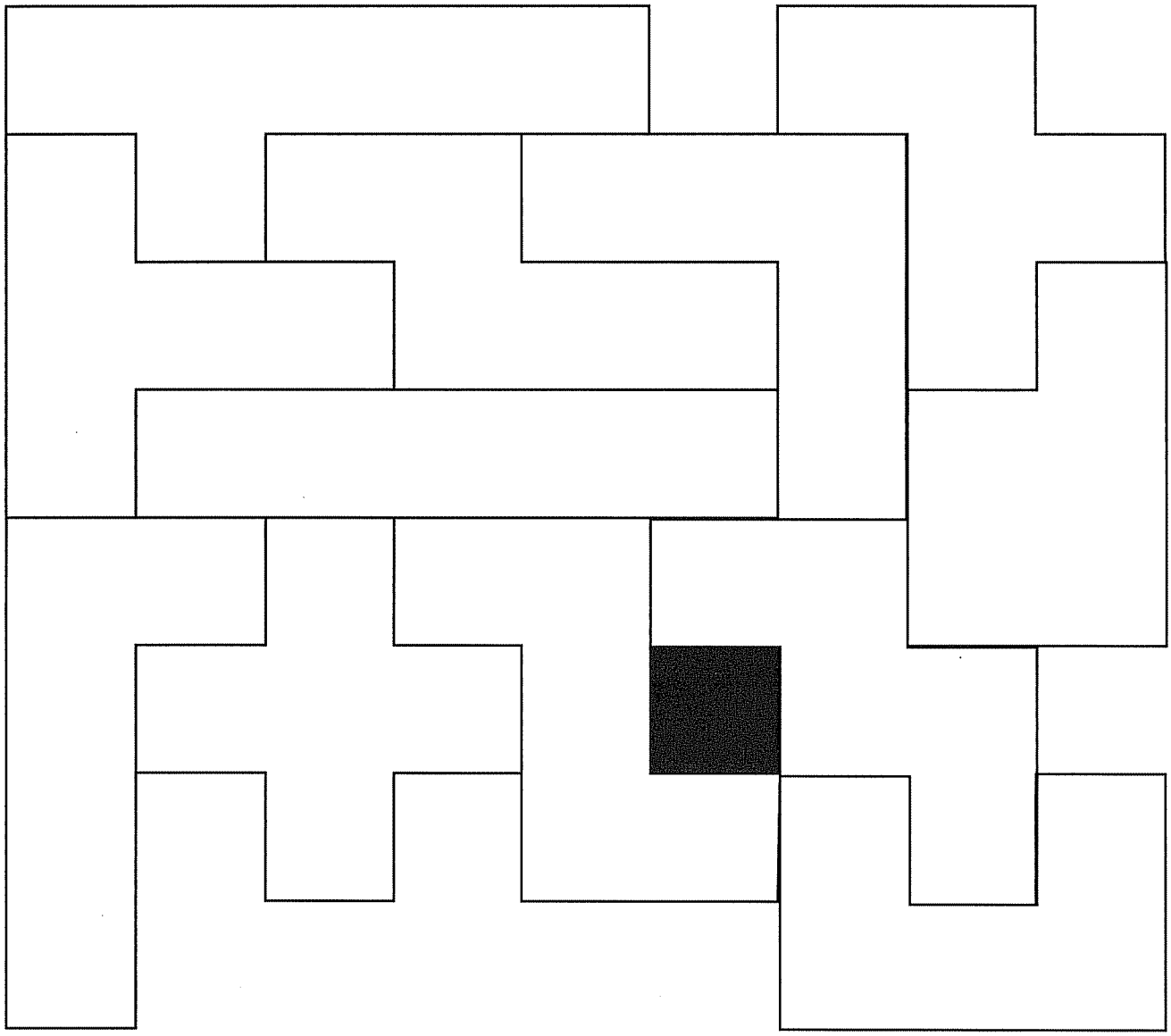
For other ideas about THREE here are two possible books:

Aker, Suzanne. *What Comes in 2's, 3's and 4's?* illust. by Bernie Karlin. New York: Simon & Schuster, 1990.

Ross, Catherine S. Triangles: *Shapes in Math, Science and Nature.* Toronto: Kids Can Press, 1994.

PENTOMINOES TO THE RESCUE

PENTOMINOES SUM 20 – Puzzle Pieces



Make a copy of the above. Cut out the twelve pentomino shapes. You will use any six of the above for the Sum 20.

PENTOMINOES TO THE RESCUE

PENTOMINOES SUM 20

Cover the grid with six pentominoes so that the sum of the numbers under each pentomino piece is 20. Record your answer by colour coding the appropriate squares on grid provided.

6	9	5	3	2	1
1	2	4	5	4	4
7	3	1	7	3	1
2	9	1	2	6	7
5	3	8	1	5	3

Contest challenge: Can you find another solution? On your entry form colour code the solution that is different than the answer given on editorial page.