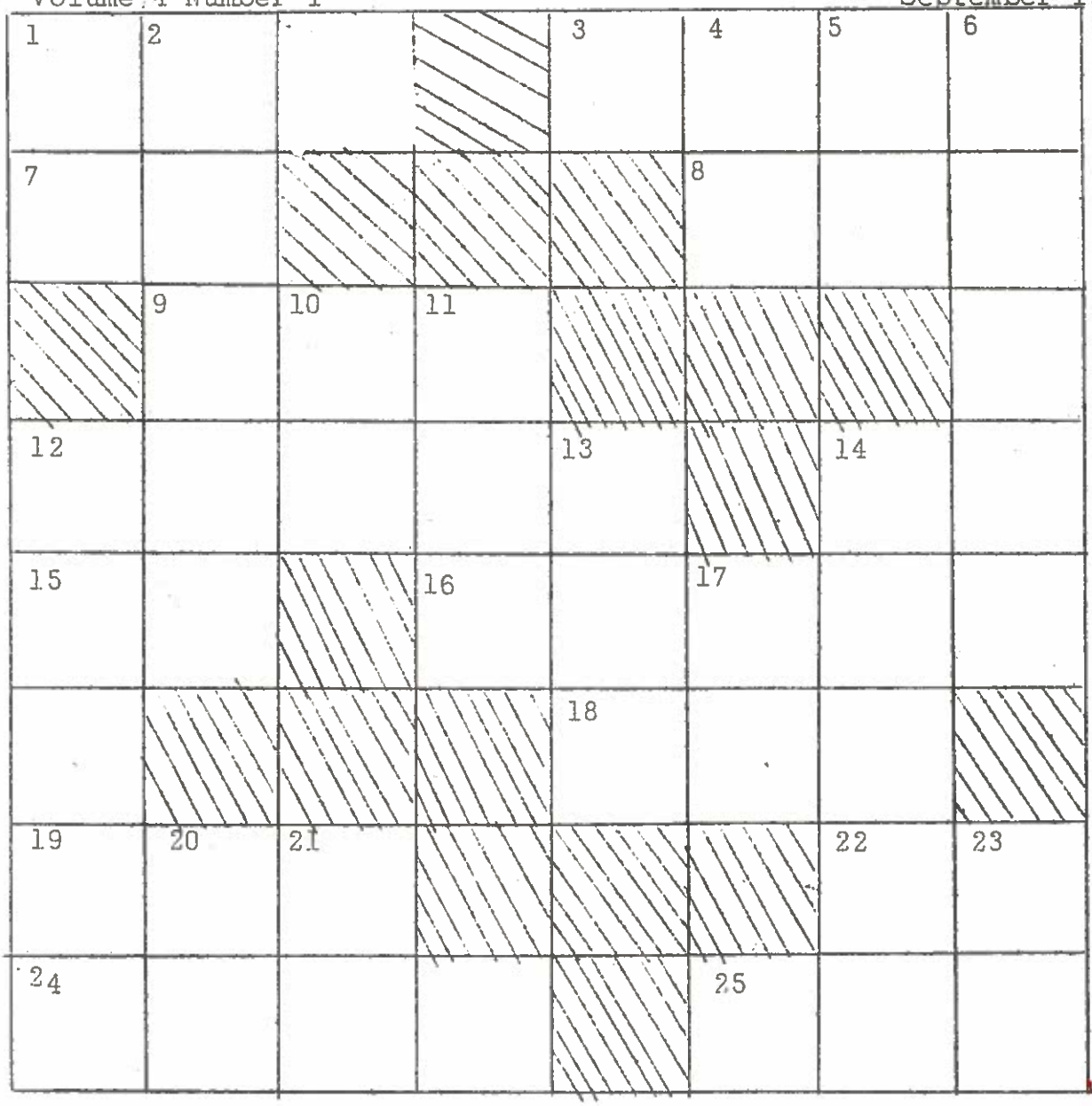
ABACUS

A PUBLICATION OF THE
ONTARIO ASSOCIATION for MATHEMATICS EDUCATION

Volume 4 Number 1 September 1976



YOUR MEMBERSHIP IN OAME INCLUDES THE ABACUS YOU CAN COUNT ON IT!

WRITE TO THE SECRETARY TREASURER

1976-77 EXECUTIVE

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MATHEMATICS CROSSWORD PUZZLE continued from page 1

Across
1. 4 x 64
3. 7200 +30 +1
7. 8 x 9
8. 5 x 60
9. 100 + 10 + 1
12 27 100 - 9
14. 5 twelves
15.(3 x 8) + (3 x 8)
16. 97 080 + 200
18. 10 tens
19. 196 + 86 + 137
22. 9 fives
24. 50 x 30
25. 1000 – 100

Down
1. 270 divided by 10
2. 31 624 + 20 554
4. 2 tens and three
5. 90 divided by 3
6. 100 x 100
10 700 divided by 70
11. 200 - 1
12.40 072 - 15 728
13. 3 x 57
14. Sixty-eight thousand forty
17. 5 + 5 + 5 + 5
20. 1000 divided by 100
21. (2 x 50) - 2 x 5)
23. 5 x 5 x 2

ALL -MATCH (more challenging game)

This game is for 2 to 6 players
You need 36 cards, four each for the numbers 1 to 9 and two dice, one marked with numerals or dat patterns from 1 to 6, the other for the numerals from 4 to 9.

1. The players take turns tossing the dice, adding or subtracting the numbers turned up, and laying down the card for the sum or difference if he can. If he has cards for both the sum and the difference, he may lay them both down.

2. The first player to lay down all his cards is the winner.

Submitted by B. Pollard
Johnston Memorial School, Sarnia

12
11
10
9
8
7
6
5
4
3
2

Dice Game (easy game)

1. Each child needs paper with numbers 2-12 on it and a paper.
2. Children take turns throwing the pair of dice.
3. The number they throw they cross off on their paper.
4. Winner is the one with all numbers crossed off or the most numbers crossed off in a given amount of time.

Submitted by S. Wilcox
Johnston Memorial School, Sarnia

MESSAGE FROM THE PUBLISHERS

The office of the Ontario Association for Mathematics Education regrets that it has not been able to publish Volume 4 Number 1 of the Abacus earlier this year. Our editor, Mr.A Czempinski has had unforeseen difficulties in having the material reach our office for publication.

The office has obtained from various sources the material in this pamphlet of papers. In any case where we knew the origin we have so indicated. We regret we have not the actual source of all the material.

The president has asked me to extend a special welcome to those more than 100 Elementary "Schools" who joined the association during the joint OAME-NCTM Drive. He also welcomes those elementary teachers who joined while attending the third, fourth and fifth leadership seminars. A welcome is also extended to the 1007 members who have to this date October 23, 1976 purchased their 76-77 memberships. We are looking forward to the 400 who have not renewed to do so in the next two weeks.

This edition of the Abacus will be of greater use to the teachers K-10 but we hope some of the devices can be a basis for forming similar activities in the more advanced grades.

PLEASE WATCH THE DECEMBER GAZETTE FOR FURTHER INFORMATION ON
OTTAWA in Tulip Time
Our Annual Convention May 13-15, 1977.

INDIVIDUAL ACTIVITIES

Fun with numbers

Try this game. The rules of the game are:

(a) use addition and subtraction
(b) use place value

Write other names for numbers using the above rules.

1. With three 4's, write another name for each of the following numbers:

   4, 12, 40, 48

2. With three 6's, write another name for each of the following numbers:

   6, 18, 60

3. With four 2's, write another name for:

   18, 22, 26, 220, 224

4. With three 8's write another name for:

   8, 80, 96

5. With four 5's, write another name for:

   55, 65, 110, 550

What's in a Name?

Assign each letter of the alphabet a value:

e.g. a = 1; b= 2; c= 3; ...

a = 3; b =6; c= 9; ...

a) Write your given name and surname. Substitute a number for each letter. What is the value of your i) given name? ii) surname? What is the total?

Graph the value of each child's surname. Prepare questions about the graph.

1) Whose name gave the least value?

2) Whose name gave the greatest value?

3) What is the difference between these?

4) What is the total value of the boy's surname?

5) What is the average value of the surnames?

b) Have pupils prepare a written record of the above assignment.

Given Name --Nancy = 14+1+14+3+25 = 57
Surname Brown + 2+18+15+23+14 =72

TOTAL = 129

My given name is: an (odd, even) number

a (prime: composite) number

a factor of _____.

a multiple of_____.

My surname is: an (odd, even number.
a (prime, composite number
a factor of _____.
a multiple of _____.

My given name is 15 < my surname.

The total value of my name is -

13 > Susan's and 9 < David's

The product of my given name and my surname is _____

c) Have the children find the value of other names.
EXAMPLE Canadian provinces, oceans, seas, planets, etc.

S.Hornbeck

SOME INTEGER CARD GAMES

IN THESE GAMES ACE = 1, JACK = + 11 or − 11, QUEEN = + 12 or − 12, KING = + 13 or − 13
RED CARDS: NEGATIVE, BLACK CARDS: POSITIVE

1. WAR

All the cards are dealt out face down to the players.
Each player turns over the top card in his pile.
The player with the largest integer showing wins.
He takes those cards and adds them to the bottom of his pile.
Play continues as above until one player has all the cards.
He is the winner.

2. INTEGER BLACKJACK

The player who gets closest to zero by adding his cards is the winner. Each player is dealt one card down and one card face up. The dealer then goes around the table again giving each player a chance to have another face up card (hit me) or not (freezing). The dealer continues doing this until all players freeze or have 5 cards.

- Nomi, Cathy, Andrew, Martha, Kim, Steven,
- Gr. 7 students U.T.S.

3. INTEGER KRYPTO

Deal out 5 cards face down to each player. Put the rest of the deck face down and turn over the top card. Using the operations +, - , x, ÷ Each player is to combine all the cards in his hand to obtain an expression as close to the value of the up turned card as possible. A player's score is the positive difference between the up turned card and the value of the expression formed with his 5 cards, Low score wins.

- Eric, Robt., Pam
- Gr. 7 students U.T.S.

PUZZLE

Each letter represents a distinct numeral. Try to find the numerical replacements to make a correct addition problem from:

SEND
MORE
MONEY

SI ESTIMATION

Prior to the introduction of the Metric system teachers in Ontario taught the various forms of measurement according to the Imperial system. The adults of Ontario to-day are the products of that system. Yet, as far as estimation of a measurement many of us are very incompetent. Let us hope that the teachers of to-day teaching the metric system get their students off to a better start on estimation. Below are a few samples of things they can do to develop estimation. You may have seen them all before but estimation comes only with practice.

1. Estimate these body measurements for each member of your group.
   (a) mass in kg (b) height in cm (c) neck measurement in cm
   (d) hat size in cm (e) waist measurement in cm

2. A rectangle is given the student. Please note side A is the longer side; side B is shorter side. A star for centre point A dot 5 cm from side A and 7 cm from side B . An X 6 mm from side A and 2 cm from side B. On the back mark it off in 1 cm grid. You may use a straight edge to draw the grid but not a ruler.

3. Three different shaped bottles partly filled with water are given to the student. Estimate the number of cm^3 of water in each bottle. You may use the grid you drew in question 2.

4. A bristol board with strings stapled to it in various shapes is supplied. Observe the string fastened to the bristol board. Estimate the length of each string.

5. Estimate the mass of a roll of pennies and a roll of nickels in metric measure. Associate it with a package of margarine or box of salt, etc.

6. The stone, the brick, the wood block. Compare their masses Estimate the mass.

7. Estimate the area of each figure, a square, circle,polygon, lily leaf, triangle.

8. The parking lot at the west of the school is to be used for storing used cars. Allow no space for driveways. Estimate the number of (1) Pontiacs (2) Mustangs (c) Volkswagons that could be stored there.

9. Roll a ball slowly the length of the hall. Each person do it three times. Estimate the average length of time. Estimate the length of the hall. Calculate the rate in m/s.

10. Estimate the number of hectares in the west parking lot.

DIVISION DRILL

1. (a) WRITE DOWN ANY 3-DIGIT NUMBER
WRITE IT AGAIN MAKING A 6-DIGIT NUMBER
DIVIDE IN TURN BY 7, 11, 13
RESULT: ORIGINAL NUMBER

E.G. 643 x 1001 = 643, 643

"7 x 11 x 13

(b) WRITE DOWN ANY 2-DIGIT NUMBER
WRITE IT TWICE AGAIN MAKING A 6-DIGIT NUMBER
DIVIDE IN TURN BY 3, 7, 13, 37
RESULT: ORIGINAL NUMBER

E.G. 56 x 10101 = 565656

"3 x 7 x 13 x 37

(c) WRITE DOWN ANY 4 DIGIT NUMBER
WRITE IT AGAIN MAKING AN 8-DIGIT NUMBER
DIVIDE IN TURN BY 73 and 137
RESULT: ORIGINAL NUMBER

E.G. 5892 x 10001 = 58925892

"73 x 137

(d) PICK YOUR FAVOURITE DIGIT: WRITE IT 6 TIMES:

DIVIDE BY 3, 7, 11, 13, 37: RESULT: FAVOURITE DIGIT

BECAUSE 111,111 = 3 x 7 x 11 x 13 x 37

2. The following Factorizations may prove useful in making questions similar to (1).

$$
\begin{aligned}
111 &= 3.37 \\
1111 &= 11.101 \\
11111 &= 41.271 \\
111111 &= 3.7.11.13.37 \\
1111111 &= 239.4649 \\
11111111 &= 11.73.101.137 \\
111111111 &= 9.37.333,667 \\
1111111111 &= 11.41.271.9091 \\
11111111111 &= 21,649.513,239 \\
111111111111 &= 3.7.11.13.37.101.9901 \\
1111111111111 &= 53.79.265,371,653 \\
11111111111111 &= 11.239.4649.909,091 \\
111111111111111 &= 3.31.37.41.271.2,906,161 \\
1111111111111111 &= 11.17.73.101.137.5,882,353 \\
11111111111111111 &= 2,071,723.5,363,222,357 \\
111111111111111111 &= 7.9.11.13.19.37.52,579.333,667
\end{aligned}
$$

REFERENCE: MATHEMATICS, ITS MAGIC AND MYSTERY, AARON BAKST,, VAN NOSTRAND

CURIOUS PRODUCTS - - WHY?

574 x 143 =	595 x 429 =
468 x 231 =	605 x 455 =
561 x 273 =	741 x 462 =
371 x 286 =	528 x 546 =
176 x 364 =	686 x 715 =

____x ___

FISH (a card game)

Cut 52 flash cards (2" x4") of lightweight bristol board. This will make 13 sets of 4 cards each. A set consists of one card which shows a single number and 3 cards which show number facts which have that number as their answer, eg. (8) (10-2)(4+4) (6+2)

3 or 4 may play at once. Each get 6 cards, the rest are put in the centre of the table. The idea is to collect sets that match. If a player had 10-2, 8, and 6+2, he would need one more 8 to make a set. He may ask anyone for whatever number he needs (when it is his turn). He may keep asking as long as the person has the card he asks for. If he does not have the card he wants, he has to "fish". Then he must draw a card from the pile. If he draws the card he asks for, he may draw again, if he doesn't, his turn is over.

Every time a player collects a set of four, he puts them on the table in front of him. When all the cards are used, the player with the most matched sets is the winner.

INDIVIDUAL ACTIVITIES NUMBER PUZZLES

Some of the problems have more than one answer. Try to find all the answers.

1. What counting number less than 20 can you add to 27 so that the sum can be divided exactly by 5?
2. What whole number less than 12 can you add to 26 so the sum can be divided exactly by 4?
3. What counting number can be subtracted from 38 so that the difference when divided by 8 has a remainder of 2?
4. What counting number less than 20 can be added to 16 so that the sum can be divided by 6 with a remainder of 5?
5. What counting number less than 25 can be added to 95 so that the sum when divided by 9 has a remainder of 1?

Have a contest within your class and increase this list to 50 puzzles.

NOTICE TO MEMBERS

The teachers of Mathematics had in the early years of Education in Ontario an opportunity to be members of the Ontario Association of Teachers of Mathematics and Physics and later the Ontario Association of Teachers of Mathematics and more recently the Ontario Association for Mathematics Education.

Anyone purchasing a membership in OAME after January 1, 1976 received a membership certificate. It is now the wish of the OAME that all charter members of the above named organizations should receive a seal to be placed on this certificate. These seals will be available after January 1, 1977 and will be mailed out with the 1977-78 receipts. In order that the office may have an estimate of the number of seals required we ask that members cut off the lower portion of this page and send to the Sarnia office at their earliest convenience. Since records are not complete for the association we are asking members to request seals on the honour system. A member is eligible for an OATMP seal, if he has been a continuous member of the three organizations beginning at some date prior to 1965. We recognize this is not within the context of a "charter member" but we wish to give recognition to those teachers who were members of OATMP. A member is eligible for the OATM seal if he has been a continuous member of OATM and OAME since 1965. For these two seals the member will have joined OEA and indicated his or her interest section as the Mathematics Section or he or she will have joined OEA and attended the Mathematics Meeting of OEA or an OATMP meeting or an OATM meeting. These were usually held during the Easter Holidays. A member is eligible for an OAME seal if he has been a continuous member since May 1973. These members have joined directly and not through OEA.

I desire an

OATMP seal _____ OATM seal _____ OAME seal _____

check on one line - one seal per member

_____
Signature

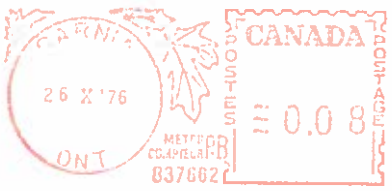
Last date for return Dec. 1/76

SPECIAL NOTICE TO MEMBERS OF OAME

In past years, the policy of the Association had been to extend privileges of membership and the right to receive publications to a member whose membership expired on August 31 of any calendar year to December 31st of that year without a renewal payment. This entitled a member to the September and December issues of the Gazette and the September and November issues of the Abacus.
BEGINNING September 1, 1976 privileges of membership and publications will cease on October 31st if a renewal payment is not made. A self addressed remittance envelope was sent to members in late August for your convenience or may mail directly to OAME office, 247 Bright St., Sarnia, Ont. N7T 4E9

Coming Events	Date	Inquiries
Elementary Leadership Seminar	Oct. 20-23/76	Sarnia Office
NOMA Conference -North Bay	Oct. 2/76	R. Tuck
SWOAME Conference -Windsor	Nov. 6/76	D. Skoyles

THE ABACUS
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X

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