REPUBLIKA NG PILIPINAS
REPUBLIC OF THE PHILIPPINES
KAGAWARAN NG EDUKASYON, KULTURA AT ISPORTS
DEPARTMENT OF EDUCATION, CULTURE AND SPORTS
DECS Complex Meralco Avenue
Pasig City Philippines

PHILIPPINES 2000
Sama-Sama sa DECS

Tanggapan ng Kalihim
Office of the Secretary

August 31, 1999

DECS MEMORANDUM
No 361, s 1999

ANNOUNCING THE WINNERS OF THE 5TH ANNUAL NATIONAL DAMATH CENTURY MATCH AND ADDITIONAL SCI MATH GAMES

To Bureau/Regional Directors
Schools Superintendents
Private Elementary and Secondary School Principals

1 The Department of Education, Culture and Sports through the Bureaus of Elementary and Secondary Education, in cooperation with the Department of Science and Technology, the Bato Balani Foundation, Inc, and the Amalgamated Corp (AMSPEC), announces the official results of the 5th Annual National DaMaths Century Match which was held on February 25 27, 1999 at Davao City National High School and at DECSRO XI Conference Hall, Torres St., Davao City, and the additional sci-math games for the forthcoming Sci-DaMaths millennium match

2 The list of national winners in the said activity and that of the additional sci math games are contained in Inclosures A and B to this Memorandum, respectively

3 The national winners received during the closing program the DOST brass in-fiberglass trophies, the Bato Balani Foundation, Inc medallions, sci-math books and cash prizes, and AMSPEC writing/drawing materials

4 In this connection, DECS Region X will be receiving next year the Millennium Hall of Fame Award for garnering three times the overall national championship

5 Appreciation and recognition are due the host, DESCRO XI through its EED and SFD staff, the DOST Region XI, the City of Davao, the local TV/radio/print media, the Davao City Schools Division, the Davao City National High School, mathematics/science teachers, department heads, education supervisors, school administrators, nonteaching staff, parents, and sponsors who in one way or another contributed to the success of this highly innovative sci-math activity

6 Immediate and wide dissemination of this Memorandum is expected

Andrew Gonzalez

ANDREW GONZALEZ, FSC
Secretary

Incls
As stated

Reference
DECS Memorandum No 15, s. 1999

To be indicated in the Perpetual Index
under the following subjects

CONTESTS
SCIENCE EDUCATION
STUDENTS

(Inclosure A to DECS Memorandum No 361 s 1999)

Official Results of the 5th Annual National *DaMaths* Century Match

Elementary Level

- **Counting *DaMaths*** (Grades I - II)

1st	**John Nico Lucero**	**MMSU Lab ES, Laoag City**	**R-I**
2nd	Chenee Kris Logmao	Bocboc ES, Marinduque	R-IV
3rd	Larry James Gerogalem	Kamasi ES, Maguindanao	ARMM

- **Whole *DaMaths*** (Grades III - IV)

1st	**Frederick Hemperona**	**Toltogan ES, Bohol**	**R-VII**
2nd	Harvey B Lucy	Claudio Villagen	R-V
3rd	Juan Recentes	Obay ES, Zamboanga Norte	R-IX

- **Fraction *DaMaths*** (Grades V - VI)

1st	**Leonard L Lodevico**	**Isidro Paredes ES**	**R-II**
2nd	Joe Frankie Fernandez	Tarece ES, Sn Carlos City	R-I
3rd	Pada Guingar	Belwang ES, Mt Province	CAR

Secondary Level

- **Integer *DaMaths*** (First Year)

1st	**Vede M Sullano, Jr**	**Alloran Trade HS , Mis Occ**	**R-X**
2nd	Rommel Rentuaya	Tagum NHS, Tagum City	R-XI
3rd	Luel Bergantin	Pili NHS, Camarines Sur	R-V

- **Rational *DaMaths*** (Second Year)

1st	**Emerson Tumolya**	**TNHS, Isabela**	**R-II**
2nd	Bonard D Luspo	Bal-ason NHS, Gingoog City	R-X
3rd	Marlon Llera	Pigcawayan NHS, Cotabato	R-XII

- **Sci-No *DaMaths*** (Third Year)

1st	**Jerry Pabalan**	**Barcelona NCHS, Sorsogon**	**R-V**
2nd	William Feria, Jr	Reg'l Science HS, Isabela	R-II
3rd	Gilberto Jabinor	Prenza NHS, Bulacan	R-III

- **Electro *DaMaths*** (Fourth Year)

1st	**Valentin Gonzaga**	**Looc NHS, Misamis Occ**	**R-X**
2nd	Hector Santos	Benigno Aquino HS, Makati	NCR
3rd	Reynan Arevalo	Higatangan NHS, Leyte	R-VIII

Binary *DaMathan* (for Teacher-Coaches)

1st	**Ms Odubias Elentorio**	**Salunayan NHS**	**R-XII**
2nd	Mr Samuel Yder	SLNHS, Gingoog City	R-X
3rd	Mr Rommel Tan	Higatangan NHS	R-VIII

Integer *DaMathan* (for Parent-Coaches)

1st	**Ms Edita Calban**	**Paknaan NHS, Mandaue City**	**R-VII**
2nd	Mr Wenceslao Casas	Pigcawayan NHS, Cotabato	R-XII
3rd	Mr Danilo Quitoriano	BNHS	R-I

		gold	*silver*	*bronze*
Overall National *DaMaths* Champion	**Region X**	**2**	**2**	**0**
1st Runner-up	Region II	2	1	0
2nd Runner-up	Region VII	2	0	0

* Basically the rules in playing the Filipino checkerboard game called *dama* will be used with some modifications in integrating Mathematics and Science as follows

1 Set the starting positions of the chips (see Table 1)

2 After the starting positions of the chips have been set, the first player is determined by drawing lots

3 A chip is allowed to move diagonally forward only to an adjoining vacant square

4 A chip has to take the opponent's chip diagonally forward or backward, thus, 'pass' is not allowed Mathematical operations (+ , -- , x , - -) will be used depending on the vacant square's operation symbol where the 'taker' chip lands by jumping over the 'taken' chip (the latter chip has to be removed from the board after performing the indicated mathematical operation and recording same in the scoresheet)

5 In taking more than one chip, the 'taker' chip is always the addend, minuend, multiplicand, or dividend as the case may be

6 In taking a chip or more than one chip, the *dama* rules on *'dama', 'mayor dalawa* or *tatlo', 'mayor tatlo over dalawa', 'mayor dama',* and *'mayor dalawa or tatlo over dama'* prevail

7 A chip is declared *'dama'* upon reaching terminally on the following designated squares

For red chips	(0,7)	(2,7)	(4,7)	(6,7)
For blue chips	(1,0)	(3,0)	(5,0)	(7,0)

8 A *'dama'* chip is allowed to take a chip or more than one chip, or move to any unoccupied square along its diagonal path Moreover, a *dama*'s score is doubled in taking a chip or chips,and quadrupled if it takes the opponent's *dama* chip Similarly, an ordinary chip's score is doubled if it takes a *dama* chip

9 A 'move' [e g 2 -> (6,3)] is good only at the most for one (1) minute including its corresponding entries in the scoresheet; while, the game's duration is twenty (20) minutes

10 The game ends when any of the following situations occur

* If no show of one player is declared after ten minutes
* Repetitive moves of any or both players
* A player resigns
* A player's chip is cornered
* A player has no more chip to move
* The 20 - minute game duration ended

11 The remaining chips have to be added to the respective players' total scores

12 The player with the **greater total score** in *DaMaths* / **lesser total score** in *SciDama* is declared winner for which he /she is entitled to one (1) point in the tally sheet of contestants or one-half (0 5) point in case of a draw

13 Only one scoresheet is allowed to be accomplished alternately by the two players whereby incorrect entries shall be their responsibility In case of incorrect entries in the scoresheet, a player has to immediadely call the attention of the competition facilitator by raising one's hand, that is, after stopping the time As determined by the said facilitator, the appropriate corrections will be done by the erring player inasmuch as the former' decision is final and unappealable

14 With the end in view of making this innovative activity globally competitive, effective SY 1999-2000 the *Chess Swiss System* will be adopted in the manner of conducting in the highest tradition the national level of *Sci-DaMaths* competition This policy is in line also with this Department's advocacy of the culture of excellence in Mathematics and Science

15 In view of this Department's meager resources, networking with community participation is encouraged such as the 'Adopt - A - School' Program in sponsoring the travel expenses of pupil/student participants (e g local empowerment through finance resource mobilization subject to the usual local trust fund's accounting rules and regulations per MOA between donor and donee)

16 As a process reengineering scheme of this innovative project, the *Sci DaMaths* contest categories are hereby adjusted as follows

	Mathematics	**Science**
Elementary Categories		
• Grades I - II	Counting *DaMaths*	
• Grades III - IV	Whole *DaMaths*	*WaterPatrol *SciDama*
• Grades V - VI	Fraction *DaMaths*	*PowerPatrol *SciDama*
Secondary Categories		
• First Year	Integer *DaMaths*	Electro *SciDama*
• Second Year	Rational *DaMaths*	*DamaSci*-Notation
• Third Year	*Radical *DaMaths*	*THI *SciDama*
• Fourth Year	*Polynomial *DaMaths*	*Thermo *SciDama*
Teacher Category	Binary *DaMathan*	*Thermo *SciDama han*
Parents Category	Integer *DaMathan*	*PowerPatrol *SciDamathan*

(**additional sci-math games)*

Table 1 Starting positions of the *Sci-DaMaths* chips

Counting *DaMaths*			
10	7	2	5
1	4	11	8
12	9	6	3

Fraction *DaMaths*			
10/10	7/10	2/10	5/10
1/10	4/10	11/10	8/10
12/10	9/10	6/10	3/10

Whole *DaMaths*			
9	6	1	4
0	3	10	7
11	8	5	2

Integer *DaMaths*			
-9	6	-1	4
0	-3	10	-7
-11	8	-5	2

Rational *DaMaths*			
-9/10	6/10	-1/10	4/10
0	3/10	10/10	-7/10
11/10	8/10	-5/10	2/10

Radical *DaMaths			
$-9/\sqrt{2}$	$-/\sqrt{8}$	$4/\sqrt{18}$	$16/\sqrt{32}$
$-49/\sqrt{8}$	$-25/\sqrt{18}$	$36/\sqrt{32}$	$64/\sqrt{2}$
$-121/\sqrt{18}$	$-81/\sqrt{32}$	$100/\sqrt{2}$	$144/\sqrt{8}$

Polynomial *DaMaths			
$-3x^2y$	$-xy^2$	$6x$	$10y$
$-21xy^2$	$-15x$	$28y$	$36x^2y$
$-56x$	$45y$	$66x^2y$	$78xy^2$

***WaterPatrol *SciDama* (in cu m)**			
90	65	10	45
5	30	105	70
110	85	50	25

***PowerPatrol *SciDama*(in Kwh)**			
95	70	15	50
10	35	110	75
115	90	55	30

THI *SciDama (Temperature Humidity Index)			
25%	70 F	30%	75 F
80 F	35%	85 F	40%
45%	120 F	50%	110°F

Thermo *SciDama			
29 g	17 C	3 g	11 C
2 (	) g	31 C	19 g
37 g	23°C	13 g	5 C

Binary *DaMathan*			
0	1	0	1
1	0	1	0
0	1	0	1

Electro *SciDama*			
P10	7 kwh	P2	5 kwh
1 kwh	P4	11 kwh	P8
P1	9 kwh	P6	3 kwh

***DamaSci*-Notation**			
1.01×10^{10}	7.7×10^{7}	2.2×10^{2}	5×10^{5}
1.1×10^{1}	4.4×10^{4}	1.111×10	8.8×10^{8}
1.212×10	9.9×10^{9}	6.6×10^{6}	3×10^{3}

*Radical *DaMaths*

Examples of taking chip

• **$-9/\sqrt{2}$ + $(-/\sqrt{8})$**

Solution

$-9/\sqrt{2} + (-/\sqrt{(2)(4)}$

$9/\sqrt{2} + (-2/\sqrt{2}) = -11/\sqrt{2}$

$= -11(1.41)$ or **-15.51**

$16/\sqrt{32}$ $(-9/\sqrt{2})$

Solution

$16(-9)[/\sqrt{(32)(2)}]$

$= -512/\sqrt{64}$

$= -512(8) =$ **-4096**

- **$\frac{36/\overline{32}}{4/\overline{16}}$**

Solution

$\frac{36/\overline{(2)(16)}}{4/\overline{(2)(9)}}$

= 9(4) / 3 or **12**

*Polynomial *DaMaths*

Examples of taking chip

- **$-3x^2y$** takes **$36x^2y$** and lands on **(2,5)** whose operation is **+**

Solution **$-3x^2y + 36x^2y$** = $33x^2y$
= $33(2)^2(5)$
= 33(4)(5) or **660**

- **$-xy^2$** takes **28y** and lands on **(3,4)** whose operation is **-**

Solution **$-xy^2 - 28y$**
$-3(4)^2 - 28(4)$ by substitution
-3(16) - 112
-48 - 112 = **-160**

- **6x** takes **$-21xy^2$** and lands on **(4,5)** whose operation is **x**

Solution **$6x(-21xy^2)$** = $-126x^2y^2$
= $-126(4)^2(5)^2$ by substitution
= -126(16)(25) or **-50,400**

- **$78xy^2$** takes **6x** and lands on **(1,6)** whose operation is **-**

Solution $\frac{78xy^2}{6x} = 13y^2$
= $13(6)^2$ by substitution
= 13(36) or **468**

The remaining chips will be added to the respective players
e g The last locations of **-45y** and **$36x^2y$** are **(6,3)** and **(2,1)**, respectively

-45y = -45**(3)** = **-135**

$36x^2y$ = $36(2)^2(1)$ = 36(4)(1) or **144**

*WaterPatrol and PowerPatrol *SciDama*

- Only **+** and **-** operations are involved, thus change **x** to **+** and **÷** to **-** in the *SciDama* board (Same with **THI *SciDama***)
- Examples of taking chip

for WaterPatrol *SciDama*

- **90 cu m + 45 cu m = 135 cu m**
- **105 cu m - 65 cu m = 40 cu m**
- **30 cu m - 50 cu m = NS** (no score)

For PowerPatrol *SciDama*

50 kwh + 70 kwh = 120 kwh
110 kwh - 15 kwh = 95 kwh
75 kwh - 115 kwh = NS

- After adding the remaining chips, the player with lesser water (cu m) / power (kwh) consumption is declared winner

*THI *SciDama*

- In determining the **Temperature Humidity Index (THI)**, use the table below

	Relative Humidity (%)																				
	0		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
85F	78	79	80	81	82	83	84	85	86	87	88	89	90	91	93	95	97	99	102	105	108

- Examples of taking chip

	THI	***Total THI***
• **25% + 40% = 65%**	**91 F**	**91 F**
• **50% 25% = 25%**	**83°F**	**174°F**
• **45% 30% = 15%**	**81 F**	**255 F**
• **25% 40% = NS** (no score)	**NS**	**255 F**

- After adding the remaining chips the player with the lesser temperature in the *Total THI* (F converted to C) is declared winner

*Thermo *SciDama*

- Examples of taking chip

	score			*total score*		
	g	*C*	*(g) (C)*	*g*	*C*	*(g) (C)*
• **2 g + 19 g = 21 g**	**21**	**--**	**--**	**21**	**-**	**--**
• **13 g - 5 g = 6 g**	**6**	**--**	**--**	**27**	**-**	**--**
• **19 g - 23 g = NS** (no score)	**NS**	**--**	**--**	**27**	**-**	**--**
• **7 C + 11 C = 18 C**	**--**	**18**	**--**	**27**	**18**	**--**
• **29 C - 3 C = 26 C**	**--**	**26**	**--**	**27**	**44**	**--**
• **17 C - 37 C = NS**	**--**	**NS**	**--**	**27**	**44**	**--**
• **2 g x 7 C = 14 (g) (C)**	**--**	**--**	**14**	**27**	**44**	**14**
• **29 C x 13 g = 377 (g) (°C)**	**--**	**--**	**377**	**27**	**44**	**391**
• **31 g - 2 g = NS**	**NS**	**--**	**--**	**27**	**44**	**391**
• **17 C - 3 C = NS**	**--**	**NS**	**--**	**27**	**44**	**391**
• **29 C - 31 g = NS**	**--**	**--**	**NS**	**27**	**44**	**391**
Add remaining chips, e g						
• **5 g + 13 g = 18 g**	**18**	**--**	**--**	**45**	**44**	**391**
• **29 C + 17 C + 3 C = 49 C**	**--**	**49**	**--**	**45**	**93**	**391**
total (g) x *total C*						
• **45 g x 93 C = 4185 (g) (C)**	**--**	**--**	**--**	**4185**		**4576**

Thus, [4576 (g) (°C)] 1 cal / (g) (C) **4576 cal**

- The player with lesser ***number of calories*** is declared winner