2009 NATIONAL MA⊕

GEMINI TEST

TEXT MESSAGE DILEMMA!!

20 POINTS

You and your MA Θ friends are text messaging mathematical words back and forth when your phone suddenly begins showing numerical messages instead of the text messages you expect. Can you decipher the messages your friends are sending?

1.	6284	
2.	322867	
3.	837839	
4.	38537	
5.	564274846	
6.	39766368	
7.	22734643	
8.	778273	
9.	46834725	
10.	56442	

GEMINI TEST

PAINT BY NUMBERS

20 POINTS

This puzzle is a unique blend of logic and art. The numbers above each column and to the left of each row tell you how many groups of black squares there are in that line and, in order, how many consecutive black squares there are in each group. For example, 3 1 2 7 tells you that there are four groups that will contain, in order, 3, 1, 2, and 7 black squares. Since they are separated, there will be at least one empty square between them. There may also be empty squares at the beginning or end of each row or column. The trick is to figure out how many empty squares come between the black ones. When you finish, you will have a picture.

					i			ı				ı	ı	ı									
											1												
											1								9				
									1	6	1	6	1				3		1		3		
								4	1	1	2	2	2			2	3	3	1	3	5	2	
								7	'	'	_	_					J	5	•	3	3	۷	
						6	1	6	1	6	1	1	1	6	5	4	1	12	2	10	1	2	5
				5	5																		
		1	1	1	7																		
		1	1	1	9																		
1	1	1	1	1	1																		
1	1	2	2	1	1																		
1	5	2	2	1	1																		
			1	1	9																		
			1	1	7																		
				5	5																		
		1	1	1	1																		
			1	5	3																		
		1	1	1	1																		
				5	3																		
			5	1	1																		
			1	1	3																		
				5	5																		

D

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W

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SUNSPHERE WORD SEARCH 20 PTS. ANSWER =

Find each word in the Sunsphere and mark out its letters. (Hint: no word is found completely within another word.) Put the remaining letters in order from left to right and top to bottom to find the clue to solve the puzzle.

ALGEBRA G Ε 0 Μ Ε Т R **ANGLE** Α Χ U R Α M I Μ M M U L U Ν Α Е Μ Т 0 R U S Ε Т Ε L G Ε R Ρ D I R Ν Α D ٧ Т Ρ Ε O Ī Τ ı L Μ Α L L Μ F 0 Ρ R Α С Т S Τ Χ Ν Υ D L ٧ I S Ε Т Т Т C U V Ν 0 Α Н Ι Η L Τ Ε Е Ε Α Ε 0 D В R Α 0 D I Κ Ν D С Т Т Ρ S ٧ В G Υ 0 Н Ν Ν Т Ε R Ε Ε Т S Α Ι ı R L G Н Е Н Ν Α Μ Т R D Α D D L Н Е Ε Ε S Ν M Α Q Т S Т Ε R D Ε Ε U Α Τ 0 R Τ Ε Ν R Ε ı D 0 I U 0 0 Ν R Н Τ Α F 0 Н 0 L L 0 R Q Е I Ε 1 Ν Е C Ν U U Т R M D Н U M Е R U R С Ν Α Α U D **KITE** R S Т D L Е D M LOCI Α I ı Α Ν R F 0 С O ı L S 0 R G Ν L Р Т Α Е Q Α Υ U Т В M L Ε F I Α Е R S Ρ 0 Α L R Ε U 0 0 Α Е G R C Τ Ν L O С S I ı Ν S Ε G R Α Т Т D 0 1 0 R С Т Е С Н Е SIX С G S Α Ν U Ε Е R W Е R Т ٧ Ε L 0 L Т Ε G Ε Α Н Ρ S D I Ν W **TWO** 0 ı 0 L Α D G Ρ L Μ U ı **YARD** Ζ Α Α Ε R Α Ζ R Ī R 0 F Е R U 1 Т

AREA BOOLE CALCULUS CHORD CIRCLE COSINE **CURVE DEGREE DELTA DERIVATIVE DIAGONAL DIVIDE DOMAIN ELLIPSE EULER FOUR GEOMETRY INTEGRATION IRRATIONAL** LIMIT **MATHEMATICS MAXIMUM MEAN MEDIAN MINIMUM** MU ALPHA THETA **PARABOLA PLATO POLAR QUADRILATERAL** RADIAN RANGE **RECTANGLE SECANT SECTOR** SIMPSON'S RULE SLOPE **SQUARE TANGENT THEOREM TORUS** TRIANGLE TRIGONOMETRY **VECTOR**

SUDOKU -- 20 POINTS

This is a "squiggly " variation of Sudoku. Each outlined area consists of nine blocks and the digits 1 through 9 must appear in each section. As with the normal Sudoku, each of the nine digits also appears in each row and column.

	5			8				
	9				4	5	2	
				9				8
	8			2		3		
		5				2		
		1		3		3001	5	
9				5				
	6	2	3				9	
				1			4	

CRYPTOGRAMS

20 POINTS

In the following equations, each number 0 through 9 has been replaced by a letter A-Z. The numbers have been replaced by the same letters in each of the three equations. Your job is to determine what the original equations are.

PUZZLE #1

JXXT * MGGT = EECGMCJT

$$L =$$
 $M =$ $S =$ $T =$ $X =$ $=$

PUZZLE #2:

$$NMFW + RNXX = MMYMX$$

NMFW * RNXX = ZPYLLYYW

$$F =$$
____ $L =$ ___ $M =$ ___ $N =$ ___ $P =$ ____

$$R =$$
 $W =$ $X =$ $Y =$ $Z =$ $Z =$