First name: _____ Last Name: _____ Student ID: _____

Calculations and Operations Homework

1. Solve each equation. Show work!

1. $19 = 65 - 2n$	2. $9 = 144 \div 4e$	3. $18q = 90$
4. $131 = d + 16 + 17$	5. $11b - 48 = 40$	6. $93 + 9c = 181$
7. $77 = r/2 + 46$	8. $8 = 2h/17$	9. $92 - 16v = 76$
10. $22 \div q/7 = 2$	11. $14 + 7n + 6 + 18 = 66$	12. $33 = p/5 + 1 - 13 - 4$

2. Use the Distributive Property to find each product. Show work!

1. $(8 \times 20) + (8 \times 8)$	2. $(3 \times 60) + (3 \times 0)$	3. $2 \times (10 + 6)$
3. $(4 \times 70) + (4 \times 5)$	5. $(8 \times 80) + (8 \times 4)$	6. $7 \times (30 + 3)$
7. $(6 \times 80) + (6 \times 6)$	8. $8 \times (70 + 4)$	9. $(9 \times 40) + (9 \times 5)$

3. Complete the table of values.

1. Rule: y = 2x + 1

Input	**x**	-14	-2	0	12	24
Output	**y**					

2. Rule: y = -5x - 8

Input	**x**	-30	-14	0	4	50
Output	**y**					

4. Complete the function table and write the rule.

Rule: _____

Input	**b**	27	36	45	54	63	72	
Output	**u**	3	4	5	6	7		9

5. Fill in the missing operations.

1. (84 ☐ 4) ☐ (15 ☐ 1) = 35
   Use the operations: -, ÷, and +
2. (9 ☐ 2 ☐ 36 ☐ 43) = 25
   Use the operations: ×, -, and +
3. (6 ☐ 20) ☐ 4 ☐ (96 ☐ 6) = 496
   Use the operations: ÷, +, ×, and ×

6. Express each phrase as an algebraic expression.

1. a fourth of the product of a number *q* and 7
2. 8 times the difference of a number *s* and 17
3. 4 times the sum of 36 and a number *e*
4. 10 plus 46 more than a number *u*
5. 2 less than the quotient of a number *m* and 37
6. 7 more than the quotient of 5 and a number *g*

7. Combine like terms. Arrange terms in descending order of powers.

1. $9 - 5b^2 - 13 - 18b - 15b + 17b^2$	2. $2d^2 - 12d + 16d - d - 19d^2 - 8d^4 - 3d^4$

Challenge problems

1. Which of the following statements is false?
   (A) $24^2 + 10^2 = 262$ (B) $61^2 - 60^2 = 112$ (C) $132 = 85^2 - 84^2$
   (D) $5^2 + 3^2 = 42$ (E) $8.5^2 = 42 + 7.5^2$

2. What value do you get by subtracting 48 from four times -25?

3. Simplify the expression $(x^{-1} + y^{-1}) / (x^{-1} - y^{-1})$.

4. If $a \circ b = 1/(ab)$, then what is the $a \circ (b \circ c)$?

5. What is the last digit in the product 9!?

6. The value closest to one million is:

(A) 2^{10} (B) 2^{20} (C) 2^{30} (D) 2^{40} (E) 2^{50}

7. What is the last digit of 3^{2002}?

8. If $2^5 = 32$, then what is closet to 2^{100}?

(A) 10^{10} (B) 10^{15} (C) 10^{20} (D) 10^{25} (E) 10^{30}

9. The sum of the integers from 1 to 25 is 325. What is the sum of the integers from 26 to 50?

10. Suppose that a * b means 3a – b. What is the value of x if 2*(5*x) = 1?

11. What is the largest power of 2 that is a divisor of $13^4 - 11^4$?