OCTOBER 2, 2018

UNIT 2: POWERS AND EXPONENT LAWS

SECTION 2.2:
POWERS OF 10 AND THE ZERO EXPONENT

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MATH 9

Oct 1-9:44 AM

WHAT'S THE POINT OF TODAY'S LESSON?

We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Numbers 1" OR "N1" which states:

"Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by: representing repeated multiplication using powers; using patterns to show that a power with an exponent of zero is equal to one; solving problems involving powers."

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What does THAT mean???

SCO N1 means that we will learn about the two parts of a power (the base, or "the big number", and the exponent, or "the little number"). We will show what a power means when we write it out using multiplication (ex: $3^2 = 3 \times 3$), and we will use patterns to prove, for example, that $3^0 = 1$. Finally, we will use what we know about powers to solve problems.

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WARM UP:

Evaluate each expression.

i) -3^2 ii) $-(3)^2$ iii) $-(-3)^2$ iv) $(-3)^2$

-9 -9 -9 9

Oct 2-9:15 AM

HOMEWORK QUESTIONS?
(Pages 55 - 57, #7-9, 10-14, 16, 18, 19, 20, 21a

Oct 2-3:36 PM

SECTION 2.2: POWERS OF 10 AND THE ZERO EXPONENT

Please copy and complete the following table:

EXPONENT	POWER (use a base of 2)	STANDARD FORM
5	2^5	32
4	2^4	16
3	2^3	8
2	2^2	4
1	2^1	2
	2^0	1

Oct 17-12:44 PM

Please copy and complete the following table:

EXPONENT	POWER (use a base of 3)	STANDARD FORM
5	3^5	243
4	3^4	81
3	3^3	27
2	3^2	9
1	3^1	3
	3^0	1

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Please copy and complete the following table:

$263^0 = 1$

$\left(\frac{1}{2}+\frac{2}{3}\right)^0 = 1$

$\left(\frac{0.5}{6}\right)^0 = 1$

EXPONENT	POWER [use a base of (-5)]	STANDARD FORM
5	$(-5)^5$	-3125
4	$(-5)^4$	625
3	$(-5)^3$	-125
2	$(-5)^2$	25
1	$(-5)^1$	-5
	$(-5)^0$	1

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UNIT 2, 2nd PAGE: "EXPONENT LAWS"

1. **ZERO EXPONENT LAW:** A power with an integer base (other than 0) and an exponent of 0 is equal to 1. We express this law as: $a^0 = 1; a \neq 0$.

   Ex.: $2^0 = 1$
   $3^0 = 1$
   $(-5)^0 = 1$
   $-4^0 = -1$

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PLEASE TURN TO PAGE 59 IN *MMS9*. LOOK AT EXAMPLE 1 - *EVALUATING POWERS WITH EXPONENT ZERO.*

Evaluate each expression:

1. $13^0 = 1$
2. $(-15)^0 = 1$
3. $-7^0 = -1$
4. $-(-8^0) = -(-1) = 1$
5. $[-2^2 + 3^3 \times (-5)^5 \div (-10)^8]^0 =$

Oct 17-1:01 PM

PLEASE TURN TO PAGE 60 IN *MMS9*. LOOK AT EXAMPLE 2 - *WRITING NUMBERS USING POWERS OF TEN.*

Write the following numbers using powers of 10:

1. $8\,678 = (8 \times 1000) + (6 \times 100) + (7 \times 10) + (8 \times 1)$
$= (8 \times 10^3) + (6 \times 10^2) + (7 \times 10^1) + (8 \times 10^0)$

2. $12\,935 = (1 \times 10^4) + (2 \times 10^3) + (9 \times 10^2) + (3 \times 10^1) + (5 \times 10^0)$

3. $403 =$

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PLEASE TURN TO PAGE 61 IN *MMS9*.

"Discuss the Ideas":

1. 4^0 $(-4)^0$ -4^0 The negative does not have the zero exponent

2. "Power of 10?" Can be represented by a base of ten.

$100 = 10^2$ billion $= 10^9$

$1000 = 10^3$ $10^0 = 1$

1 million $= 10^6$ $10^4 = 10\,000$

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CONCEPT REINFORCEMENT:

MMS9:

PAGE 61: #4, 5, 6, 7, 8, 9, 10, 11, and 12

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