Subject: Math Grade: 6 Unit #: 1 Title: Prime Time

UNIT OVERVIEW

STAGE ONE: Identify Desired Results

Established Goals/Standards

Standards

6.NS.B.4

6.EE.A.1

6.EE.A.2A

6.EE.A.2B

6.EE.A.2

6.EE.A.3

6.EE.A.4

Long-Term Transfer Goal

At the end of this unit, students will use what they have learned to independently…understand relationships among factors, multiples, divisors and products as well as why two expressions are equivalent.

Meaning

Enduring Understandings

Students will understand that…

- *classify numbers as prime and composite numbers*
- *recognize which situations call for common factors, common multiples , the least common multiple or the greatest common factor*
- *develop strategies for finding factors and multiples, least common multiples and greatest common factors*
- *recognize and use the fact that every whole number can be written in exactly one way as a product of prime numbers*
- *use exponential notation to write repeated factors*
- *relate the prime factorization of two numbers to the least common to the least common multiple and greatest common factor of two numbers*
- *recognize that the Distributive Property relates the multiplicative and additive structures of whole numbers*
- *use the properties of operations of numbers, including the Distributive Property and the Order of Operations convention, to write equivalent numerical expressions*
- *use factors and multiples to solve problems, and explain some numerical facts of everyday life*

Essential Questions

Students will consider such questions as…

- Will breaking a number into factors help me solve the problem?
- What common factors and common multiples do the numbers have
- What do the factors and multiples of the numbers tell me about the situation
- When might it be useful to write a number in factored form or as a sum?

Acquisition

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		What knowledge will students learn as part of this unit? Students will know Factors & Multiples: Understand relationships among factors, multiples, divisors, and products. • If a number *N* can be written as a product of two whole numbers, $N = a \times b$, then *a* and *b* are factors of *N*. Multiples of a can be found using the expression $a \times$ (some whole number), such as 2*a*, 3*a*, 4*a*, etc. Some numbers can be expressed in exponential notation, such as a^2, a^3, a_4, etc. • When all factors of a number are broken down into prime numbers, you have a unique prime factorization. Finding the prime factorization of two numbers can be useful in finding the least common multiple and greatest common factor of the numbers and in classifying numbers as prime, composite, even, odd, or square. Equivalent Expressions: Understand why two expressions are equivalent. • When calculating the value of an expression, the operations have to be performed in a conventional order, the order of operations. • Sometimes a numerical expression can be written in different ways but the expressions are equivalent because the value is the same. Properties of operations, including the Distributive Property, are essential tools for writing equivalent expressions.	*What skills will students learn as part of this unit?* Students will be skilled at: Number theory, including factors, multiples, primes, composites, prime factorization; order of operations, distributive property.

STAGE TWO: Determine Acceptable Evidence	
	Assessment Evidence
Criteria for to assess understanding: *(This is used to build the scoring tool.)*	Performance Task focused on Transfer: Unit Project: My Favorite Number
	Other Assessment Evidence: • Check points • Partner quizzes

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	• Check ups • Self-assessments • Teacher observations • Unit test Common assessment at the end of the unit

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T, M, A *(Code for Transfer, Meaning Making and Acquisition)*	**STAGE THREE: Plan Learning Experiences**	
• M • M • M • T • T • M • M • M • A • M • A • M • M • A • A • M	Learning Events: • Playing Factor Game: finding proper factors • Playing to Win: Prime and Composite Numbers • Play The Product Game: Finding Multiples • Rectangles and Factor Pairs • Riding Ferris Wheels: Choosing common multiples or common factors • Looking at Cicada Cycles: Choosing common multiples or common factors • Bagging Snacks: Choosing common multiples or common factors • Product Puzzle: Finding Factor Strings • Finding the Longest Factor String • Using Prime Factorizations • Linking Multiplication and Addition • Reasoning with Even and Odd Numbers • Using the Distributive Property • Ordering Operations • Choosing an Operation	Evidence of learning: *(formative assessment)* • Reflection questions • Ace questions • Class work • Student journals • Teacher observations

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