

Unit Title: “Prime Time”

Course: Middle School Mathematics

Subject Area: Mathematics

Time Frame: 20 days

Standards

Middle School Mathematics Standards	Sunshine State Standards Benchmarks	NCEE New Standards
<p>The student will:</p> <ol style="list-style-type: none">1.1 Understand the relationship among factors, multiples, division, and products.1.2 Link area and dimensions of rectangles with products and factors.1.3 Identify numbers as prime or composites and as odd or even based on their factors.1.4 Develop strategies for finding factors and multiples of whole numbers.1.5 Demonstrate the Fundamental Theorem of Arithmetic with specified whole numbers.1.6 Develop strategies to solve problems involving factors and multiples.1.7 Describe and continue given number patterns.	<p>MA.A.5.3.1 The student uses concepts about numbers, including primes, factors, and multiples, to build number sequences.</p> <p><i>Expectations</i> The student:</p> <ul style="list-style-type: none">• Knows if numbers (less than or equal to 100) are prime or composite.• Finds the greatest common factor and least common multiple of two or more numbers.• Determines the prime factorization of a number less than or equal to 100.• Uses divisibility rules.	<p>The student:</p> <p>M1d Is familiar with characteristics of numbers (e.g., divisibility, prime factorization) and with properties of operations (e.g., commutativity and associativity), short of formal statements.</p>

Desired Results

Enduring Understanding	Essential Questions	Knowledge and Skills
<p>Students will understand</p> <ul style="list-style-type: none"> The concepts of factor and multiple are interdependent. Operations on numeric and algebraic expressions are dependent upon finding factors and multiples of whole numbers and algebraic expressions. 	<ul style="list-style-type: none"> What is a factor of a number? How can factors be found? Do all numbers have factors? What does it mean to say that a number is prime? Why must a factor string be unique? What are common factors and common multiples? 	<p>Students will know</p> <ul style="list-style-type: none"> Key terms (e.g., common factor, common multiple, composite number, even number exponent, factor multiple, odd number prime factorization, prime number, proper factor) Some numbers have many factors and other numbers have few factors <p>Students will be able to</p> <ul style="list-style-type: none"> Determine the factors of whole numbers. Find the greatest common factor of two numbers Find the least common multiple of two numbers Classify numbers as prime or composite, as even or odd, and as abundant, deficient, or perfect

Acceptable Evidence

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<ul style="list-style-type: none"> The Factor Game A friendly contest in which winning strategies involve distinguishing between numbers with many factors and numbers with few factors. The analysis of the game strategies introduces the definitions of prime and composite numbers. Student encounter questions that are rich in connections to situations in which factors, multiples, and prime numbers are 	<p>Check-Up 1 Quiz A Check-Up 2 Quiz B Unit Test Unit Project – My Special Number</p>	<p>Teacher observations of students during work on performance tasks. Accountable talk during work on performance tasks.</p>

Performance Tasks	Quizzes, Test, and Work Samples	Observations and Dialogues
<p>significant.</p> <ul style="list-style-type: none"> • The Product Game Students find products of factors through the Product Game. The focus of the game is on basic multiplication facts. • Factor Pairs Students use square tiles to make all possible rectangles to represent the numbers 1 through 30. Finding rectangles with given area helps students to visualize whole numbers and to list factor pairs. The rectangles also provide a foundation to discuss how many factors must be checked to find all the factor pairs of a number. Connecting factor pairs to area previews the study of measurement. Square tiles are also used to model even and odd numbers and to prove conjectures about the sums and products of odd and even numbers. • Common Factors and Multiples Real-life situations are used to motivate student interest in common factors and common multiples. The context of the problems and questions help make clear whether a solution involves finding a common multiple, a common factor, the least common multiple, or the greatest common factor. • Factorizations Finding longer factor strings of a number leads students to discover the Fundamental Theorem of Arithmetic. Factor trees are used as a systematic way of finding the prime factorization of a number. • The Locker Problem The Locker Problem provides an excellent way to summarize the unit and involves all the ideas about the multiplicative structure of numbers developed in the unit. Students organize data, look for patterns, and solve problems involving factors and multiples. 		