**Grade 4 GT Mathematics Unit 2 Preview**

Operations and Algebraic Thinking



Objectives: (Your child will be able to)

* Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
	+ Ability to build on knowledge of order of operations to find the value of an expression without variables.
* Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.
* Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.
	+ Knowledge that corresponding terms are used to create ordered pairs.
	+ Ability to apply knowledge of the coordinate system.

# Vocabulary: (Words your child will need to understand)

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| • **Evaluate:** To find the numerical value | • **Function Table:** A table of ordered pairs that applies a rule to the input to find an output |
| **• Expression:** a mathematical combination of numbers, variables, and operations Ex. 3 +6, 4*b* | • **Equation:** A number sentence with an equal signEx. 5 x 4 = 20 |
| **• Divisible**: Capable of being divided by another number without a remainder | **• Prime number**: A number that has exactly two different factors, itself and 1 |
| **• Unknown:** a variable in an expression or equation | **• Pattern:**  A sequence of shapes or numbers that follow a logical rule; things that are arranged following a rule or rules |
| **• Rule:** a way to describe how a pattern changes or how an input produces an output; the relationship between terms or between the order and term in a successive terms | **• Ordered Pair:** Set of two numbers in which the order has an agreed-upon meaning, such as the Cartesian coordinates (x, y), where the first coordinate represents the horizontal position, and the second coordinate represents the horizontal position, and the second coordinate represents the vertical position. |

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# Vocabulary Continued: (Words your child will need to understand)

|  |  |
| --- | --- |
| **• Arithmetic Sequence:**  A mathematical sequence where the **difference** between successive terms is a constant number | **• Geometric Sequence:**  A mathematical sequence where the **quotient** of consecutive terms is a constant number |
| **• Repeating Pattern:**  A pattern with a core that repeats as the pattern extends. Ex: A B A C A B A C … | **• Core:**  The elements of a repeating pattern that repeat. Ex: In the pattern “A B B C A B B C A…,” the core is “A B B C” |
| **• Growing Pattern:** A pattern in which the occurrence of one or more part increases in a predictable manner. Ex: A B A A B A A A B A … | **• Successive:**  Following in order, without interruption, synonym: consecutive |
| **• Coordinate Grid:** A plane formed by the intersection of a horizontal number line with a vertical number line. The horizontal number line is called the **x-axis** and the vertical number line is called the **y-axis**. The number lines intersect at their zero points. Their point of intersection is called the **origin** and written as (0,0) | **• Corresponding Terms:**  terms from the same order of different sequences |
| **• Constant:** A change that remains the same between successive terms  |  |

Optional activities to do with your child:

* Role a die and write an expression with more than one operation that results in the number you rolled.
* Look for and point out real world patterns.
* Choose two operations and unknowns (Ex., Add 5, then multiply by 2; 2(*x + 5)*) and apply to create a pattern
* Create function tables to describe objects (Ex., input: bikes, output: wheels)
* Change real world situations into math expressions (Ex., Karen scored 3 times as many goals as Juan; 3*y)*
* Practice all operation math facts.
* Visit this site to explore mathematical sequences: <http://goo.gl/aUAaM>
* Visit these sites for practice with number patterns: <http://goo.gl/Roj9c>, <http://goo.gl/2F552>, [http://goo.gl/Q4kYF](Number%20Patterns)
* Visit this site for practice with function tables and patterns: <http://goo.gl/k3CRq>
* Visit these sites for practice with translating words into algebraic expressions: <http://goo.gl/d6JoF>, <http://goo.gl/Oed3a>, <http://goo.gl/I1tRG>
* Visit these sites to explore the Fibonacci Sequence: <http://goo.gl/QhIU3>, <http://goo.gl/EKVby>
* Visit this site for practice with graphing coordinates: <http://goo.gl/DMJtb>
* Visit this site for practice with geometric sequences: <http://goo.gl/WnNKK>
* Visit this site for practice with Pascal’s Triangle: <http://ptri1.tripod.com/>, <http://goo.gl/VSqLf>



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