Mathematics K-6 GLE Glossary DRAFT

The Mathematics K-6 Glossary provides definitions and descriptions for words found in the Mathematics Grade-Level Expectations. The same word may appear in more than one grade level but have a slightly different definition because of context. The words in the glossary have been written to best match the focus and terminology for a particular grade level. This document is still in a draft format, with possible word changes and the addition of new terms to occur at a future date.

UPDATES 03/14/08

1st Grade	
develop fluency: fluency means that students are able to compute efficiently and accurately with single digit numbers. For example, counting on for addition and counting up for subtraction.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 84). Reston, VA: Author.
3rd Grade	
commonly used fractions: halves, thirds, and fourths.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 150).
number sentence: mathematical statement (equation) in which equal values appear to the right and left of an equal sign or comparisons written horizontally. Examples: 3 + 4 = 7, 8 – 2 = 6, 3 + 4 = 2 + 5, 7 > 6. *Note:* 3 + 5 = 8 x 5 = 40 is a run on number sentence or string of numbers and not an equality therefore it is not an acceptable representation for an equation or for showing process.	Cavanagh, M. (2002). *Math to learn* (p. 457). Wilmington, MA: Great Source Education Group, Inc.
4th Grade	
number sentence: mathematical statement (equation) in which equal values appear to the right and left of an equal sign or comparisons written horizontally. Examples: 3 + 4 = 7, 8 – 2 = 6, 3 + 4 = 2 + 5, 7 > 6. *Note:* 3 + 5 = 8 x 5 = 40 is a run on number sentence or string of numbers and not an equality therefore it is not an acceptable representation for an equation or for showing process.	Cavanagh, M. (2002). *Math to learn* (p. 457). Wilmington, MA: Great Source Education Group, Inc.
prism: a polyhedron, solid bound by polygons that enclose a single region of space, that has two congruent and parallel faces called bases joined by faces that are polygons.	Geometry to go: A mathematics handbook (p. 467). (2001). Wilmington, MA: Great Source Education Group, Inc.
rule (for a pattern): a general statement written in numbers or words that describes how to determine any term in a pattern. Rules or generalizations for patterns may include both *recursive* and *explicit* notation. In the recursive form of pattern generalization, the rule focuses on the rate of change from one element to the next. Example: Next = Now + 2; Next = Now x 4. In the explicit form of pattern generalization, the formula or rule is related to the order of the terms in the sequence and focuses on the relationship between the independent variable (the number representing a term in the sequence) and the dependent variable (the number in the sequence). For example: 5t - 3 ; t – x; (t +1) x 5 Words may also be used to write a rule in recursive or explicit notation. Example: take the previous number and add two to get the next number; to find the total for any day multiple the day times five and subtract three.	

transformations: the mapping, or movement of all points of a figure in a plane according to a common operation or subdividing and combining shapes or composing and decomposing shapes. Examples, of the operation include rotations, dilations, reflections and translations.	*Math at hand: A mathematics handbook* (p. 536). (1999). Wilmington, MA: Great Source Education Group, Inc.
5th Grade	
number sentence: mathematical statement (equation) in which equal values appear to the right and left of an equal sign or comparisons written horizontally. Examples: 3 + 4 = 7, 8 – 2 = 6, 3 + 4 = 2 + 5, 7 > 6. *Note:* 3 + 5 = 8 x 5 = 40 is a run on number sentence or string of numbers and not an equality therefore it is not an acceptable representation for an equation or for showing process.	Cavanagh, M. (2002). *Math to learn* (p. 457). Wilmington, MA: Great Source Education Group, Inc.
partitive: distribution division that involves figuring out how many are in the group when the number of groups is known. Example: How would you divide 24 cookies equally among 6 children? (Sharing or partitioning the cookies into 6 equivalent subsets.)	Fosnot, C and Dolk, M, (2001). Young mathematicians at Work: constructing multiplication and division, (p. 53 – 57). Heineman.
quotative: measurement division that involves seeing how many groups will fit into a number. Example: If a serving consists of 4 cookies and you have 24 cookies, to how many children can you give a serving of cookies? (Grouping or making one pile of 4 cookies, then a second pile of 4 cookies, etc.)	Fosnot, C and Dolk, M, (2001). Young mathematicians at Work: constructing multiplication and division, (p. 53 – 57). Heineman.
rule (for a pattern): a general statement written in numbers or words that describes how to determine any term in a pattern. Rules or generalizations for patterns may include both *recursive* and *explicit* notation. In the recursive form of pattern generalization, the rule focuses on the rate of change from one element to the next. Example: Next = Now + 2; Next = Now x 4. In the explicit form of pattern generalization, the formula or rule is related to the order of the terms in the sequence and focuses on the relationship between the independent variable (the number representing a term in the sequence) and the dependent variable (the number in the sequence). For example: 5t - 3 ; t – x; (t +1) x 5 Words may also be used to write a rule in recursive or explicit notation. Example: take the previous number and add two to get the next number; to find the total for any day multiple the day times five and subtract three.	
transformations: the mapping, or movement of all points of a figure in a plane according to a common operation or subdividing and combining shape or composing and decomposing shapes. Examples, of the operation include rotations, dilations, reflections and translations.	*Math at hand: A mathematics handbook* (p. 536). (1999). Wilmington, MA: Great Source Education Group, Inc

6th Grade	
number sentence: mathematical statement (equation) in which equal values appear to the right and left of an equal sign or comparisons written horizontally. Examples: 3 + 4 = 7, 8 – 2 = 6, 3 + 4 = 2 + 5, 7 > 6. *Note:* 3 + 5 = 8 x 5 = 40 is a run on number sentence or string of numbers and not a an equality therefore it is not an acceptable representation for an equation or for showing process.	Cavanagh, M. (2002). *Math to learn* (p. 457). Wilmington, MA: Great Source Education Group, Inc.
rule (for a pattern): a general statement written in numbers or words that describes how to determine any term in a pattern. Rules or generalizations for patterns may include both *recursive* and *explicit* notation. In the recursive form of pattern generalization, the rule focuses on the rate of change from one element to the next. Example: Next = Now + 2; Next = Now x 4. In the explicit form of pattern generalization, the formula or rule is related to the order of the terms in the sequence and focuses on the relationship between the independent variable (the number representing a term in the sequence) and the dependent variable (the number in the sequence). For example: 5t - 3 ; t – x; (t +1) x 5 Words may also be used to write a rule in recursive or explicit notation. Example: take the previous number and add two to get the next number; to find the total for any day multiple the day times five and subtract three.	

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Kindergarten	
attributes: a characteristic or distinctive feature—such as shapes, size, color—of an object or given set of objects.	Eather, J. *A math dictionary for kids*. Retrieved June 5, 2004, from http://www.amathsdictionaryforkids.com
model: to represent a mathematical situation with manipulatives (objects), pictures, numbers or symbols.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 95). Reston, VA: Author
1st Grade	
attributes: a characteristic or distinctive feature—such as shapes, size, color—of an object or given set of objects.	Eather, J. *A math dictionary for kids*. Retrieved June 5, 2004, from http://www.amathsdictionaryforkids.com
expression: a mathematical phrase that represents a number through the combination of operation symbols, numbers and/or symbols. Examples: 2 + 3 ; 5 - 4	*Math at hand: A mathematics handbook* (p. 523). (1999). Wilmington, MA: Great Source Education Group, Inc
close to doubles: number combinations such as 3 + 4, 6 + 7, etc. that are 1 apart.	
compose or decompose numbers: flexibly using or knowing numbers through creating and breaking numbers apart to form equivalent representations. For example knowing that in 4 there is a "3" and a "1" allows a student to think about 7 + 4 as being 7 + 3 + 1.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 82). Reston, VA: Author
develop fluency: developing fluency means the process of memorizing some combinations or - having command of some combinations - not having to count, use manipulatives or draw pictures to find the sum or difference; fluency means that students are able to compute efficiently and accurately with single digit numbers.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 84). Reston, VA: Author.
model: to represent a mathematical situation with manipulatives (objects), pictures, numbers or symbols.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 95). Reston, VA: Author
repeating patterns: patterns that are cyclical in nature, with each cycle repeating elements in the same order. Example: ABCABCABC.	*Navigating through algebra in grades pre-k–2* (p. 7.) (2001). Reston, VA: National Council of Teachers of Mathematics.
2nd Grade	
attributes: a characteristic or distinctive feature—such as shapes, size, color—of an object or given set of objects	Eather, J. *A math dictionary for kids*. Retrieved June 5, 2004, from http://www.amathsdictionaryforkids.com
commutative principle (law, rule or property): in addition and multiplication, numbers may be added or multiplied in any order.	Eather, J. *A math dictionary for kids*. Retrieved August 6, 2004, from http://www.amathsdictionaryforkids.com

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commutative property of addition: the sum stays the same when the order of the addends is changed. Example: 6 + 4 = 4 + 6.	*Math at hand: A mathematics handbook* (p. 519). (1999). Wilmington, MA: Great Source Education Group
Compose or decompose numbers: flexibly using or knowing numbers through creating and breaking numbers apart to form equivalent representations. For example knowing that in 4 there is a "3" and a "1" or a allows a student to think about 27 +14 as being 20 + 10 + 7 + 3 + 1 or 30 + 10 + 1 = 41.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 82). Reston, VA: Author
demonstrate fluency: demonstrate fluency means that students are able to compute efficiently and accurately with single digit numbers	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 84). Reston, VA: Author.
expression: a mathematical phrase that represents a number through the combination of operation symbols, numbers and/or symbols. Examples: 2 + 5 ; 4 - 2	*Math at hand: A mathematics handbook* (p. 523). (1999). Wilmington, MA: Great Source Education Group, Inc.
growing patterns: patterns that show an arithmetic change between pairs of elements in the pattern. For example, growing patterns may show numbers in decreasing order or buildings in decreasing size. Example: 3,5,8,12, ……	*Navigating through algebra in grades pre-k–2* (p. 8.) (2001). Reston, VA: National Council of Teachers of Mathematics.
landmark numbers: numbers that provide a foundation for extending number sense concepts. For example, at the second grade level generally include sums of tens and getting to the next ten or counting by fives.	*NCTM (2000) Principles and standards for school mathematics. Reston, VA. NCTM. pp. 83-84. NCTM*
model: to represent a mathematical situation with manipulatives (objects), pictures, numbers or symbols.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 95). Reston, VA: Author
number sentence: equations or comparisons. Examples: 3 + 4 = 7; 8 – 2 = 6; 7 > 6.	Cavanagh, M. (2002). *Math to learn* (p. 457). Wilmington, MA: Great Source Education Group, Inc.
Parts of geometric figures: faces, vertices, sides, edges, lines, etc.	National Council of Teachers of Mathematics. (2001). *Navigating through geometry in prekindergarten–grade 2* (p. 2). Reston, VA: Author
qualitative change: a change (in the quality of something) that can be described by words such as taller, shorter, darker, lighter, warmer, etc.	Greenes, C., Cavanagh, M., Dacey, L., Findell, C., Small, M. (2001). *Navigating through algebra in prekindergarten–grade 2* (p. 4). Reston, VA: National Council of Teachers of Mathematics

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3rd Grade	
attributes: a characteristic or distinctive feature—such as shapes, size, color—of an object or given set of objects.	Eather, J. *A math dictionary for kids*. Retrieved June 5, 2004, from http://www.amathsdictionaryforkids.com
bar graph: a graph that uses the height or length of rectangles to compare data.	Cavanagh, M. (2000). *Math to know* (p. 443). Wilmington, MA: Great Source Education Group, Inc.
classify numbers: to group a set of numbers together by an attribute, such as even or odd, less than 20, more than 20, etc. recognizing that different types of numbers have particular characteristics.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 151).
commonly used fractions: halves, thirds, fourths, fifths, sixths, eighths, and tenths.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 150).
commutative property of addition: the sum stays the same when the order of the addends is changed. Example: 6 + 4 = 4 + 6.	*Math at hand: A mathematics handbook* (p. 519). (1999). Wilmington, MA: Great Source Education Group
composing or decomposing numbers: flexibly using or knowing numbers through creating and breaking numbers apart to form equivalent representations. For example, 36 can be thought of as 32 + 4, 20 + 16, 40 – 4, 12 X 3, etc.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 149).
congruent: objects that have the same shape and size are congruent.	Abdelnoor, J. R. E. (1979). The silver Burdett mathematical dictionary (Rev. Ed.) (p. 21). Silver Burdett Press: Morristown, New Jersey.
develop fluency: developing the ability for efficient and accurate methods of computing and being able to demonstrate flexibility in computational methods chosen which result in students being able to explain their methods and produce accurate answers.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 152).
expression: a mathematical phrase that represents a number through the combination of operation symbols, numbers and/or symbols. Examples: 2 x 60; 3 + Δ	*Math at hand: A mathematics handbook* (p. 523). (1999). Wilmington, MA: Great Source Education Group, Inc.
identity property of addition: if you add a zero to a number, the sum is the same as that given number. Example: 7 + 0 = 7	*Math at hand: A mathematics handbook* (p. 525). (1999). Wilmington, MA: Great Source Education Group, Inc.
line graph: a graph used to show change over time with points connected by line segments.	Cavanagh, M. (2000). *Math to know* (p. 454). Wilmington, MA: Great Source Education Group, Inc.
line plot: a diagram showing frequency of data on a number line.	Cavanagh, M. (2000). *Math to know* (p. 455). Wilmington, MA: Great Source Education Group, Inc.

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model: to represent a mathematical situation with manipulatives (objects), pictures, numbers or symbols.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 95). Reston, VA: Author
number sentences: equations or comparisons. Examples: 3 + 4 = 7, 8 – 2 = 6, 7 > 6	Cavanagh, M. (2002). *Math to learn* (p. 457). Wilmington, MA: Great Source Education Group, Inc.
pictorial (picture) graph: a graph that uses pictures or symbols to show data.	Cavanagh, M. (2000). *Math to know* (p. 460). Wilmington, MA: Great Source Education Group, Inc.
quantitative: relating to number or quantity; elements can be counted or measured.	Eather, J. *A math dictionary for kids*. Retrieved June 5, 2004, from http://www.amathsdictionaryforkids.com.
referent: a familiar object or place that a student can use as a basis for estimating the measurement of something; students might think of the length of their desks, the size of an orange, etc.	*Joram, E. (2003). Benchmarks as tools for developing measurement sense.* Clements, D. H. & Bright, G. (Eds.) *Learning and teaching measurement.* Reston, VA: National Council of Teachers of Mathematics, 2003. (p. 57-67).
shape of data: An overview of numerical data—the highest and lowest points (range) of the data, where most of the data are clumped together, where there are no data, where there are be data located far from the rest of the data (outliers), as well as what the mode and median are.	Russell, S. J., Schifter, D., and Bastable, V. (2002). *Developing mathematical ideas: working with data casebook* (p. 65-8). Parsippany, NJ: Dale Seymour Publications.
4th Grade	
array: a set of objects in equal rows and equal columns.	Cavanagh, M. (2002). *Math to learn* (p. 98). Wilmington, MA: Great Source Education Group, Inc.
attributes: a characteristic or distinctive feature—such as shapes, size, color—of an object or given set of objects.	Eather, J. *A math dictionary for kids*. Retrieved June 5, 2004, from http://www.amathsdictionaryforkids.com
benchmark: a reference that is based on situations that are commonly known such as a dollar bill (six inches), the distance of a doorknob from the floor (about a meter or yard), a half-gallon of milk, a two-liter soda, and five pounds of sugar.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 174). Reston, VA: Author
categorical data: data that represents individuals or objects by one or more characteristics or traits they share, such as maleness or femaleness or blue eyes for green eyes." Categorical data is often treated as counts, proportions, or percentages of people or things in them.	*Navigating though data analysis and probability in grades 3 -5* (p. 19.) (2002). Reston, VA: National Council of Teachers of Mathematics
commutative property of multiplication: the product stays the same when the order of the factors is changed. Example: 8 x 5 = 5 x 8.	*Math at hand: A mathematics handbook* (p. 519). (1999). Wilmington, MA: Great Source Education Group, Inc.

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composing or decomposing numbers: flexibly using or knowing numbers through creating and breaking numbers apart to form equivalent representations. For example, 36 can be thought of as 32 + 4, 20 + 16, 40 – 4, 12 X 3, 72/2 etc.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 149).
demonstrate fluency: demonstrating the ability for efficient and accurate methods of computing and being able to demonstrate flexibility in computational methods chosen which result in students being able to explain their methods and produce accurate answers.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 152).
expression: a mathematical phrase that represents a number through the combination of operation symbols, numbers and/or symbols. Examples: 23 x 67; 33-**Δ**	Cavanagh, M. (2000). *Math to know* (p. 450). Wilmington, MA: Great Source Education Group, Inc.
even : a whole number that is divisible by 2.	*Math at hand* : *A mathematics handbook.* (p. 523). (1999). Wilmington, MA: Great Source Education Group, Inc.
features (of the data set): features include the range, the outliers, the median, mean and mode. It is important that students not only identify these features, but also know at they indicate about the data.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 179).
flipping/reflecting: a transformation creating a mirror image of a figure on the opposite side of a line.	*Math at hand: A mathematics handbook* (p. 533). (1999). Wilmington, MA: Great Source Education Group, Inc.
fluency: refers to having efficient and accurate methods for computing.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 152).
identity property of multiplication: if you multiply a number by one, the product is the same as the number.	Cavanagh, M. (2000). *Math to know* (p. 526). Wilmington, MA: Great Source Education Group, Inc.
line plot: a diagram showing frequency of data on a number line.	Cavanagh, M. (2000). *Math to know* (p. 455). Wilmington, MA: Great Source Education Group, Inc.
median (feature of data): when the numbers are arranged from least to greatest, the middle number of a set of numbers, or the mean of two middle numbers when the set has two middle numbers.	*Math at hand: A mathematics handbook* (p. 527). (1999). Wilmington, MA: Great Source Education Group, Inc.
mode (feature of data): the number that appears most frequently in a set of numbers. There may be one, more than one, or no mode.	*Math at hand: A mathematics handbook* (p. 528). (1999). Wilmington, MA: Great Source Education Group, Inc.
model: to represent a mathematical situation with manipulatives (objects), pictures, numbers or symbols.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 95). Reston, VA: Author

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multiple: the product of a whole number and any other whole number.	*Math at hand: A mathematics handbook* (p. 528). (1999). Wilmington, MA: Great Source Education Group, Inc.
number sentence: an equation or comparison. Examples: 3 + 4 = 7, 8 – 2 = 6, 7 > 6.	Cavanagh, M. (2002). *Math to learn* (p. 457). Wilmington, MA: Great Source Education Group, Inc.
numerical data: represent objects or individuals by numbers assigned to certain measurable properties, such as their length or their age.	*Navigating though daa analysis and probability in grades 3 -5* (p. 19.) (2002). Reston, VA: National Council of Teachers of Mathematics.
odd: a whole number that is not divisible by 2.	*Math at hand: A mathematics handbook* (p. 529). (1999). Wilmington, MA: Great Source Education Group, Inc.
outlier: a number in a set of data that is much larger or smaller than most of the other numbers in the set.	*Math at hand: A mathematics handbook* (p. 529). (1999). Wilmington, MA: Great Source Education Group, Inc.
prism: a 3-dimensional figure in which all of the surfaces are polygons.	*Math on call: A mathematics handbook* (p. 588). (1998). Wilmington, MA: Great Source Education Group, Inc.
range (feature of data): the difference between the greatest and the least value in a set of data.	*Math at hand: A mathematics handbook* (p. 532). (1999). Wilmington, MA: Great Source Education Group, Inc.
set: a collection of distinct elements or items.	*Math at hand: A mathematics handbook* (p. 534). (1999). Wilmington, MA: Great Source Education Group, Inc.
sliding/translating: a transformation that involves sliding a figure a given distance in a given direction.	*Math at hand: A mathematics handbook* (p. 536). (1999). Wilmington, MA: Great Source Education Group, Inc.
transformations: the mapping, or movement of all points of a figure in a plane according to a common operation . Examples of the operation include rotations, dilations, reflections, and translations.	*Intermath* *www.intermath-uga-gatech/dictionary/*
transforming shapes: changing plane figures by mapping or moving every point to a new location.	*Math at hand: A mathematics handbook* (p. 536). (1999). Wilmington, MA: Great Source Education Group, Inc.
turning/rotating: a transformation that involves turning a figure at a given angle and in a given direction around a point	*Math at hand: A mathematics handbook* (p. 534). (1999). Wilmington, MA: Great Source Education Group, Inc.
5th Grade	
associative property of addition: the sum stays the same when the grouping of the addends is changed. Example: (5+4) +6 = 5 + (4+6)	*Math at hand: A mathematics handbook* (p. 517). (1999). Wilmington, MA: Great Source Education Group, Inc.

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associative property of multiplication: the product stays the same when the grouping of the factors is changed. Example: (3 x 4) X 7 = 3 x (4 x 7)	*Math at hand: A mathematics handbook* (p. 517). (1999). Wilmington, MA: Great Source Education Group, Inc.
attributes: a characteristic or distinctive feature—such as shapes, size, color—of an object or given set of objects.	Eather, J. *A math dictionary for kids*. Retrieved June 5, 2004, from http://www.amathdictionaryforkids.com
categorical data: data that represents individuals or objects by one or more characteristics or traits they share, such as maleness or femaleness or blue eyes for green eyes." Categorical data is often treated as counts, proportions, or percentages of people or things in them.	*Navigating though data analysis and probability in grades 3 -5* (p. 19.) (2002). Reston, VA: National Council of Teachers of Mathematics
center point (of rotation): the point that a geometric figure is rotated or turned around. The point can be on the figure, but does not have to be.	*Algebra to go: A mathematics handbook.* (p 481). (2000). Wilmington, MA. Great Source Education Group, Inc.
commonly used fractions: halves, thirds, fourths, fifths, sixths, eighths, and tenths.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 150).
composing or decomposing numbers: flexibly using or knowing numbers through creating and breaking numbers apart to form equivalent representations. For example, 36 can be thought of as 32 + 4, 20 + 16, 40 – 4, 12 X 3, 72/2 etc.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 149).
composite number: a number that has more than two factors.	*Math at hand: A mathematics handbook* (p. 520). (1999). Wilmington, MA: Great Source Education Group, Inc.
coordinate systems: two-dimensional systems in which the coordinates of a point are its distances from two intersecting, usually perpendicular straight lines called axes	Cavanagh, M. (2000). *Math to know* (p. 446). Wilmington, MA: Great Source Education Group, Inc.
distributive property: when one of the factors of a product is written as a sum, multiplying each addend before adding does not change the product. Example: 3 x (5 + 4) = (3 x 5) + (3 x 4)	*Math at hand: A mathematics handbook* (p. 522). (1999). Wilmington, MA: Great Source Education Group, Inc.
even: a whole number that is divisible by 2.	*Math at hand: A mathematics handbook* (p. 523). (1999). Wilmington, MA: Great Source Education Group, Inc.
expression: a mathematical phrase that represents a number through the combination of operation symbols, numbers and/or symbols. Examples: 23 x 67; 3a; x+y	Cavanagh, M. (2000). *Math to know* (p. 450). Wilmington, MA: Great Source Education Group, Inc.

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factor: an integer that will divide evenly into another number.	*Math at hand: A mathematics handbook* (p. 524). (1999). Wilmington, MA: Great Source Education Group, Inc.
flipping/reflecting: a transformation creating a mirror image of a figure on the opposite side of a line	*Math at hand: A mathematics handbook*. (p. 533). (1999). Wilmington, MA: Great Source Education Group, Inc
fractions: a way of representing part of a whole (or a group) by telling the number of equal parts in the whole and the number of those parts you are describing.	*Algebra to go: A mathematics handbook.* (p 489). (2000). Wilmington, MA. Great Source Education Group, Inc.
generalizations: reasoning about the structure of a pattern or rule.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 159). Reston, VA: Author.
model: to represent a mathematical situation with manipulatives (objects), pictures, numbers or symbols.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 95). Reston, VA: Author
net of a prism: a flat 2-dimensional shape that can be folded into a 3-dimensional solid.	Eather, J. *A math dictionary for kids*. Retrieved June 5, 2004, from http://www.amathsdictionaryforkids.com.
number sentence: an equation or comparison. Examples: 3 + 4 = 7, 8 – 2 = 6, 7 > 6.	Cavanagh, M. (2002). *Math to learn* (p. 457). Wilmington, MA: Great Source Education Group, Inc.
numerical data: data that represent objects or individuals by numbers assigned to certain measurable properties, such as their length or their age.	*Navigating though daa analysis and probability in grades 3 -5* (p. 19.) (2002). Reston, VA: National Council of Teachers of Mathematics.
odd: a whole number that is not divisible by 2.	*Math at hand: A mathematics handbook* (p. 529). (1999). Wilmington, MA: Great Source Education Group, Inc.
partitive: distribution division that involves figuring out how many are in the group when the number of groups is known. Example: How would you divide 24 cookies equally among 6 children? (Think of dividing or partitioning the cookies into 6 equivalent subsets.)	Fosnot, C and Dolk, M, (2001). Young mathematicians at Work: constructing multiplication and division, (p. 53 – 57). Heineman.
prime number: a number that has exactly two different positive factors, itself and 1.	*Math at hand: A mathematics handbook* (p. 531). (1999). Wilmington, MA: Great Source Education Group, Inc.
quotative: measurement division that involves seeing how many groups will fit into a number. Example: If a serving consists of 4 cookies and you have 24 cookies, to how many children can you give a serving of cookies? (Think of making one pile of 4 cookies, then a second pile of 4 cookies, etc.)	Fosnot, C and Dolk, M, (2001). Young mathematicians at Work: constructing multiplication and division, (p. 53 – 57). Heineman.
rotational symmetry: a property of a figure that is mapped onto itself by a rotation of 180^0 or less.	*Geometry to go* (p. 470). (2001). Wilmington, MA: Great Source Education Group, Inc.

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sliding/translating: a transformation that involves sliding a figure a given distance in a given direction.	*Math at hand: A mathematics handbook* (p. 536). (1999). Wilmington, MA: Great Source Education Group, Inc
square number: the number of dots in a square array; the product of an integer multiplied by itself.	*Math at hand: A mathematics handbook* (p. 531; 535). (1999). Wilmington, MA: Great Source Education Group, Inc
transformation: the mapping, or movement of all points of a figure in a plane according to a common operation. Examples of the operation include rotations, dilations, reflections, and translations.	*Math at hand: A mathematics handbook* (p. 536). (1999). Wilmington, MA: Great Source Education Group, Inc
transforming shapes: changing plane figures by moving or mapping every point in a plane figure to a new location.	*Math at hand: A mathematics handbook* (p. 536). (1999). Wilmington, MA: Great Source Education Group, Inc.
translation: a transformation in which a figure is slid a given distance in a given direction	*Math at hand: A mathematics handbook* (p. 536). (1999). Wilmington, MA: Great Source Education Group, Inc.
turning/rotating: a transformation that involves turning a figure at a given angle and in a given direction around a point.	*Math at hand: A mathematics handbook* (p. 534). (1999). Wilmington, MA: Great Source Education Group, Inc.
unit fraction: a fraction with a numerator of 1, for example, ½, 1/3, ¼, 1/10	*Math at hand: A mathematics handbook* (p. 537). (1999). Wilmington, MA: Great Source Education Group, Inc.
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associative property of addition: the sum stays the same when the grouping of the addends is changed. Example: (22 + 13) +12 = 22 + (13 + 2)	*Math at hand: A mathematics handbook* (p. 517). (1999). Wilmington, MA: Great Source Education Group, Inc.
associative property of multiplication: the product stays the same when the grouping of the factors is changed. Example: (8 x 7) x 13 = 8 x (7 x 13)	*Math at hand*: *A mathematics handbook* (p. 517). (1999). Wilmington, MA: Great Source Education Group, Inc.
benchmark: a reference that is based on situations that are commonly known such as a dollar bill (six inches), the distance of a doorknob from the floor (about a meter or yard), a half-gallon of milk, a two-liter soda, and five pounds of sugar.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 174). Reston, VA: Author
common factor: a number that is a factor of two or more numbers.	*Math on call: A mathematics handbook* (p. 576). (1998). Wilmington, MA: Great Education Source Group, Inc.

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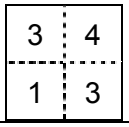
common multiple: a number that is a multiple of two or more numbers.	*Math on call: A mathematics handbook* (p. 576). (1998). Wilmington, MA: Great Education Source Group, Inc.
composing or decomposing numbers: flexibly using or knowing numbers through creating and breaking numbers apart to form equivalent representations. For example, 36 can be thought of as 32 + 4, 20 + 16, 40 – 4, 12 X 3, 72/2 etc.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 149).
conjecture: A proposition which is consistent with known data, but has neither been verified nor shown to be false. It is synonymous with hypothesis.	Retrieved February 15, 2005 from *http://mathworld.wolfram.com/Conjecture.html*
corresponding angles: angles that are in the same relative position in similar or congruent figures.	*Geometry to go: A mathematics handbook* (p. 452). (2001). Wilmington, MA: Great Source Education Group, Inc.
corresponding sides of similar triangles: Sides that are in the same relative position in similar or congruent figures. Similar triangles are triangles that have proportional corresponding sides and congruent corresponding angles	*Geometry to go: A mathematics handbook* (pp. 452, 472). (2001). Wilmington, MA: Great Source Education Group, Inc.
distributive property: when one of the factors of a product is written as a sum, multiplying each addend before adding does not change the product. Example: 7 x (11 + 13) = (7x11) + (7 x 13)	*Math at hand: A mathematics handbook* (p. 522). (1999). Wilmington, MA: Great Source Education Group, Inc.
factor: an integer that will divide evenly into another number.	*Math at hand: A mathematics handbook* (p. 524). (1999). Wilmington, MA: Great Source Education Group, Inc.
functions: relations in which every value of *x* has a unique value of *y*.	*Math on call: A mathematics handbook* (p. 583). (1998). Wilmington, MA: Great Education Source Group, Inc.
image: a figure that is created after a shape undergoes a transformation.	*Geometry to go: A mathematics handbook* (p. 467). (2001). Wilmington, MA: Great Source Education Group, Inc.
isometric representations: drawings that provide a corner view of an object, thus showing three dimensions	*Geometry to go: A mathematics handbook* (p. 459). (2001). Wilmington, MA: Great Source Education Group, Inc.
linear (function) equation: an equation whose graph in a coordinate grid is a straight line.	*Math on call: A mathematics handbook* (p. 583). (1998). Wilmington, MA: Great Education Source Group, Inc.
mat plans: drawings of the base of a cube on squares, with numbers on the squares to show how high each stack of cubes is. 	Lappan, G. Frey, J. T., Fitzgerald, W. M., Friel, S. N., & Phillips, E. D. (2002). Ruins of Montarek spatial visualization. *Connected mathematics* (p. 9). Glenview, IL: Prentice Hall.
mean: the measure of center found by dividing the sum of two or more numbers by the number of addends.	Cavanagh, M. (2000). *Math to Know.* Wilmington, MA*:* Great Source Education Group, Inc. p.455.

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measure of center: measures of center or central tendency describe where data are centered; measures of center include the mean, median, and mode.	Billstein, R., Libesking, S., & Lott, J.W. (1998). *A problem solving approach to mathematics for elementary teachers*. (p. 492). Reading, MA. Addision-Wesley.
median: when the numbers are arranged from least to greatest, the middle number of a set of numbers, or the mean of two middle numbers when the set has two middle numbers.	*Math at hand: A mathematics handbook* (p. 527). (1999). Wilmington, MA: Great Source Education Group, Inc.
mode: the number that appears most frequently in a set of numbers; there may be one, more than one, or no mode.	*Cavanagh, M.* (2000). *Math to Know.* Wilmington, MA: Great Source Education Group, Inc. p.*45.*
model: to represent a mathematical situation with manipulatives (objects), pictures, numbers or symbols.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 95). Reston, VA: Author
multiple: the product of a whole number and any other whole number.	*Math on call: A mathematics handbook* (p. 584). (1998). Wilmington, MA: Great Education Source Group, Inc.
nonlinear (function) equation: a function whose graph in a coordinate grid is not a straight line.	*Algebra to go: A mathematics handbook* (p. 459). (1998). Wilmington, MA: Great Source Education Group, Inc.
non-standard units**:** measuring units such as paper clips, pencils, etc. that can be used to help understand the nature of units; tiles and dominoes can be used as non-standard units for area measure.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 105). Reston, VA: Author
pre-image: the original figure in a transformation.	*Geometry to go: A mathematics handbook* (p. 458). (2001). Wilmington, MA: Great Source Education Group, Inc.
properties of 1-2- and 3- dimensional shapes: common features of 1-, 2-, and 3-dimensional shapes, such as number and length of sides, angle measures, etc.	Eather, J. *A math dictionary for kids*. Retrieved August 25, 2004, from http://www.amathsdictionaryforkids.com.
range: the difference between the greatest and the least value in a set of data.	*Math at hand: A mathematics handbook* (p. 532). (1999). Wilmington, MA: Great Source Education Group, Inc.
reflection/flips: a transformation in which a figure is flipped over a line called the line of reflection; corresponding points in the image and pre-image are equidistant from the line of reflection.	*Geometry to go: A mathematics handbook* (p. 469). (2001). Wilmington, MA: Great Source Education Group, Inc.
representations: physical objects, drawings, charts, graphs, and symbols that help students communicate their thinking.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 280). Reston, VA: Author.
rotation/turn: a transformation that forms an image by turning its pre-image about a point.	*Geometry to go: A mathematics handbook* (p. 470). (2001). Wilmington, MA: Great Source Education Group, Inc.
rotational symmetry: a property that allows a figure to be mapped onto itself as it is rotated 180 degrees or less.	*Geometry to go: A mathematics handbook* (p. 470). (2001). Wilmington, MA: Great Source Education Group, Inc.

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standard units of measure: measurements that are used to communicate in the United States (customary) and around the world (metric system).	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 172). Reston, VA: Author.
stem- and- leaf plot: a method of organizing data from least to greatest using the digits of the greatest place value to group data. The data is separated in to stems (tens) and leaves (ones).	*Math on call: A mathematics handbook* (p. 593). (1998). Wilmington, MA: Great Education Source Group, Inc.
symbolic rules: rules that use variables and numbers to describe a pattern or express a relationship.	*Navigating through algebra in grades 6–8* (p. 3) (2001). Reston, VA: National Council of Teachers of Mathematics
translation/slide: a transformation in which an image is formed by moving or mapping every point on a figure the same distance in the same direction. Points in the original figure are equidistant from their image.	*Geometry to go: A mathematics handbook*(p. 475). (2001). Wilmington, MA: Great Source Education Group, Inc.
visual model: models such as networks that could be used to analyze and solve real problems as those concerned with efficiency. The models of 2- and 3-dimensional objects may also assist in the students' reasoning about spatial relationships.	National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics* (p. 237). Reston, VA: Author