



ADW GRADE 3 MATH STANDARDS & INSTRUCTION GUIDE 2017

NUMBER SENSE (NS)	Standard	Core Concepts	Key terms	Examples
MA.3.NS.1	Count, read, and write whole numbers up to 1,000.	<ul style="list-style-type: none">Place value up to 1,000		Write 349 for the number "three hundred forty-nine"
MA.3.NS.2	Identify and interpret place value in whole numbers up to 1,000.	<ul style="list-style-type: none">Place value up to 1,000The value of a digit depends on the place it appears in a numberThe digit 0 is a place holder and has no value	<ul style="list-style-type: none">digitvalue of a digit	Understand that the 7 in 479 represents 7 tens or 70.
MA.3.NS.3	Use words, models, and expanded form to represent numbers up to 1,000.	<ul style="list-style-type: none">Expanded form is writing an addition expression containing all of the values of the digits in a number	<ul style="list-style-type: none">expanded form	Recognize that $492 = 400 + 90 + 2$.
MA.3.NS.4	Identify any number up to 1,000 in various combinations of hundreds, tens, and ones.	<ul style="list-style-type: none">10 of one unit represents 1 of the next higher unit (10 ones = 1 ten, etc.)	<ul style="list-style-type: none">onestenshundreds, thousands	325 can be written as 3 hundreds, 2 tens, and 5 ones, or as 2 hundreds, 12 tens, and 5 ones, etc.



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NUMBER SENSE (NS)	Standard	Core Concepts	Key terms	Examples
MA.3.NS.5	Compare whole numbers up to 1,000 and arrange them in numerical order.	<ul style="list-style-type: none">• A whole number is greater than ($>$), less than ($<$), or equal to ($=$) another whole number.• Whole numbers can be ordered from least to greatest/ greatest to least	<ul style="list-style-type: none">• compare• order	What is the smallest whole number you can make using the digits 4, 9, and 1? Use each digit exactly once.
MA.3.NS.6	Round numbers less than 1,000 to the nearest ten and the nearest hundred.	<ul style="list-style-type: none">• Rounding is a process for finding the multiple of 10, 100 etc. closest to a given number.• Rounding rules can be applied to round whole numbers to the nearest 10 or 100.	<ul style="list-style-type: none">• rounding	Round 548 to the nearest ten.
MA.3.NS.7	Identify odd and even numbers up to 1,000 and describe their characteristics.	<ul style="list-style-type: none">• Even numbers can be divided into two equal sets of whole numbers• Odd numbers cannot be divided into two equal sets of whole numbers• Even numbers have a 2, 4, 6, 8, or 0 in the ones place	<ul style="list-style-type: none">• even• odd	Find the even number: 47, 106, 357, 629

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NUMBER SENSE (NS)	Standard	Core Concepts	Key terms	Examples
MA.3.NS.8	Show equivalent fractions using equal parts.	<ul style="list-style-type: none">• Equivalent fractions have the same value, but use different numbers• Modeling fractions using concrete materials	<ul style="list-style-type: none">• equivalent• equivalent fractions	Draw pictures to show that $\frac{3}{5}$, $\frac{6}{10}$, and $\frac{9}{15}$ are equivalent fractions.
MA.3.NS.9	Identify and use correct names for numerators and denominators.	<ul style="list-style-type: none">• The denominator is the bottom number of the fraction. It tells how many equal parts the whole is divided into.• The numerator is the top number and tells how many parts are indicated.	<ul style="list-style-type: none">• numerator• denominator	In the fraction $\frac{3}{5}$, name the numerator and denominator
MA.3.NS.10	Given a pair of fractions, decide which is larger or smaller by using objects or pictures.			Is $\frac{3}{4}$ of a medium pizza larger or smaller than $\frac{1}{2}$ of a medium pizza? Explain your answer.



NUMBER SENSE (NS)	Standard	Core Concepts	Key terms	Examples
MA.3.NS.11	Given a set of objects or a picture, name and write a decimal to represent tenths and hundredths.	<ul style="list-style-type: none">• A decimal is a fraction whose denominator is 10, 100, etc.• A decimal is written using place value rather than as a fraction• A decimal point separates the whole number places from decimal fraction places• The first place to the right of the one's place is the $\frac{1}{10}$'s• The second place to the right of the one's place is the $\frac{1}{100}$'s	<ul style="list-style-type: none">• decimal fraction• decimal point• tenths place• hundredths place	You have a pile of 100 beans and 72 of them are lima beans. Write the decimal that represents lima beans as a part of the whole pile of beans.



NUMBER SENSE (NS)	Standard	Core Concepts	Key terms	Examples
MA.3.NS.12	Given a decimal for tenths, show it as a fraction using a place-value model.	<ul style="list-style-type: none">• Model decimals involving tenths using concrete materials• Decimals involving tenths can be written as common fractions• Decimals and fractions can be equivalent, even though they are written differently.	<ul style="list-style-type: none">• equivalent	Shade the part of a square that represents 0.7 and write the number $\frac{7}{10}$.
MA.3.NS.13	Interpret data displayed in a circle graph and answer questions about the situation.	<ul style="list-style-type: none">• Collecting data and displaying it in a meaningful ways helps to answer questions about a situation.	<ul style="list-style-type: none">• data• graph• circle graph	Have the students in your class choose the pizza they like best from these choices: cheese, sausage, and pepperoni. Use a spreadsheet to enter the number of students who chose each kind and make a circle graph of the data. Determine the most popular and the least popular kind of pizza, and explain what the circle and each pie slice represent.



COMPUTATION (C)	Standard	Core Concepts	Key terms	Examples
MA.3.C.1	Add and subtract whole numbers up to 1,000 with or without regrouping, using relevant properties of the number system.	<ul style="list-style-type: none">• Addition is counting, and you can only count things that are the same.• Subtraction is counting backwards, and you can only count things that are the same• In addition, 10 ones are traded for 1 ten, etc.• In subtraction, 1 hundred is traded for 10 tens, etc.	<ul style="list-style-type: none">• addition• subtraction• regrouping	$854 - 427 = ?$. Explain your method.
MA.3.C.2	Represent the concept of multiplication as repeated addition.	<ul style="list-style-type: none">• In multiplication, two or more groups of equal amounts are combined to form one group• Multiplication is repeated addition: $3 \times 4 = 4+4+4$	<ul style="list-style-type: none">• multiplication• repeated addition	Lynn made 3 baskets each week for 4 weeks. Draw a picture to show how many baskets she made.
MA.3.C.3	Represent the concept of division as repeated subtraction, equal sharing, and forming equal groups.	<ul style="list-style-type: none">• In division, one group is separated into two or more smaller groups of equal amounts• Division is repeated subtraction: $6 \div 2 = 6 - 2 - 2 - 2$	<ul style="list-style-type: none">• division• repeated subtraction	Bob shared 10 cookies among 5 friends. Draw a picture to show how many cookies each friend got.



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COMPUTATION (C)	Standard	Core Concepts	Key terms	Examples
MA.3.C.4	Know and use the inverse relationship between multiplication and division facts, such as $6 \times 7 = 42$, $42 \div 7 = 6$, $7 \times 6 = 42$, $42 \div 6 = 7$,	<ul style="list-style-type: none">• Multiplication undoes division: $10 \div 2 \times 2 = 10$• Division undoes multiplication: $10 \times 2 \div 2 = 10$• A fact family shows a conceptual understanding of how multiplication and division work	<ul style="list-style-type: none">• inverse relationship• facts family	Find other facts related to $8 \times 3 = 24$.
MA.3.C.5	Show mastery of multiplication facts for 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12	<ul style="list-style-type: none">• Mastering the times tables 0 - 12.		Know the answer to 6×7 .
MA.3.C.6	Add and subtract simple fractions with the same denominator.	<ul style="list-style-type: none">• Addition and subtraction involve counting and you can only count things that are the same• The denominator of a fraction names what is being counted	<ul style="list-style-type: none">• numerator• denominator	Add $\frac{3}{8}$ and $\frac{1}{8}$. Explain your answer.

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COMPUTATION (C)	Standard	Core Concepts	Key terms	Examples
MA.3.C.7	Use estimation to decide whether answers are reasonable in addition and subtraction problems.	<ul style="list-style-type: none">• Rounding is a tool used to estimate• Estimation is used to check the reasonableness of an exact answer	<ul style="list-style-type: none">• round• estimate	Your friend says that $79 - 22 = 27$. Without solving, explain why you think the answer is wrong.
MA.3.C.8	Use mental arithmetic to add or subtract with numbers less than 100.	<ul style="list-style-type: none">• Techniques for adding and subtracting whole numbers using mental math are different than when using pencil and paper		Subtract 35 from 86 without using pencil and paper.



ALGEBRA AND FUNCTIONS (AF)	Standard	Core Concepts	Key terms	Examples
MA.3.AF.1	Represent relationships of quantities in the form of a numeric expression or equation.	<ul style="list-style-type: none">• An expression is a mathematical phrase that can contain numbers and operators (+, -, \times, \div)• An equation is a number sentence that uses an equal sign• An equal sign indicates the expressions on either side of it have the same value	<ul style="list-style-type: none">• expression• equation	Bill's mother gave him money to buy three drinks that cost 45 cents each at the concession stand. When he returned to the bleachers, he gave 25 cents change to his mother. Write an equation to find the amount of money Bill's mother originally gave him.
MA.3.AF.2	Solve problems involving numeric equations.	<ul style="list-style-type: none">• To evaluate a numeric expression means to find the value of the expression	<ul style="list-style-type: none">• evaluate	Use your equation from the last example to find the amount of money that Bill's mother gave him. Justify your answer.



ALGEBRA AND FUNCTIONS (AF)	Standard	Core Concepts	Key terms	Examples
MA.3.AF.3	Choose appropriate symbols for operations and relations to make a number sentence true.	<ul style="list-style-type: none">• Each of the four operations have an impact on the value of an expression• Symbols are used to represent addition, subtraction, multiplication, and division, as well as compare the value of numeric expressions	<ul style="list-style-type: none">• operation symbols	What symbol is needed to make the number sentence $4 _ 3 = 12$ true?
MA.3.AF.4	Understand and use the commutative and associative rules of multiplication.	<ul style="list-style-type: none">• The order of numbers when adding or multiplying makes no difference. This is not true for subtraction or division• The grouping of numbers when adding or multiplying makes no difference. This is not true for subtraction or division	<ul style="list-style-type: none">• Commutative property• associative property	Multiply the numbers 7, 2, and 5 in this order. Now multiply them in the order, 2, 5, and 7. Which was easier? Why?



ALGEBRA AND FUNCTIONS (AF)	Standard	Core Concepts	Key terms	Examples
MA.3.AF.5	Create, describe, and extend number patterns using multiplication.	<ul style="list-style-type: none">• There is a relationship between numbers in a sequence	<ul style="list-style-type: none">• Pattern	What is the next number: 3, 6, 12, 24, ...? How did you find your answer?
MA.3.AF.6	Solve simple problems involving a functional relationship between two quantities.	<ul style="list-style-type: none">• As a number is added, subtracted, multiplied, or divided by another number, the resulting value changes• Number patterns can be created to solve problems using addition, subtraction and multiplication.	<ul style="list-style-type: none">• Value• relationship	Ice cream sandwiches cost 20 cents each. Find the cost of 1, 2, 3, 4, ... ice cream sandwiches. What pattern do you notice? Continue the pattern to find the cost of enough ice cream sandwiches for the class.



GEOMETRY (G)	Standard	Core Concepts	Key terms	Examples
MA.3.G.1	Identify quadrilaterals as four-sided shapes.	<ul style="list-style-type: none">• A quadrilateral is a two-dimensional figure with four sides	<ul style="list-style-type: none">• quadrilateral• square• rectangle• parallelogram• triangle	Which of these are quadrilaterals: square, triangle, rectangle
MA.3.G.2	Identify right angles in shapes and objects and decide whether other angles are greater or less than a right angle.	<ul style="list-style-type: none">• A right angle measures exactly 90°• An angle more than 90° is greater than a right angle• An angle less than 90° is less than a right angle	<ul style="list-style-type: none">• angle• right angle	Identify right angles in your classroom. Open the classroom door until it makes a right angle with one wall and explain what you are doing.



GEOMETRY (G)	Standard	Core Concepts	Key terms	Examples
MA.3.G.3	Identify, describe, and classify: cube, sphere, prism, pyramid, cone, and cylinder.	<ul style="list-style-type: none">• A cube is a six sided solid figure with all equal faces• A sphere is a shape best described as a round ball that looks the same when seen from all directions• A prism is a solid object with two identical ends and flat sides• A pyramid has a base that is a polygon and sides that are triangles which meet at the top (apex)	<ul style="list-style-type: none">• solid figures• cube• sphere• prism• pyramid• cone• cylinder	Describe the faces of a pyramid and identify its characteristics.
MA.3.G.4	Identify common solid objects that are the parts needed to make a more complex solid object.	<ul style="list-style-type: none">• Complex solid shapes are combinations of different types of solid figures	<ul style="list-style-type: none">• Solid figures	Describe and draw a house made from a prism and a pyramid.



GEOMETRY (G)	Standard	Core Concepts	Key terms	Examples
MA.3.G.5	Draw a shape that is congruent to another shape.	<ul style="list-style-type: none">• Congruent figures have the same size and shape	<ul style="list-style-type: none">• congruent	Draw a triangle that is congruent to a given triangle. You may use a ruler and pencil or the drawing program on a computer.
MA.3.G.6	Use the terms point, line, and line segment in describing two-dimensional shapes.	<ul style="list-style-type: none">• Line segments meet at a point• The sides of two-dimensional shapes are line segments	<ul style="list-style-type: none">• point• line• line segment	Describe the way a triangle is made of points and line segments and how you know it is a triangle.
MA.3.G.7	Draw line segments and lines.	<ul style="list-style-type: none">• Arrowheads are drawn at the ends of lines to show they continue infinitely in both directions• A line segment is a part of a line and has a point at either end	<ul style="list-style-type: none">• line• line segment	Draw a line segment three inches long.
MA.3.G.8	Identify and draw lines of symmetry in geometric shapes (by hand or using technology).	<ul style="list-style-type: none">• A line of symmetry is an imaginary line where you could fold the image and have both halves match exactly	<ul style="list-style-type: none">• line of symmetry	Use pencil and paper or a drawing program to draw lines of symmetry in a square. Discuss your findings.



GEOMETRY (G)	Standard	Core Concepts	Key terms	Examples
MA.3.G.9	Sketch the mirror image reflections of shapes.	<ul style="list-style-type: none">• A mirror image is like a reflection in a mirror. Everything is the same, except reversed• Each side of a figure divided by a line of symmetry is a mirror image of the other side	<ul style="list-style-type: none">• mirror image	Hold up a cardboard letter F to a mirror. Draw the letter and the shape you see in the mirror.
MA.3.G.10	Recognize geometric shapes and their properties in the environment and specify their locations.	<ul style="list-style-type: none">• Geometric shapes are classified by their properties	<ul style="list-style-type: none">• geometric shapes• square• rectangle• parallelogram• triangle	Write the letters of the alphabet and draw all the lines of symmetry that you see.



MEASUREMENT (M)	Standard	Core Concepts	Key terms	Examples
MA.3.M.1	Measure line segments to the nearest half-inch.	<ul style="list-style-type: none">• A ruler measures whole inches and parts of an inch	<ul style="list-style-type: none">• half-inch	Measure the length of a side of a triangle.
MA.3.M.2	Determine equivalent measures of length. Give your answer in yards, feet, and inches.	<ul style="list-style-type: none">• Units of equal measure: (3 ft = 1 yd), (12 in = 1 ft)		A piece of rope measures 51 inches. What is 51 inches in yards, feet and inches? Explain your method
MA.3.M.3	Find the perimeter of a polygon.	<ul style="list-style-type: none">• Perimeter is the distance around a polygon• A polygon is a two-dimensional shape with straight sides	<ul style="list-style-type: none">• perimeter• polygon	Find the perimeter of a table in centimeters. Explain your method.
MA.3.M.4	Estimate or find the area of shapes by covering them with squares.	<ul style="list-style-type: none">• Area is the number of squares needed to cover the surface of an object	<ul style="list-style-type: none">• area	How many square tiles do you need to cover this desk?
MA.3.M.5	Estimate or find the volume of objects by counting the number of cubes that would fill them.	<ul style="list-style-type: none">• Volume is the amount of space taken up by an object. It is measured by the number of cubes needed to fill the object.	<ul style="list-style-type: none">• cube• volume	How many of these cubes will fill the box?



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MEASUREMENT (M)	Standard	Core Concepts	Key terms	Examples
MA.3.M.6	Estimate and measure capacity using quarts, gallons, and liters.	<ul style="list-style-type: none">• Capacity is the measure of an object's ability to hold a substance.• The capacity of a large object can be estimated given the capacity of a smaller object.	<ul style="list-style-type: none">• capacity	This bottle holds one liter. Estimate how many liters the sink holds.
MA.3.M.7	Estimate and measure weight using pounds and kilograms.	<ul style="list-style-type: none">• The weight of objects can be measured in pounds and kilograms.	<ul style="list-style-type: none">• pound• kilogram	Estimate the weight of your book bag in pounds.
MA.3.M.8	Compare temperatures in Celsius and Fahrenheit.	<ul style="list-style-type: none">• Celsius is a measure of temperature in the metric system• Fahrenheit is a measure of temperature in the customary system• A unit of Celsius measurement is greater than a unit of Fahrenheit measurement	<ul style="list-style-type: none">• Celsius• Fahrenheit	Measure the room temperature using a thermometer that has both Celsius and Fahrenheit units. If the temperature in the room measures 70°F, will the Celsius measurement be higher or lower?
MA.3.M.9	Tell time to the nearest minute.	<ul style="list-style-type: none">• Time is measured in hours, minutes, and seconds	<ul style="list-style-type: none">• second• minute• hour	You start a project at 9:10 a.m. and finish the project at 9:42 a.m. How much time has passed?

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MEASUREMENT (M)	Standard	Core Concepts	Key terms	Examples
MA.3.M.10	Find the value of any collection of coins and bills. Write the amounts less than a dollar using the ¢ symbol and write larger amounts in decimal notation using the \$ symbol.	<ul style="list-style-type: none">• The value of a collection of coins and bills depends on the type of coins and bills in the collection• Money amounts less than one dollar can be represented using the cent symbol.• Money amounts greater than one dollar can be represented using the dollar symbol	<ul style="list-style-type: none">• cent symbol• dollar symbol	You have 5 quarters and 2 dollar bills. How much money is that? Write the amount.
MA.3.M.11	Use play or real money to decide whether there is enough money to make a purchase.	<ul style="list-style-type: none">• Concrete materials can be used to determine and justify the solution to a problem		You have \$5. Can you buy two books that cost \$2.15 each? What about three books that cost \$1.70 each? Explain how you know.
MA.3.M.12	Carry out simple unit conversions within a measurement system (e.g., centimeters to meters, hours to minutes).	<ul style="list-style-type: none">• Units of equal measure: (1 h = 60 min.), (12 in. = 1 ft) (100 cm = 1 m)		How many minutes are in 3 hours?



DATA ANALYSIS AND PROBABILITY (DP)	Standard	Core Concepts	Key terms	Examples
MA.3.DP.1	Identify whether everyday events are certain, likely, unlikely, or impossible.		<ul style="list-style-type: none">• certain• likely• unlikely• impossible	It is raining in your neighborhood. Is it certain, likely, unlikely, or impossible that the tree in your front yard will get wet?
MA.3.DP.2	Record the possible outcomes for a simple probability experiment.	<ul style="list-style-type: none">• There are many methods that can be used to collect and display data.• Data collected can be used to determine the likelihood of an event occurring	<ul style="list-style-type: none">• probability outcome	Have a partner toss a coin while you keep a tally of the outcomes. Exchange places with your partner and repeat the experiment. Explain results to the class.