

Nebraska Sixth Grade Math Standards and Extended Indicators

for Students with Significant Disabilities

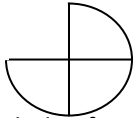
K-12 Comprehensive Number Sense Standard: Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

NUMBER SYSTEM

MA 6.1.1 Number System: Students will represent and show relationships among positive rational numbers and integers.

Indicator	MA 6.1.1.b Compare and order positive and negative integers	
Extended Indicator	MAE 6.1.1.b Compare and order whole numbers up to 40	
	Standards Clarification	<ul style="list-style-type: none"> • The student will be able to determine which number (of two given numbers up to 40) is less, more, or the same. <ul style="list-style-type: none"> ➤ Example: When given a number line, the student determines that 38 is more than 24. • The student will be able to put random numbers up to 40 in correct order. <ul style="list-style-type: none"> ➤ Example: Given the numbers 36, 27, 15, 18, the student puts them in correct order (15, 18, 27, 36).
Indicator	MA 6.1.1.d Represent large numbers using exponential notation MASTERY NOT EXPECTED	
Indicator	MA 6.1.1.e Identify the prime factorization of numbers	
Extended Indicator	MAE 6.1.1.e Identify factorization of a number up to 20	
	Standards Clarification	<ul style="list-style-type: none"> • The student determines correct factors of a given number. <ul style="list-style-type: none"> ➤ Example: Given choices 4x2, 4x3, 4x4, and asked which shows the numbers that make 12, the student uses a multiplication fact card and determines 4x3 are the correct numbers (factors). ➤ Example: When asked what two numbers the student can multiply together to make 15, the student uses a fact table and determines the factors are 3 and 5.

MA 6.1.2 Operations: Students demonstrate the meaning of arithmetic operations with positive fractions and decimals.

Indicator	MA 6.1.2.a Use drawings, words, and symbols to explain the meaning of addition and subtraction of fractions	
Extended Indicator	MAE 6.1.2.a Use drawings to subtract halves, thirds, and fourths from a whole	
	Standards Clarification	<ul style="list-style-type: none"> With the use of drawings or manipulatives, the student will subtract fractions halves, thirds and fourths from a whole. <ul style="list-style-type: none"> ➤ Example: The student has a cracker that is scored into halves. After breaking the cracker into the two equal pieces giving one piece to a friend, the student recognizes that he has $\frac{1}{2}$ of a cracker left. ➤ Example: Given a wooden circle divided into fourths, the student removes one piece and determines she has three pieces, left and each piece is called $\frac{1}{4}$. <p>Teacher Note: The terms $\frac{1}{4}$, $\frac{1}{3}$, and $\frac{1}{2}$ are required knowledge for this standard.</p> 
Indicator	MA 6.1.2.b Use drawings, words, and symbols to explain the meaning of addition and subtraction of decimals	
Extended Indicator	MAE 6.1.2.b Recognize decimal representation of money	
	Standards Clarification	<ul style="list-style-type: none"> The student will recognize the decimal representation of a given amount of money <ul style="list-style-type: none"> ➤ Given a dollar and a quarter, the student selects \$1.25 as the correct written representation of that amount. ➤ From the following choices “\$3.50, \$35.0 and \$.35”, the student selects “\$3.50” as the correct representation of three dollars and fifty cents. <p>Teacher Note: Decimals are always represented as money for this standard.</p>

MA 6.1.3 Computation: Students will compute fluently and accurately using appropriate strategies and tools.

Indicator	MA 6.1.3.a Multiply and divide positive rational numbers	
Extended Indicator	MAE 6.1.3.a Multiply positive single digit numbers	
	Standards Clarification	<ul style="list-style-type: none"> The student will multiple positive single digit numbers <ul style="list-style-type: none"> ➤ Using a calculator, the student will multiple 3 x 8 and determine the answer is 24. ➤ Using a multiplication table, the student determines that the answer to $\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$ is 20.

Indicator	MA 6.1.3.b Select and apply the appropriate method of computation when problem solving	
Extended Indicator	MAE 6.1.3.b Select the appropriate method of computation (addition, subtraction, multiplication, and division) when problem solving	
	Standards Clarification	<ul style="list-style-type: none"> • When given a story problem or real-life situation, the student will determine “how” to solve the problem (add, subtract, multiply or divide). <ul style="list-style-type: none"> ➤ After ordering several items from a menu, the student determines addition must be used to find the total amount to be paid. ➤ After reading the following story problem, the student determines that subtraction must be used to find how many are left. “Jack had 45 baseball cards in his collection. He gave 20 to his best friend, Jose. How many cards does Jack have left?” ➤ Given 5 packages of cookies with 6 cookies in each package, the student determines that multiplication or addition may be used to find the total number of cookies. ➤ The student and a friend bake cookies and hold a bake sale. The student determines the total money earned must be divided by 2 people to decide how much money each person makes. <p>Teacher Note: Actual calculation is not required for this standard. The phrase “How will you find...” may help students master this concept.</p>

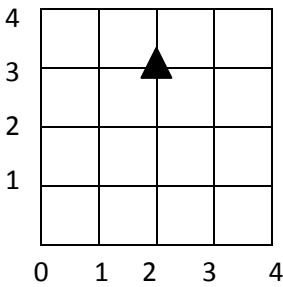
MA 6.1.4 Estimation: Students will estimate and check reasonableness of answers using appropriate strategies and tools.

Indicator	MA 6.1.4.a Use appropriate estimation methods to check the reasonableness of solutions for problems involving positive rational numbers	
Extended Indicator	MAE 6.1.4.a Apply estimation to the nearest 10 on addition and subtraction results	
	Standards Clarification	<ul style="list-style-type: none"> • The student will compute an addition problem and apply estimation to the nearest 10 to the sum. <ul style="list-style-type: none"> ➤ Example: The student will use a number line and add $15 + 3$ and determines that 18 is closer to 20 than 10. • The student will compute a subtraction problem and apply estimation to the nearest 10 to the difference. <ul style="list-style-type: none"> ➤ Example: The student uses a calculator to find the difference to $46 - 23$ and determines that 33 is closer to 30 than 40.

K-12 Comprehensive Geometric/Measurement Standard: Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

GEOMETRIC/MEASUREMENT CONCEPTS


MA 6.2.2 Coordinate Geometry: Students will identify locations using coordinate geometry.

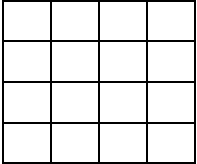
Indicator	MA 6.2.2.a Identify the ordered pair of plotted point in the coordinate plane	
Extended Indicator	MAE 6.2.2.a Identify the plotted point on a 4 x 4 grid	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • Given a point on a 4 x 4 grid, the student will determine the coordinates. <ul style="list-style-type: none"> ➤ Example: When given the coordinates (2,3), (1,2), and (3,3), the student recognizes that the triangle is at (2,3). <div style="text-align: center;">  </div> <p>Teacher Note: The student should be exposed to the term “grid” but the terms “coordinate/coordinates” are not required knowledge if another word/phrase is more appropriate for student understanding.</p> <p>When teaching students the order for determining coordinates, the saying “Walk to the elevator before you go up.” may be helpful.</p>

MA 6.2.4 Spatial Modeling: Students will use visualization of geometric models to solve problems.

Indicator	MA 6.2.4.a Identify two-dimensional drawings of three-dimensional objects	
Extended Indicator	MAE 6.2.4.a Identify a two-dimensional shape and match it to a three-dimensional object (e.g., square to cube, triangle to pyramid, circle to sphere)	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will identify a square, triangle, and circle and then match them to a cube, pyramid, and sphere. <ul style="list-style-type: none"> ➤ Example: The student identifies a picture of a square and finds an object in the room (a box previously placed in the room by the teacher) that matches the square. ➤ Example: After blowing bubbles outside, the student makes a picture of the experience by pasting blue-circles in the pictures to represent the bubbles. <p>Teacher Note: The student must identify by name squares, circles, and triangles but the names of matching three-dimensional (cube, sphere, pyramid) are not required knowledge if other words are more appropriate for student understanding.</p>

MA 6.2.5 Measurement: Student will apply appropriate procedures, tools, and formulas and determine measurements.

Indicator	MA 6.2.5.d Determine the perimeter of polygons	
Extended Indicator	MAE 6.2.5.d Determine the perimeter of polygons (triangle, rectangle, square)	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student recognizes that perimeter is the distance around a closed figure. <ul style="list-style-type: none"> ➤ Example: The student counts the steps it takes to walk around the mat by the school front door. ➤ Example: The student uses a calculator add $3+8+3+8$ and determine the perimeter of this rectangle is 22. <div style="text-align: right;">  </div> <p>Teacher Note: The term “perimeter” should be familiar to the student. The student will be required to know how to calculate the perimeter of a polygon.</p>

Indicator	MA6.2.5.e Determine the area of parallelograms and triangles	
Extended Indicator	MAE 6.2.5.e Determine the area of a square	
	Standards Clarification	<ul style="list-style-type: none"> • The student will determine the area of a given square. <ul style="list-style-type: none"> ➤ Example: Given a 3"x 3" piece of cardboard, the student lays one-inch squares on the surface and determines the cardboard's area is 9. The teacher adds the term "square inches" to the 9. ➤ Example: Given this figure, the student determines the area of the rectangle is 16 (teacher adds the terms "square unit") <div style="text-align: right; margin-right: 50px;">  </div> <p>Teacher Note: The student should be familiar with the term "area". Although the student may not use the terms "square units, square inches, square feet" when determining area, the teacher should always ask for the number of "square units, inches, feet".</p>
Indicator	MA 6.2.5.f Determine the volume of rectangular prisms MASTERY NOT EXPECTED	

K-12 Comprehensive Algebraic Standard: Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

ALGEBRAIC CONCEPTS

MA 6.3.1 Relationships: Students will represent, analyze, and use relationships to make generalizations.

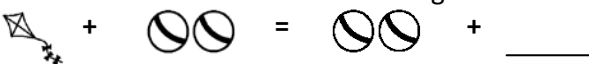
Indicator	MA 6.3.1.a Describe and create simple algebraic expressions from words and tables											
Extended Indicator	MAE 6.3.1.a Match a simple algebraic expression involving addition to given tables											
	Standards Clarification	<ul style="list-style-type: none"> • The student will determine the algebraic expression involving addition shown in a table. <ul style="list-style-type: none"> ➤ Example: The teacher and the student discuss the table and look at the first number under the “n”. Then they look at the 6 next to the 5. When the teacher asks what happened to 5 to make 6, the student determines 1 was added to 5. The teacher writes n (standing for <u>n</u>umber) + 1 at the top of the second column. <table border="1" style="float: right; margin-left: 20px;"> <tr><td>n</td><td>?</td></tr> <tr><td>5</td><td>6</td></tr> </table> ➤ Example: The student looks at the table and determines that 6 had 3 added to it to make 9 and 11 had 3 added to it to make it 14. He decides the $n + 3$ goes at the top of the second column. <table border="1" style="float: right; margin-left: 20px;"> <tr><td>n</td><td>?</td></tr> <tr><td>6</td><td>9</td></tr> <tr><td>11</td><td>14</td></tr> </table> 	n	?	5	6	n	?	6	9	11	14
n	?											
5	6											
n	?											
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11	14											
Indicator	MA 6.3.1.b Use a variable to describe a situation with an equation											
Extended Indicator	MAE 6.3.1.b Use a symbol to represent a numeric value in a simple equation											
	Standards Clarification	<ul style="list-style-type: none"> • The student will recognize the numeric value of a symbol in a simple equation. <ul style="list-style-type: none"> ➤ Example: The student reads the equation $5 + n = 7$ and determines that n represents the number 2. ➤ Example: The student reads the equation $12 - n = 4$ and uses manipulatives to determine that the n is equal to 8. <p>Teacher Note: It may help student understanding if the unknown value is always called “n” to stand for <u>n</u>umber. An appropriate way to phrase the question to this type of problem may be “If n is 1, what do you get?”</p>										

MA 6.3.2 Modeling in Context:**Students will create, use, and interpret models of quantitative relationships.**

Indicator	MA 6.3.2.a Model contextualized problems using various representations	
Extended Indicator	MAE 6.3.2.a Model representations of coin combinations up to \$1.00	
	Standards Clarification	<ul style="list-style-type: none"> • The student will determine various coin combinations that are equal in value. <ul style="list-style-type: none"> ➤ Example: Given a quarter and two dimes, the student recognizes that the quarter and two dimes (45¢) is the same as four dimes and a nickel (45¢). ➤ Example: After ordering an ice cream bar at the snack bar for 25¢, the student determines he can pay for it with a quarter or two dimes and a nickel. ➤ Example: Given a set of coins including quarters, dimes, nickels, and pennies, the student determines at least two ways to make a given amount of money.

MA 6.3.3 Procedures:**Students will apply properties to solve equations.**

Indicator	MA 6.3.3.b Evaluate numerical expressions containing multiple operations with respect to order of operations	
Extended Indicator	MAE 6.3.3.b Demonstrate understanding of order of operations involving one-digit addition, subtraction, and multiplication with parentheses	
	Standards Clarification	<ul style="list-style-type: none"> • The student will perform one-digit subtraction problems by always completing the operation in parentheses first. <ul style="list-style-type: none"> ➤ Example: Given the problem $7 - (3 + 2) =$, the student recognizes that they must first add $3 + 2$ ➤ Example: Given the problem $(10 - 1) - 2 =$, the student recognizes they must first calculate $10 - 1$. ➤ Example: Given the problem $(5 + 1) \times 2 =$, the student recognizes that they must first add $5 + 1$. ➤ Example: Given the problem $5 + (2 \times 3) =$, the student recognizes that they must first multiply 2×3. <p>Teacher Note: Calculation is not required for this standard.</p>

Indicator	MA 6.3.3.c Evaluate simple algebraic expressions involving multiplication and division	
Extended Indicator	MAE 6.3.3c Evaluate simple algebraic expressions involving addition and subtraction	
	Standards Clarification	<ul style="list-style-type: none"> The student will determine the value of n in a simple algebraic expression involving addition. <ul style="list-style-type: none"> ➤ Example: When given the algebraic expression $n + 4$ and $n = 1$, the student determined that he gets 5. The student will determine the value of n in a simple algebraic expression involving subtraction. <ul style="list-style-type: none"> ➤ Example: When given the algebraic expression $n - 4$ and $n = 14$, the student determined that he gets 10. <p>Teacher Note: It may help student understanding if the unknown value is always called “n” to stand for <u>number</u>. An appropriate way to phrase the question to this type of problem may be “If n is 1, what do you get?”</p>
Indicator	MA 6.3.3.d Solve one-step equations involving positive rational numbers	
Extended Indicator	MA 6.3.3.d Solve simple one-step equations involving addition and subtraction	
	Standards Clarification	<ul style="list-style-type: none"> The student will determine the unknown value in a simple one-step equation involving addition. <ul style="list-style-type: none"> ➤ Example: Using manipulatives, the student determines that n is 15 in the equation $5 + n = 20$ The student will determine the unknown value in a simple one-step equation involving subtraction. <ul style="list-style-type: none"> ➤ Example: Using manipulatives, the student determines that n is 6 in the equation $15 - n = 9$ <p>Teacher Note: It may help student understanding if the unknown value is always called “n” to stand for <u>number</u>.</p>
Indicator	MA 6.3.3.e Identify and explain the properties of equality used in solving equations	
Extended Indicator	MAE 6.3.3.e Solve an addition problem demonstrating the commutative property of equality	
	Standards Clarification	<ul style="list-style-type: none"> The student will recognize the commutative property of addition in order to determine the missing value in a second problem. <ul style="list-style-type: none"> ➤ Example: The student determines that a kite goes in the blank. <div style="text-align: center;">  </div> ➤ The student determines 15 is the missing number. $6 + 15 = \underline{\quad} + 6$ <p>Teacher Note: The term “commutative” is not required knowledge if another word/phrase is more appropriate for student understanding.</p>

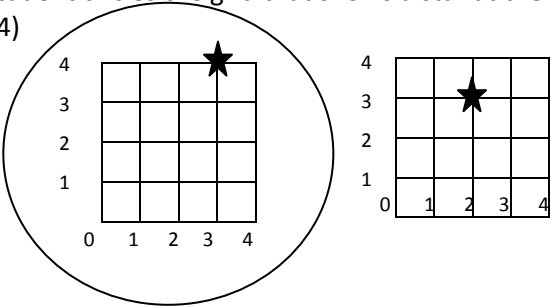
MA 7.1.4 Estimation:**Students will estimate and check reasonableness of answers using appropriate strategies and tools.**

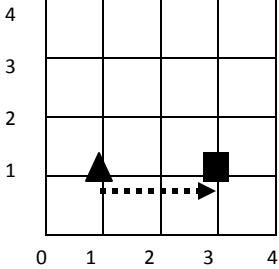
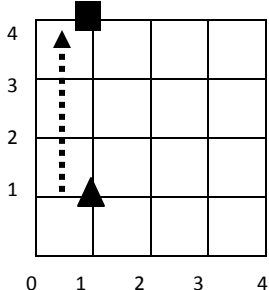
Indicator	MA 7.1.4.a Use estimation methods to check the reasonableness of solutions for problem involving integers and positive rational numbers	
Extended Indicator	MAE 7.1.4.a Apply estimation to the nearest 10 on addition, subtraction, and multiplication results	
	Standards Clarification	<ul style="list-style-type: none">• The student will compute an addition problem and apply estimation to the nearest 10 to the sum.<ul style="list-style-type: none">➤ Example: The student will add $15 + 3$ and determines that 18 is closer to 20 than 10.• The student will compute a subtraction problem and apply estimation to the nearest 10 to the difference.<ul style="list-style-type: none">➤ Example: The student uses a calculator to find the difference to $46 - 23$ and determines that 33 is closer to 30 than 40.• The student will compute a multiplication problem and apply estimation to the nearest 10 to the product.<ul style="list-style-type: none">➤ Example: The student uses an accommodation to find the product of 12×4 and determines that 48 is closer to 50 than 40.

K-12 Comprehensive Geometric/Measurement Standard: Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.



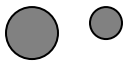
GEOMETRIC/MEASUREMENT CONCEPTS

MA 7.2.2 Coordinate Geometry: Students will identify locations using coordinate geometry.

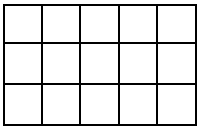
Indicator	MA 7.2.2.a Plot the location of an ordered pair in the coordinate plane	
Extended Indicator	MAE 7.2.2.a Plot the location of an ordered pair on a 4 x 4 grid	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will plot the location of an ordered pair on a 4 x 4 grid. <ul style="list-style-type: none"> ➤ Example: Given the coordinates (1,2), the student stands at those coordinates on a 4x4 grid drawn on the playground. ➤ Example: The student circles the grid that shows a star at the coordinates (3, 4) <div style="text-align: center;">  </div> <p>Teacher Note: The student should be exposed to the term “grid” but the terms “coordinate/coordinates” are not required knowledge if another word/phrase is more appropriate for student understanding.</p> <p>When teaching student the order for determining coordinates, the saying “Walk to the elevator before you go up.” may be helpful.</p>

Indicator	MA 7.2.2.c Find the distance between points along horizontal and vertical lines of a coordinate plane	
Extended Indicator	MAE 7.2.2.c Identify the distance between two given points along horizontal and vertical lines of a grid	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will determine the distance between two given points on a horizontal line on a grid. <ul style="list-style-type: none"> ➤ The student counts the squares and determines that the distance between the triangle and the square is 2.  <ul style="list-style-type: none"> • The student will determine the distance between two given points on a vertical line on a grid. <ul style="list-style-type: none"> ➤ The student counts the squares and determines that the distance between the triangle and the square is 3. 

MA 7.2.3 Transformations: Students will use transformations and symmetry to analyze geometric shapes.

Indicator	MA 7.2.3.b Perform and describe positions and orientation of shapes under a single transformation on an coordinate plane	
Extended Indicator	MAE 7.2.3.b Identify congruent shapes	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will identify congruent shapes. <ul style="list-style-type: none"> ➤ Example: The student determines that these three shapes are congruent.  ➤ Even though the shapes are going in different directions, the student recognizes that they are congruent.  ➤ Example: the student recognizes these circles are not congruent because they are not the same size.  <p>Teacher Note: The student must be exposed to and understand the meaning of the term “congruent”. “Congruent” means that shapes exactly match. It's more specific than “same shape.” Congruent figures are the same shape and size, even though their orientations may differ.</p>

MA 7.2.5 Measurement: Students will select and apply appropriate procedures, tools, and formulas to determine measurements.

Indicator	MA 7.2.5.b Determine the area of trapezoids and circles, and the circumference of circles	
Extended Indicator	MAE 7.2.5.b Determine the area of a rectangle (not a square)	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will determine the area of a rectangle. <ul style="list-style-type: none"> ➤ Example: The student counts the squares in the rectangle and determines the area is 15 square units.  ➤ Example: Using the square tiles places on a floor, the student will find the area of a rectangular space. <p>Teacher Note: The student should be familiar with the term “area”. Although the student may not use the terms “square units, square inches, square feet ” when determining area, the teacher should always ask for the number of “square units, inches, feet”.</p>

K-12 Comprehensive Algebraic Standard: Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

ALGEBRAIC CONCEPTS

MA 7.3.1 Relationships: Students will represent and analyze relationships using algebraic symbols.

Indicator	MA 7.3.1.a Describe and create algebraic expressions from words, tables, and graphs											
Extended Indicator	MAE 7.3.1.a Match a simple algebraic expression involving addition and subtraction to a given table, chart, or illustration											
	Standards Clarification	<ul style="list-style-type: none"> The student will determine the algebraic expression involving addition shown in a table. <ul style="list-style-type: none"> ➤ Example: The teacher and the student discuss the table and look at the first number under the “<i>n</i>”. Then they look at the 10 next to the 9. When the teacher asks what happened to 10 to make 9, the student determines 1 was subtracted from 10. The teacher writes <i>n</i> (standing for <u>n</u>umber) - 1 at the top of the second column. <table border="1" data-bbox="1360 787 1474 863"> <tr><td><i>n</i></td><td>?</td></tr> <tr><td>10</td><td>9</td></tr> </table> ➤ Example: The student looks at the table and determines that 15 had 3 taken from it to make 12 and 7 had 3 taken from it to make it 4. He decides the <i>n</i> - 3 goes at the top of the second column. <table border="1" data-bbox="1354 957 1474 1073"> <tr><td><i>n</i></td><td>?</td></tr> <tr><td>15</td><td>12</td></tr> <tr><td>7</td><td>4</td></tr> </table> 	<i>n</i>	?	10	9	<i>n</i>	?	15	12	7	4
<i>n</i>	?											
10	9											
<i>n</i>	?											
15	12											
7	4											
Indicator	MA 7.3.1.b Use a variable to describe a situation with an inequality											
Extended Indicator	MAE 7.3.1.b Identify a correct inequality											
	Standards Clarification	<ul style="list-style-type: none"> The student will determine if a given inequality is true. <ul style="list-style-type: none"> ➤ Example: Given two inequalities ($15 > 6$ and $15 < 6$), the student determines that $15 > 6$ is the true one. ➤ Example: The student determines that $25 < 15$ is not true. <p>Teacher Note: The student should know terms “is greater than” and “is less than” and the signs $<$ and $>$.</p>										

MA 7.3.2 Modeling in Context:**Students will create, use, and interpret models of quantitative relationships.**

Indicator	MA 7.3.2.a Model contextualized problems using various representations	
Extended Indicator	MAE 7.3.2.a Recognize addition number sentences using various representations	
	Standards Clarification	<ul style="list-style-type: none"> • Given a story problem, the student will identify the number sentence that represents the problem. <ul style="list-style-type: none"> ➤ Example: “There are 3 apples in the bowl. Dad bought 5 more apples at the store and put them in the bowl. Now there are 8 apples in the bowl.” The student recognizes that $3 + 5 = 8$ as the number sentence that goes with the story.

MA 7.3.3 Procedures:**Students will apply properties to solve equations and inequalities.**


Indicator	MA 7.3.3.c Given the value of the variable(s), evaluate variable expressions with respect to order of operations	
Extended Indicator	MAE 7.3.3.c Evaluate variable expressions with respect to order of operations in addition, subtraction, and multiplication with parentheses	
	Standards Clarification	<ul style="list-style-type: none"> • The student will determine the answer to a variable expression with parentheses when given the value of the variable. <ul style="list-style-type: none"> ➤ Example: Given the problem $(7 - n) + 2 =$ and told that $n = 3$, the student first subtracts $7 - 3 = 4$. Then the student adds $4 + 2$ and gets 6. ➤ Example: Given the problem $(9 - 2) + n =$ and told that $n = 5$, the student first computes $9 - 2 = 7$. Then the student adds $7 + 5$ and gets the answer 12. ➤ Example: Given the problem $(6 - 2) \times n =$ and told that $n = 5$, the student first computes $6 - 2 = 4$. Then the student multiplies 4×5 and gets the answer 20. ➤ Example: Given the problem $3 \times (n + 4)$ and told that $n = 2$, the student first computes $2 + 4 = 6$. Then the student multiplies 3×6 and gets the answer 18. <p>Teacher Note: It may help student understanding if the unknown value is always called “n” to stand for <u>number</u>. An appropriate way to phrase the question to this type of problem may be “If n is 1, what do you get?”</p>

Indicator	MA 7.3.3.d Solve two-step equations involving integers and positive rational numbers	
Extended Indicator	MAE 7.3.3.d Solve one-step equations involving addition or subtraction	
	Standards Clarification	<ul style="list-style-type: none"> • The student will find the missing value (number) in one-step addition equation. <ul style="list-style-type: none"> ➤ Example: The student and his teacher play a game called “What’s Missing”. The teacher writes the addition problem $12 + 5 = 17$. The teacher then covers the 5 with a card that has an “n” on it. The student determines that the “n card” is covering the number 5 . • The student will find the missing value (number) in a one-step subtraction equations. <ul style="list-style-type: none"> ➤ Example: Given the equation $10 - n = 4$, the student determines that n is 6. <p>Teacher Note: The term “equation” is not required knowledge if another word/phrase is more appropriate for student understanding.</p>
Indicator	MA 7.3.3.e Solve one-step inequalities involving positive rational numbers MASTERY NOT EXPECTED	

K-12 Comprehensive Data Analysis/Probability Standard: Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

DATA ANALYSIS/PROBABILITY CONCEPTS

MA 7.4.1 Display and Analysis: Students will formulate questions that can be addressed with data, and then organize, display, and analyze the relevant data to answer their questions.

Indicator	MA 7.4.1.a Analyze data sets and interpret their graphical representations													
Extended Indicator	MAE 7.4.1.a Identify and interpret a data set													
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will identify and interpret data presented in picture representations. <ul style="list-style-type: none"> ➤ Example: Given this data set,  the student will recognize that the set of footballs is greater. The student will identify and interpret data presented in a table. <ul style="list-style-type: none"> ➤ The student reads and interprets the data in the table and determines the Bears scored the most points at the track meet. <table border="1" data-bbox="1263 1018 1469 1234"> <thead> <tr> <th colspan="2">Track Meet</th> </tr> <tr> <th>Team</th> <th>Points</th> </tr> </thead> <tbody> <tr> <td>Chiefs</td> <td>14</td> </tr> <tr> <td>Stars</td> <td>30</td> </tr> <tr> <td>Bears</td> <td>35</td> </tr> <tr> <td>Bulldogs</td> <td>27</td> </tr> </tbody> </table>	Track Meet		Team	Points	Chiefs	14	Stars	30	Bears	35	Bulldogs	27
Track Meet														
Team	Points													
Chiefs	14													
Stars	30													
Bears	35													
Bulldogs	27													
Indicator	MA 7.4.1.b Find and interpret mean, median, mode, and range for set of data													
Extended Indicator	MAE 7.4.1.b Find the median for a set of data (the set will have an uneven number of members written in order)													
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will select the median from a group of numbers <ul style="list-style-type: none"> ➤ Example: The student determines that the middle number in the set (3, 5, 7, 9, 11) is 7 . <p>Teacher Note: Median – the middle number in a set of numbers. The term “median” is not required knowledge if the term “middle” is more appropriate for student understanding.</p> <p>The median is determined by arranging members in order from lowest to highest and determining the middle number.</p>												

MA 7.4.3 Probability: Students will apply and interpret basic concepts of probability.

Indicator	MA 7.4.3.a Find the probability of independent compound events	
Extended Indicator	MAE 7.4.3.a Determine the probability of a given event (always, sometimes, never)	
	Standards Clarification	<ul style="list-style-type: none"> • When given a situation, the student will determine its probability of happening as always, sometimes or never. <ul style="list-style-type: none"> ➤ Example: The student determines that “dogs driving cars” will never happen. ➤ Example: The student determines that of these two statements “Dad goes fishing and catches a fish”, “Dad goes fishing and catches an elephant.”, Dad catching a fish could sometimes happen. <p>Teacher Note: The term “probability” is not required knowledge if the term “chance” is more appropriate for student understanding.</p>
Indicator	MA 7.4.3.b Compare and contrast theoretical and experimental probabilities	
Extended Indicator	MAE 7.4.3.b Compare theoretical probabilities	
	Standards Clarification	<ul style="list-style-type: none"> • When given a situation, the student will determine which choice gives them a better chance of getting a specific outcome. <ul style="list-style-type: none"> ➤ Example: Mom has two cookie jars. She puts chocolate chip cookies in the round cookie jar and in the square cookie jar she puts chocolate chip and sugar cookies. The student determines that if he wants a better chance of getting a chocolate chip cookie, he should reach into the round cookie jar. ➤ Example: The teacher puts 10 pretzels and 4 mini- candy bars in one bag. In a second bag she puts 4 pretzels and 10 mini-candy bars. The student wants a candy bar so determines she will reach into the second bag in order to have a better chance of getting what she wants. <p>Teacher Note: The term “theoretical probability” is not required knowledge if the term “better chance” or “best chance” might be more appropriate terms for student understanding.</p> <p>Theoretical probability is finding the probability of an event without doing an experiment or analyzing data.</p>

Nebraska Eighth Grade Math Standards and Extended Indicators for Students with Significant Disabilities

K-12 Comprehensive Number Sense Standard: Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

NUMBER SYSTEM

MA 8.1.1 Number System: Students will represent and show relationships among real numbers.

Indicator	MA 8.1.1.a Compare and order real numbers	
Extended Indicator	MAE 8.1.1.a Compare and order positive and negative integers (-50 to 50)	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will determine whether a given integer is greater than or less than another given integer. <ul style="list-style-type: none"> ➤ Example: When provided a number line with positive and negative integers, the student determines that 35 is less than 42. ➤ Example: When provided a number line with positive and negative integers, the student determines that the missing integer is 5. <div style="text-align: center; margin: 10px 0;"> $\begin{array}{ccccccccccccccc} -5 & -4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4 & _ & 6 & 7 \\ \leftarrow & & & & & & & & & & & & & \rightarrow \end{array}$ </div> <ul style="list-style-type: none"> ➤ Example: When provided with a number line with negative integers, the student will determine that -5 is less than -2. <p>Teacher Note: Students should be aware of the concept that all (negative and positive) numbers get larger as one moves right on a number line.</p> <p>The student needs to be aware of the meaning of “positive” (+) and “negative” (-) numbers. The word “integer” is not required knowledge if the term “number” is more appropriate for student understanding.</p>
Indicator	MA 8.1.1.c Represent small numbers using scientific notation MASTERY NOT EXPECTED	

Indicator	MA 8.1.1.d Classify numbers as natural, whole, integer, rational, irrational, or real	
Extended Indicator	MAE 8.1.1.d Classify numbers as natural or whole	
	Standards Clarification	<ul style="list-style-type: none"> The student will recognize that whole numbers are the counting numbers (natural) plus the 0. <ul style="list-style-type: none"> ➤ Example: Given a chart that displays whole numbers and counting numbers, the student determines the following statement is true. The number 4 is a whole number and a counting number. ➤ Example: Given a chart that displays whole numbers and counting numbers, the student determines the following statement is false. The number 0 is a counting number. <p>Teacher Note: Students need to know the term “whole numbers” but “natural numbers” may be referred to as “counting numbers” if that is more appropriate for student understanding.</p>

MA 8.1.3 Computation: Students will compute fluently and accurately using appropriate strategies and tools.

Indicator	MA 8.1.3.a Compute accurately with rational numbers	
Extended Indicator	MAE 8.1.3.a Add and subtract decimals without regrouping	
	Standards Clarification	<ul style="list-style-type: none"> The student will add (with or without a calculator or other accommodation) two amounts of money with no regrouping. <ul style="list-style-type: none"> ➤ Example: The student, using a calculator, determines the answer to $\begin{array}{r} \\$7.34 \\ + 2.15 \\ \hline \end{array}$ is \$ 9.49 The student will subtract (with or without a calculator or other accommodation) two amounts of money with no regrouping. <ul style="list-style-type: none"> ➤ Example: The student, using a calculator, determines the sum of $\begin{array}{r} \\$2.45 \\ - 1.22 \\ \hline \end{array}$ is \$3.67. <p>Teacher Note: Decimals are represented as dollars and cents for this standard.</p>

Indicator	MA 8.1.3.b Evaluate expressions involving absolute value of integers	
Extended Indicator	MAE 8.1.3.b Determine the absolute value of a given situation	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> Given a number line, the student will determine the distance a given number is from 0. <ul style="list-style-type: none"> Example: Using a large number line taped on the floor, the student determines there are 7 steps from the 0 to 7. Example: Using a small block, the student will “hop” the block along a number line from the 0 to a -5 and determine the number of hops is 5. By counting the dotted line “jumps” indicated on the number line, the student will determine the distance from 0 to 4 is 4. <div style="text-align: center;"> </div> <p>Teacher Note: Absolute value is the distance a number is from 0 on a number line.</p>
Indicator	MA 8.1.3.d Select, apply, and explain the method of computation when problem solving using rational numbers	
Extended Indicator	MAE 8.1.3.d Select and apply the method of computation (addition, subtraction, multiplication, division) when problem solving	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> When given a story problem or real-life situation, the student will determine “how” to solve the problem (add, subtract, multiply or divide) and then correctly compute the answer. <ul style="list-style-type: none"> Example: Mother finds \$15 in her purse. She finds four more dollars in her pocket. How much money does Mother have now? After reading this story problem, the student determines add 15 and 4 and computes the answer \$19.00. Example: The student and his friend bake 12 cupcakes. The student determines that he must divide the 12 cupcakes into two groups ($12 \div 2$) in order to share the cupcakes evenly with his friend. He calculates that he and his friend will each get 6 cupcakes.
Indicator	MA 8.1.3.e Solve problems involving ratios and proportions	
Extended Indicator	MAE 8.1.3.e Solve problems involving ratios	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will determine the ratio of a given problem or situation. <ul style="list-style-type: none"> Example: When given the situation “Three frogs are in the pond and one jumps out.”, the student determines that one frog out of three jumped out of the pond. Example: Knowing that one car has four tires, the student will determine that 3 cars have 12 tires. <p>Teacher Note: The word “ratio” is not required knowledge for this standard. The term “___ out of ___” may help the student learn this concept.</p>


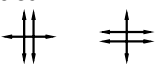
MA 8.1.4 Estimation:**Students will estimate and check reasonableness of answers using appropriate strategies and tools.**

Indicator	MA 8.1.4.a Use estimation methods to check the reasonableness of solutions for problems involving rational numbers	
Extended Indicator	MAE 8.1.4.a Apply estimation to the nearest 10 on situations (story problems) involving addition and subtraction	
	Standards Clarification	<ul style="list-style-type: none">• The student will determine how to compute addition and subtraction story problems, compute the answer, and apply estimation to the nearest 10 to the result.<ul style="list-style-type: none">➤ Example: The student is given the story problem “There are 25 fish in the tank. 7 new fish were added to the tank.” The student determines he will need to add $25 + 7$, gets his calculator, and gets the answer 32 fish. The student then determines that 32 is closer to 30 than to 40.

K-12 Comprehensive Geometric/Measurement Standard: Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

GEOMETRIC/MEASUREMENT CONCEPTS

MA 8.2.1 Characteristics: Students will describe, compare, and contrast characteristics, properties and relationships of geometric shapes and objects.

Indicator	MA 8.2.1.c Identify geometric properties of parallel lines cut by a transversal and related angles	
Extended Indicator	MAE 8.2.1c Identify geometric properties of parallel lines cut by a perpendicular transversal that creates right angles	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will recognize that when parallel lines are cut by a perpendicular line, right angles are created. <ul style="list-style-type: none"> ➤ Example: Using craft sticks to make examples of parallel lines cut by another line, the student will determine which examples have all right angles.  <p>Teacher Note: The student should be exposed to the terms “perpendicular” and “right angles”. The term “transversal” is not required knowledge if other terms are more appropriate for student understanding.</p> <p>Students should be exposed to perpendicular lines that are both horizontal and vertical.</p> 
Indicator	MA 8.2.1.d Identify pairs of angles	
Extended Indicator	MAE 8.2.1.d Identify pairs of right angles	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will identify right angles in a group of several types of angles. <ul style="list-style-type: none"> ➤ Example: The student uses a model of a right angle to find other right angles in an assortment various angles. <p>Teacher Note: The student should be exposed to the term “right angle”.</p>



Indicator	MA 8.2.1.e Examine the relationships of the interior angles to a triangle (e.g., the sum of the angles is 180 degrees)	
Extended Indicator	MAE 8.2.1.e Match congruent triangles based on interior angles	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> When given triangles that are the same size but with different interior angles, the student will determine pairs of identical triangles. <ul style="list-style-type: none"> Example: Given a box containing 6 triangles, the student will sort the triangles into identical pairs. <div data-bbox="1068 453 1256 569" data-label="Image"> </div> Example: Given a specific wooden triangle, the student will sort through a miscellaneous group of triangles and find an identical (congruent) triangle. <p>Teacher Note: The term “congruent” is not required knowledge if the terms “identical” or “exactly the same” are more appropriate for student understanding.</p>

MA 8.2.2 Coordinate Geometry: Students will specify locations and describe relationships using coordinate geometry.

Indicator	MA 8.2.2.a Use coordinate geometry to represent and examine the properties of rectangles and squares using horizontal and vertical segments	
Extended Indicator	MAE 8.2.2.a Use coordinate geometry to determine the measurement of a side (rectangle, square)	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> Given a grid with a rectangle or a square placed on it, the student will count the squares on the grid to determine the length of a given side. <ul style="list-style-type: none"> Example: The student lays a construction paper rectangle on a piece of graph paper and determines the length of side “a” is 3 and side “b” is 2. <div data-bbox="842 1577 1036 1751" data-label="Image"> </div>

MA 8.2.5 Measurement:

Students will apply appropriate procedures, tools, and formulas to determine measurements.

Indicator	MA 8.2.5.c Apply the Pythagorean theorem to find missing lengths in right triangles and to solve problems	
Extended Indicator	MAE 8.2.5.c Find the missing length and/or height in a right triangle	
	Standards Clarification	<ul style="list-style-type: none"> Given a grid with a right triangle placed on it, the student will count the squares on the grid to determine the length and or height of a given side. <ul style="list-style-type: none"> ➤ Example: The student lays a construction paper right triangle on a piece of graph paper and determines the length of side “a” is 3 and side “b” is 2. <div data-bbox="852 762 1045 919" style="text-align: center;"> </div>
Indicator	MA 8.2.5.d Use scale factors to find missing lengths in similar shapes	
Extended Indicator	MAE 8.2.5.d Match similar geometric shapes represented in different scales	
	Standards Clarification	<ul style="list-style-type: none"> The student will determine similar geometric shapes that are of different sizes. <ul style="list-style-type: none"> ➤ Example: Given the group of shapes  the student determines that  are similar.

K-12 Comprehensive Algebraic Standard: Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

ALGEBRAIC CONCEPTS

MA 8.3.1 Relationships: Students will represent and analyze relationships using algebraic symbols.

Indicator	MA 8.3.1.b Describe relationships using algebraic expressions, equations, and inequalities	
Extended Indicator	MAE 8.3.1.b Identify relationships using algebraic expressions	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • When given a specific situation using an unknown, the student will determine the algebraic expression that matches the situation. <ul style="list-style-type: none"> ➤ Example: When given the situation “You want to subtract (or take away) 10 from n”, the student determines the correct algebraic expression is $n - 10$. ➤ Example: When given the situation “Jim wants to add n and 25, the student determines the correct algebraic expression is $n + 25$. ➤ Example: When given the situation “Multiply n times 9.” The student will determine the correct algebraic expression is $n \times 9$. <p>Teachers Note: Always using “n” for the unknown number may be helpful for student understanding since “n” could stand for the unknown or missing “<u>n</u>number”.</p> <p>By putting the unknown at the beginning of the equation, students read from left to right and making this concept more understandable.</p>

MA 8.3.2 Modeling in Context: Students will create, use, and interpret models of quantitative relationships.

Indicator	MA 8.3.2.a Model contextualized problems using various representations	
Extended Indicator	MAE 8.3.2.a Recognize addition and subtraction number sentences using various representations	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • Given a story problem, the student will identify the number sentence that represents the problem. <ul style="list-style-type: none"> ➤ Example: “There are 20 students in the class. 3 moved away. Now there are 17 students in the class.” The student recognizes that $20 - 3 = 17$ as the number sentence that goes with the story.

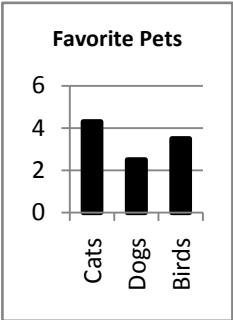
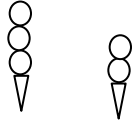
MA 8.3.3 Procedures: Students will apply properties to solve equations and inequalities.

Indicator	MA 8.3.3.b Evaluate numerical expressions containing whole number exponents	
Extended Indicator	MAE 8.3.3.b Identify representations of numbers squared	
	Standards Clarification	<ul style="list-style-type: none"> The student will recognize that a given number squared means the number is multiplied by itself. <ul style="list-style-type: none"> ➤ Example: The student will recognize that 8^2 is 8×8. <p>Teacher Note: The student should be familiar with the term “squared”.</p>
Indicator	MA 8.3.3.c Solve multi-step equations involving rational numbers	
Extended Indicator	MAE 8.3.3.c Solve one-step equations involving addition, subtraction, and multiplication	
	Standards Clarification	<ul style="list-style-type: none"> The student will determine the value of an unknown in a one-step equation. <ul style="list-style-type: none"> ➤ Example: Given the problem $n + 8 = 10$, the student will use manipulatives to determine that $n = 2$ ➤ Example: Given the problem $n - 5 = 7$, the student will use manipulatives to determine that $n = 12$ ➤ Example: Given the problem $n \times 2 = 12$, the student will determine that $n = 6$ <p>Teachers Note: Always using “n” for the unknown number may be helpful for student understanding since “n” could stand for the unknown or missing “<u>n</u>umber”.</p> <p>By putting the unknown at the beginning of the equation, students read from left to right and may make this concept more understandable.</p>
Indicator	MA 8.3.3.d Solve two-step inequalities involving rational numbers	
Extended Indicator	MAE 8.3.3.d Identify values that make inequalities true	
	Standards Clarification	<ul style="list-style-type: none"> The student will know the meaning of “greater than” ($>$) and “less than” ($<$) symbols The student will identify true $<$ and $>$ statements. <ul style="list-style-type: none"> ➤ Example: The student recognizes the statement $5 < 8$ is true. ➤ Example: The student recognizes that the statement $43 > 34$ is true. The student will identify a missing value in a $<$ and $>$ statement to make the statement true. <ul style="list-style-type: none"> ➤ Example: When given choices of 33, 23, and 13, the student determines that the number 33 will make the statement $___ > 25$ true. ➤ Example: The student determines the number 45 will make the statement $___ < 50$ true.

K-12 Comprehensive Data Analysis/Probability Standard: Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

DATA ANALYSIS/PROBABILITY CONCEPTS

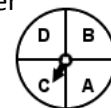
MA 8.4.1 Display and Analysis: Students will formulate questions that can be addressed with data, and then organize, display, and analyze the relevant data to answer their questions.

Indicator	MA 8.4.1.b Compare characteristics between sets of data or within a given set of data																					
Extended Indicator	MAE 8.4.1.b Compare characteristics in a set of data																					
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will compare data (e.g., which is more, which is less, which is the same) <ul style="list-style-type: none"> ➤ When looking at the bar graph about favorite pets, the student determines that most people like cats . <div style="text-align: right; margin-right: 100px;">  </div> <ul style="list-style-type: none"> ➤ After collecting data from friends, the student makes a picture graph and determines that most friends like chocolate ice cream. <div style="text-align: right; margin-right: 100px;">  <p align="center">Chocolate Vanilla</p> </div> <ul style="list-style-type: none"> ➤ The student reads the data on the table and determines that all the new cars have CD players. <div style="text-align: center; margin-top: 20px;"> <table border="1" style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th colspan="4">New Cars</th> </tr> <tr> <th></th> <th>CD Player</th> <th>Sun Roof</th> <th>Leather Seats</th> </tr> </thead> <tbody> <tr> <td>Ford</td> <td align="center">X</td> <td align="center">X</td> <td></td> </tr> <tr> <td>Chevy</td> <td align="center">X</td> <td></td> <td align="center">X</td> </tr> <tr> <td>Honda</td> <td align="center">X</td> <td></td> <td align="center">X</td> </tr> </tbody> </table> </div>	New Cars					CD Player	Sun Roof	Leather Seats	Ford	X	X		Chevy	X		X	Honda	X		X
New Cars																						
	CD Player	Sun Roof	Leather Seats																			
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Indicator	MA 8.4.1.d Select the most appropriate unit of central tendency for sets of data									
Extended Indicator	MAE 8.4.1.d Find the median for a set of data (the set will have an uneven number of members in random order)									
	Standards Clarification	<ul style="list-style-type: none"> The student will select the median from a group of numbers <ul style="list-style-type: none"> ➤ Example: The student will order the numbers 4, 2, 1, 9, 7 from lowest to highest and then determine the middle number is 4. <p>Teacher Note: The term “median” is not required knowledge</p> <p>Median – the middle number in a set of numbers. The median is determined by arranging members in order from lowest to highest and by counting to the middle.</p>								
Indicator	MA 8.4.1.e Identify misrepresentation and misinterpretation of data represented in circle graphs and box plots									
Extended Indicator	MAE 8.4.1.e Recognize accurate representation of data in a circle graph									
	Standards Clarification	<ul style="list-style-type: none"> The student will determine if a circle graph accurately reflects the information/data given. <ul style="list-style-type: none"> ➤ Example: “ Most people go barefoot when at the beach.” The student will look at the circle graph and determine if the statement is correct. <div data-bbox="1101 999 1393 1304" data-label="Figure"> </div> <ul style="list-style-type: none"> ➤ Example: The student compares data in the table with the data in the circle graph and determines the circle graph is not correct. <div data-bbox="789 1444 1045 1696" data-label="Figure"> </div> <div data-bbox="1110 1444 1390 1562" data-label="Table"> <table border="1"> <thead> <tr> <th colspan="2">Spring Track Meet</th> </tr> </thead> <tbody> <tr> <td>Team A</td> <td>40 points</td> </tr> <tr> <td>Team B</td> <td>20 points</td> </tr> <tr> <td>Team C</td> <td>7 points</td> </tr> </tbody> </table> </div>	Spring Track Meet		Team A	40 points	Team B	20 points	Team C	7 points
Spring Track Meet										
Team A	40 points									
Team B	20 points									
Team C	7 points									

MA 8.4.3 Probability: Students will apply and interpret basic concepts of probability.

Indicator	MA 8.4.3.a Identify complementary events and calculate their probabilities	
Extended Indicator	MAE 8.4.3.a Determine complementary events	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • When given a situation with complementary events, the student will determine the correct response to the situation. <ul style="list-style-type: none"> ➤ Example: “Bill heard the weatherman says there is a great chance of snow today.” The student determines that Bill should wear his boots. (Complementary events- snow/no snow) ➤ Example: “Nancy is a good runner. She almost always wins her races.” The student determines that, since Nancy almost always wins, she will win the race tomorrow. (Complementary events- win/lose) <p>Teacher Notes: Two events are complementary when one event occurs if and only if the other does not. The probabilities of two complimentary events add up to 100%.</p> <p>Understanding percentages is not required knowledge for student understanding of this concept. Words such as “almost always”, “almost never”, “seldom”, “hardly ever”, “little chance”, “good chance”, etc. may be used in place of percents.</p>
Indicator	MA 8.4.3.b Compute probabilities for independent compound events	
Extended Indicator	MAE 8.4.3.b Determine the probability for an independent event	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will determine the probability of an independent event. <ul style="list-style-type: none"> ➤ Example: The student will look at the spinner and determine that there is a 1 out of 4 chance of the arrow landing on a C. ➤ Example: Knowing that the sack has one chocolate chip cookie and one sugar cookie in it, the student determines that he has a 1 out of 2 chance of reaching inside and grabbing a sugar cookie. <p>Teacher Note: The term “probability” is not required knowledge if the term “chance” and “___ out of ___ chance” is more appropriate for student understanding.</p> <p>Independent events are two events in which the outcome of the first event does not affect the outcome of the second event.</p>



Nebraska Twelfth Grade Math Standards and Extended Indicators

for Students with Significant Disabilities

K-12 Comprehensive Number Sense Standard: Students will communicate number sense concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

NUMBER SYSTEM

MA 12.1.3 Computation: Students will compute fluently and accurately using appropriate strategies and tools.

Indicator	MA 12.1.3.a Compute accurately with real numbers													
Extended Indicator	MAE 12.1.3a Add and subtract two-digit by two digit numbers with regrouping													
	Standards Clarification	<ul style="list-style-type: none"> • The student will add two-digit numbers with regrouping. <ul style="list-style-type: none"> ➤ Example: Using a calculator or other accommodations, the student computes 47 and gets 71. $\begin{array}{r} 47 \\ + 24 \\ \hline \end{array}$ ➤ Example: Using a calculator or other accommodation, the student computes 34 and gets 19. $\begin{array}{r} 34 \\ - 15 \\ \hline \end{array}$ 												
Indicator	MA 12.1.3.b Simplify exponential expressions													
Extended Indicator	MAE 12.1.3.b Recognize expanded forms of exponents (powers)													
	Standards Clarification	<ul style="list-style-type: none"> • Identify equivalent exponential expressions <ul style="list-style-type: none"> ➤ Example: The student determines that $5 \times 5 \times 5$ is the same as 5^3. ➤ Example: The student matches 4^2 it to its expanded form 4×4. ➤ Example: Given these two sets of cards, the student finds matching pairs. <div style="display: flex; justify-content: space-around; align-items: flex-start; margin: 10px 0;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>$2 \times 2 \times 2$</td></tr> <tr><td>6×6</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>$4 \times 4 \times 4$</td></tr> <tr><td>4×4</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>$2 \times 2 \times 2 \times 2$</td></tr> <tr><td>$6 \times 6 \times 6$</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>4^3</td></tr> <tr><td>6^3</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>4^2</td></tr> <tr><td>6^2</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>2^3</td></tr> <tr><td>2^2</td></tr> </table> </div> <p>Teacher Note: Exponents may be read in two different ways. Select the option that better facilitates student understanding</p> <ol style="list-style-type: none"> 1) 4^2 is read “four squared”, 6^3 is read “six cubed”, and 3^4 is read “three to the fourth power”. 2) 4^2 is read “four to the second power”, 6^3 is read “six to the third power”, and 3^4 is read “three to the fourth power”. 	$2 \times 2 \times 2$	6×6	$4 \times 4 \times 4$	4×4	$2 \times 2 \times 2 \times 2$	$6 \times 6 \times 6$	4^3	6^3	4^2	6^2	2^3	2^2
$2 \times 2 \times 2$														
6×6														
$4 \times 4 \times 4$														
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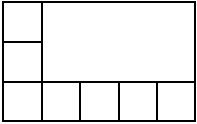
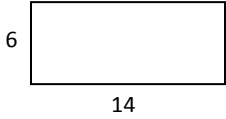
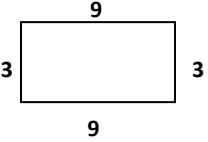
MA 12.1.4 Estimation: Students will estimate and check reasonableness of answers using appropriate strategies and tools.

Indicator	MA 12.1.4.a Use estimation methods to check the reasonableness of real number computations and decide if the problem calls for an approximation or an exact number	
Extended Indicator	MAE 12.1.4.a Apply estimation to the nearest 10 on situations (story problems) results involving addition, subtraction, and multiplication	
	Standards Clarification	<ul style="list-style-type: none"> • The student will determine how to compute addition, subtraction, and multiplication story problems, compute the answer, and apply estimation to the nearest 10 to the result. <ul style="list-style-type: none"> ➤ Example: The student is given the story problem “There are 25 fish in the tank. 7 new fish were added to the tank.” The student determines he will need to add $25 + 7$, gets his calculator, and gets the answer 32 fish. The student then determines that 32 is closer to 30 than to 40. ➤ Example: The student is given 30 pencils and gives one to each of his 7 classmates. To find out how many pencils he will have left, the student determines he must subtract 7 from 30. He takes the answer 23 and determines it is closer to 20 than to 30. ➤ Example: The student is given three packages of markers. Each package has 9 markers in it. To determine how many markers she has, the student multiplies 3×9 and gets 27. She determines that 27 is closer to 30 than 20.

K-12 Comprehensive Geometric/Measurement Standard: Students will communicate geometric concepts and measurement concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

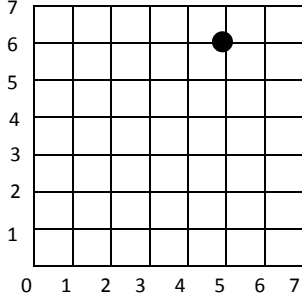
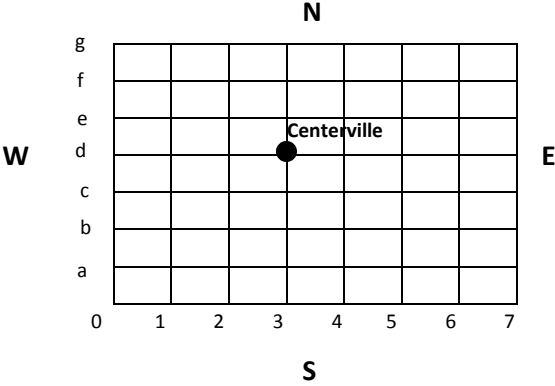
GEOMETRIC/MEASUREMENT CONCEPTS

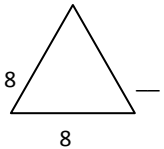
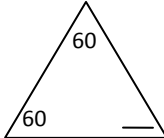
MA 12.2.1 Characteristics: Students will analyze characteristics, properties, and relationships among geometric shapes and objects.

Indicator	MA 12.2.1.d Apply geometric properties to solve problems	
Extended Indicator	MAE 12.2.1.d Apply the geometric property, length times width, to find the area of a rectangle	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will find the area of a rectangle by multiplying one side (length) times the other side (width). <ul style="list-style-type: none"> ➤ Example: The student determines the area of the rectangle is 15 square units by 1) counting the 5 boxes along the bottom side (length), 2) counting the 3 boxes along the other side (width), and 3) multiply the two numbers 5 x 3. <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ➤ Example: The student determines the area of this rectangle by using a calculator to multiply 6 x 14 and get 84 square units. <div style="text-align: center;">  </div> <ul style="list-style-type: none"> ➤ Example: Given a rectangle with the dimensions of each side, the student determines that the numbers 3 and 9 should be multiplied to calculate the area of 27. <div style="text-align: center;">  </div>

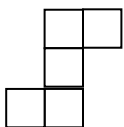
Indicator	MA 12.2.1.e Identify and apply right triangle relationships	
Extended Indicator	MAE 12.2.1.e Identify a right triangle	
	Standards Clarification	<ul style="list-style-type: none"> • The student will identify a right triangle by recognizing the right angle in the triangle. <ul style="list-style-type: none"> ➤ Example: When given examples of several triangles, the student uses a right angle template, lays it on the angles of each triangle, and finds a triangle that has a right angle. ➤ Example: The student identifies a right triangle from drawings of various types of triangles. <p>Teacher Note: The student should be familiar with the terms “right angle” and “right triangle”.</p>

MA 12.2.2 Coordinate Geometry: Students will use coordinate geometry to analyze and describe relationships in the coordinate plane.

Indicator	MA 12.2.2.a Use coordinate geometry to analyze geometric situations	
Extended Indicator	MAE 12.2.2.a Determine the coordinates for a point on a 7 x 7 or larger grid	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will identify the coordinates of an object placed on a 7 x 7 or larger grid. <ul style="list-style-type: none"> ➤ The student looks at the grid and determines that the dot is located at (5,6)  <ul style="list-style-type: none"> • The student will determine the location of a point on a simple map grid. <ul style="list-style-type: none"> ➤ Example: The student determines that the town, Centerville, is located at (3,d) on the map.  <p>Teacher Note: The student should be exposed to the term “grid” but the terms “coordinate/coordinates” are not required knowledge if another word/phrase is more appropriate for student understanding.</p> <p>When teaching students the order for determining coordinates, the saying “Walk to the elevator before you go up.” may be helpful.</p>

Indicator	MA 12.2.2.c Apply the distance formula MASTERY NOT EXPECTED	
Indicator	MA 12.2.2.d Prove special types of triangles and quadrilaterals	
Extended Indicator	MAE 12.2.2.d Identify the properties of equilateral triangles	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will recognize that all sides of an equilateral triangle are the same length. <ul style="list-style-type: none"> ➤ Example: When given an equilateral triangle, the student determines the missing side is 8 long.  The student will recognize that all angles of an equilateral triangle are the same. <ul style="list-style-type: none"> ➤ Example: When given an equilateral triangle, the student determines the missing angle is 60  <p>Teacher Note: The student should be exposed to the term “equilateral triangle”. The term “degrees” when measuring angles is not required knowledge. It may be more appropriate for student understanding to say “The angle is 60 (omit the word degrees)” or ask “How big is this angle?”</p>

MA 12.2.4 Spatial Modeling: Students will use visualization, spatial reasoning, and geometric modeling to solve problems.

Indicator	MA 12.2.4.b Use geometric models to visualize, describe, and solve problems	
Extended Indicator	MAE 12.2.4.b Use geometric models to solve problems	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will find the area of irregular shapes using geometric models. <ul style="list-style-type: none"> ➤ Example: The student determines the area of this irregular shape is 5 (square units) by counting the squares.  <p>Teacher Note: Although the student may not use the term “square units, square inches, square feet ” when determining area, the teacher should always ask for the number of “square units, inches, feet”.</p>

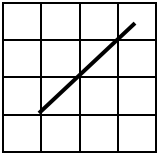
MA 12.2.5 Measurement: Students will apply the units, systems, and formulas to solve problems.

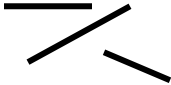

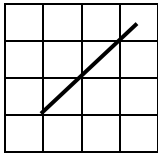
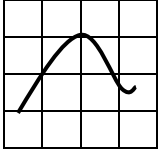
Indicator	MA 12.2.5.d Convert equivalent rates	
Extended Indicator	MAE 12.2.5.d Convert equivalent rates using money	
	Standards Clarification	<ul style="list-style-type: none">• The student will use rates to determine equivalent amounts of money.<ul style="list-style-type: none">➤ Example: The student recognizes that a nickel is the same as 5 pennies (1 to 5).➤ Example: The student has a dollar and wants to trade it for ten dimes. (1 to 10)

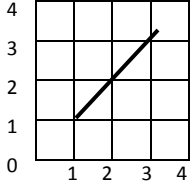
K-12 Comprehensive Algebraic Standard: Students will communicate algebraic concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

ALGEBRAIC CONCEPTS

MA 12.3.1 Relationships: Students will generalize, represent, and analyze relationships using algebraic symbols.

Indicator	MA 12.3.1.a Represent, interpret, and analyze functions with graphs, tables, and algebraic notation, and convert among these representations																
Extended Indicator	MAE 12.3.1.a Interpret values of a function in a table																
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will recognize the pattern in a table to determine an unknown. <ul style="list-style-type: none"> ➤ Example: The following story is read to the student. “Jill picked 10 apples at 8:00. By 9:00, she had picked 20 apples.” The student looks at the table, recognizes that the amount of apples is increasing by 10, and determines that Jill will pick 30 apples by 10:00. ➤ Example: The student looks at the table below and recognizes that one package has 2 cookies in it. If there are two packages, he will have 4 cookies. He recognizes that the number of packages is multiplied by 2 to get the total number of cookies. The student uses his calculator to take 6×2 and determines he will have 12 cookies. <div style="text-align: center; margin-top: 10px;"> <table border="1" style="margin: auto;"> <thead> <tr> <th colspan="5">Cookies</th> </tr> </thead> <tbody> <tr> <td>Packages</td> <td>1</td> <td>2</td> <td>3</td> <td>6</td> </tr> <tr> <td>Number of Cookies</td> <td>2</td> <td>4</td> <td>6</td> <td>n</td> </tr> </tbody> </table> </div>	Cookies					Packages	1	2	3	6	Number of Cookies	2	4	6	n
Cookies																	
Packages	1	2	3	6													
Number of Cookies	2	4	6	n													
		<table border="1" style="margin: auto;"> <thead> <tr> <th colspan="2">Picking Apples</th> </tr> </thead> <tbody> <tr> <td>8:00</td> <td>10</td> </tr> <tr> <td>9:00</td> <td>20</td> </tr> <tr> <td>10:00</td> <td>n</td> </tr> </tbody> </table>	Picking Apples		8:00	10	9:00	20	10:00	n							
Picking Apples																	
8:00	10																
9:00	20																
10:00	n																
Indicator	MA 12.3.1.c Identify the slope and intercepts of a linear relationship from an equation or graph																
Extended Indicator	MAE 12.3.1.c Identify a linear relationship from a graph																
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will recognize linear graphs with straight lines. <ul style="list-style-type: none"> ➤ Example: The student determines that this graph is linear. <p style="margin-top: 10px;">Teacher Note: The student should be familiar with the term “linear” (a straight line)</p>															
																	

Indicator	MA 12.3.1.d Identify characteristics of linear and non-linear functions	
Extended Indicator	MAE 12.3.1.d Compare linear and non-linear segments and graphs	
	Standards Clarification	<ul style="list-style-type: none"> • The student will determine if a graph is linear or not linear. <ul style="list-style-type: none"> ➤ Example: Given several line segments, the student sorts them into two groups –linear and not linear. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Linear</p>  </div> <div style="text-align: center;"> <p>Not Linear</p>  </div> </div> <ul style="list-style-type: none"> ➤ Example: Given these two graphs, the student compares the graphs and determines that graph “B” is nonlinear. <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">  <p>A</p> </div> <div style="text-align: center;">  <p>B</p> </div> </div> <p>Teacher Note: The student should be familiar with the term “linear” (a straight line)</p>

Indicator	MA 12.3.1.f Compare and analyze the rate of change by using ordered pairs, tables, graphs, and equations									
Extended Indicator	MAE 12.3.1.f Analyze the effect of the rate of change in a table or graph									
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student analyze the rate of change on a graph or table and determine if it rises, falls, or stays the same. <ul style="list-style-type: none"> ➤ Example: The student determines that the rate of change goes up on this graph.  ➤ The student determines the rate of change is going down on this table. <table border="1" data-bbox="797 743 1081 890"> <thead> <tr> <th colspan="2">Monthly Rainfall</th> </tr> </thead> <tbody> <tr> <td>May</td> <td>5 inches</td> </tr> <tr> <td>June</td> <td>3 inches</td> </tr> <tr> <td>July</td> <td>1 inch</td> </tr> </tbody> </table> <p>Teacher Note: The student is not expected to know the terms “rise” and “fall” if other words such as “goes up” and “goes down” are more appropriate.</p>	Monthly Rainfall		May	5 inches	June	3 inches	July	1 inch
Monthly Rainfall										
May	5 inches									
June	3 inches									
July	1 inch									

MA 12.3.2 Modeling in Context: Students will model and analyze quantitative relationships.

Indicator	MA 12.3.2.b Represent a variety of quantitative relationships using linear equations and one variable inequalities	
Extended Indicator	MAE 12.3.2.b Solve the quantitative relationship of one variable inequalities using addition and subtraction	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will determine numbers that make one variable addition inequalities true. <ul style="list-style-type: none"> ➤ Example: Given the choices 2 and 6, the student determines the value of n must be 5 in order to make the inequality $n + 3 < 8$ True. ➤ Example: Given the choices of 9, 12, and 15, the student determines the value of n must be 15 in order to the inequality $n - 4 > 10$ true. <p>Teacher Note: The student must be exposed to the term “inequality”. The term “variable” is not required knowledge if other words or phrases are more appropriate for student understanding.</p>

MA 12.3.3 Procedures: Students will apply properties to solve equations and inequalities.

Indicator	MA 12.3.3.b Exponents MASTERY NOT EXPECTED
Indicator	MA 12.3.3.c Add and subtract polynomials MASTERY NOT EXPECTED
Indicator	MA 12.3.3.d Multiply and divide polynomials MASTERY NOT EXPECTED
Indicator	MA 12.3.3.f Identify and generate equivalent forms of linear equations MASTERY NOT EXPECTED

K-12 Comprehensive Data Analysis/Probability Standard: Students will communicate data analysis/probability concepts using multiple representations to reason, solve problems, and make connections within mathematics and across disciplines.

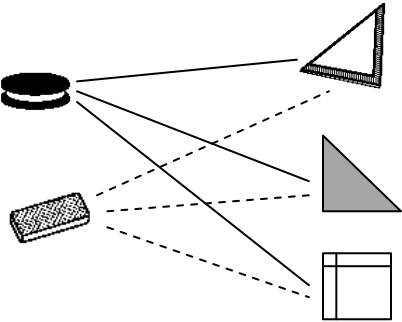
DATA ANALYSIS/PROBABILITY CONCEPTS

MA 12.4.1 Display and Analysis: Students will formulate a question and design a survey or an experiment in which data is collected and displayed in a variety of formats then select and use appropriate statistical methods to analyze the data.

Indicator	MA 12.4.1.d Describe the shape and determine the center, spread, and outliers of a data set													
Extended Indicator	MAE 12.4.1.d Determine the range of a data set													
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will determine the range of a data set. <ul style="list-style-type: none"> ➤ Example: Given the set of numbers 8, 5, 7, 3, the student will recognize the lowest number is 3 and the highest number is 8. The student will subtract 3 from 8 and determine the range is 5. • The student will read a table, determine the set of data, and compute the range of the data set. <ul style="list-style-type: none"> ➤ The student reads the table below and determines the data set is 3, 8, and 12. The student then calculates that the range is 9. <table border="1" style="margin: 10px auto; text-align: center;"> <thead> <tr> <th colspan="4">Cookie Packages</th> </tr> <tr> <th>Bag Sizes</th> <th>Small</th> <th>Medium</th> <th>Large</th> </tr> </thead> <tbody> <tr> <td>Cookies</td> <td>3</td> <td>8</td> <td>12</td> </tr> </tbody> </table> <p>Teacher Note: Students should be exposed to the term “range” in order to understand this standard.</p> <p>To find the range of a data set, the student takes the largest number in the set and subtracts the smallest number in the set. The difference is the range of the set.</p>	Cookie Packages				Bag Sizes	Small	Medium	Large	Cookies	3	8	12
Cookie Packages														
Bag Sizes	Small	Medium	Large											
Cookies	3	8	12											

MA 12.4.3 Probability: Students will apply and analyze concepts of probability.

Indicator	MA 12.4.3.b Identify dependent and independent events and calculate their probabilities	
Extended Indicator	MAE 12.4.3.b Differentiate between a dependent and independent event	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> • The student will recognize that sometimes what happens first makes a difference in what happens next. These are dependent events. <ul style="list-style-type: none"> ➤ Example: The student will make a chart of things that happen in their personal life that are dependent events (e.g., stays up late-tired the next day, mom cooks spaghetti for dinner- he eats spaghetti for dinner) ➤ Example: The student may pick a new pencil out of a box. There are three pencils (two red and one blue) in a box. The teacher selects the blue pencil first. The student recognizes that he can only pick a red pencil. The student determines that these are dependent events. • The student will recognize that sometimes what happens first does not make a difference in what happens next. These are independent events. <ul style="list-style-type: none"> ➤ Example: The student recognizes independent events that occur in his daily life (e.g., what he had for breakfast – what his friend had for breakfast, the shirt he pulls from his drawer – the pants he pulls from another drawer) ➤ Example: The student is given two spinners with red, blue and yellow spaces. He spins the first spinner and lands on the red space. He gets ready to spin the second spinner and determines that it doesn't matter he landed on a red space on the first spinner. He can get any of the colors, including red, on the second spinner. The student determines that these are independent events. <p>Teacher Note: The student must be exposed to the terms “dependent and independent events”.</p> <p>Dependent events are two events in which the outcome of the first event affects the outcome of the second event.</p> <p>Independent events are two events in which the outcome of the first event does not affect the outcome of the second event.</p>

Indicator	MA 12.4.3.c Use the appropriate counting techniques to determine the probability of an event	
Extended Indicator	MAE 12.4.3.c Use the appropriate Counting Principle to determine the combinations for an event	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will use a Counting Principle to determine combinations. <ul style="list-style-type: none"> ➤ Example: The student is given three different colored napkins and two different kinds of cookies. Using the Counting Technique, the student determines that there are 6 possible combinations of cookies with napkins <p>Teacher Note: The student will need to be taught the “Counting Principle” for determining probability (see below).</p> <p style="text-align: center;"><u>Counting Principle Demonstration</u> (cookie example above)</p>  <p>After drawing a line from each cookie to a different napkin, the student counts the total number of lines drawn (6 in this example) to determine the number of cookie/napkin combinations possible.</p>
Indicator	MA 12.4.3.d Analyze events to determine if they are mutually exclusive	
Extended Indicator	MAE 12.4.3.d Determine if two events are mutually exclusive	
	<p>Standards Clarification</p>	<ul style="list-style-type: none"> The student will determine if two given events are mutually exclusive. <ul style="list-style-type: none"> ➤ The student is given two pairs of shoes that he can wear. He recognizes that he can't wear both pairs at the same time. ➤ The student watches the coin flip at the beginning of a football game and recognizes that the coin can't land on both heads and tails at the same time. <p>Teacher Note: Events are mutually exclusive if they cannot happen at the same time. The student is not expected to know the term “mutually exclusive” if another term such as “at the same time” is more appropriate for student understanding.</p>