

5th grade Math Assessment Tool

#5-	Standard	Bloom	Synonyms/Verbs	Sample question starters	Assessment from Standards
2.1	Analyze the magnitude of a digit on the basis of its place value, using whole numbers and decimal numbers through thousandths	(B4)	Appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test, categorize, critique, debate, discuss, identify	<ol style="list-style-type: none"> 1. From at least 4 peoples' viewpoint, analyze... 2. Discuss the similarities and differences of... 3. Compare and contrast... 4. Investigate all the factors that could influence... 5. Summarize the reasons for.... 6. Deduce how the parts interact in... 7. List the pros and cons of... 	The objective is to analyze. To analyze means to determine relevant features and relationships. The learning progression to analyze requires students to understand place value of whole numbers and decimals and be able to locate the correct place value. Students represent the place values using concrete and/or pictorial models and generalize the connections (5-1.6) between the two place value systems. They use these connections to generate statements (5-1.4) about the magnitude of numbers. Students explain and justify their answers (5-1.3) and use correct, complete and clearly written and oral language to communicate their ideas (5-1.5).
2.2	Apply an algorithm to divide whole numbers fluently	(C3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	<ol style="list-style-type: none"> 1. Applying previously learned knowledge, construct.... 2. Using your knowledge of Formulate 6 questions... 3. Write a letter to the editor pointing out... 4. Classify the following ... into their correct.... 5. Write a news report... 6. Construct a flow chart for... 	The objective of this indicator is to apply. To apply means to carry out a procedure in familiar and unfamiliar situations; therefore, students should be able to divide numbers regardless of their size. The learning progression to apply requires students to recall basic division facts. Students connect experiences with concrete and pictorial models from fourth grade to symbolic procedures. Students use these models to generalize connections (5-1.6) between their models, their generated strategies and the symbolic procedure. Students use estimation strategies to determine the reasonableness of their answers and explore these procedures in context to further deepen both procedural and conceptual knowledge. As students exchange mathematical ideas with their classmates/teachers and explain and justify their answers (5-1.3), they are supporting conceptual understanding and building computational fluency.
2.3	Understand the relationship among the divisor, dividend, and quotient	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	<ol style="list-style-type: none"> 1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about... 	The objective of this indicator is to understand. To understand means to construct meaning; therefore, students' experiences extend beyond rote memorization of definitions. The learning progression to understand requires students to recall the meaning of divisor, dividend and quotient and explain what each means in the context of a variety of examples. Students then explore these relationships as they relate to fractions. Students examine how the quotient is affected if the dividend or divisor changes. Students analyze information (5-1.1) to construct arguments about these relationships (5-1.2) and generalize connections and relationships (5-1.6). Student use correct, complete and clearly written and oral language to communicate their ideas to their classmates and their teacher (5-1.5).

2.4	Compare whole numbers, decimals, and fractions by using the symbols $<$, $>$, and $=$.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	<ol style="list-style-type: none"> 1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about... 	The objective of this indicator is to understand. To understand is to construct meaning therefore, students should not just learn procedural strategies for comparing but they should build number sense around these types of numbers. The learning progression to compare requires students to recognize the place value of digits through the thousandths and understand the magnitude of fractions, decimals and whole numbers. Students use their conceptual understanding to compare without dependent on a traditional algorithm and use concrete models to support understanding where appropriate. Students recognize mathematical symbols $<$, $>$, and $=$ and their meanings. As students analyze (5-1.1) place value patterns, fractional relationships, they construct arguments and explain and justify their answer to classmates and their teacher (5-1.3). Students should use correct, complete and clearly written and oral mathematical language to communicate their reasoning (5-1.5).
2.5	Apply an algorithm to add and subtract decimals through thousandths.	(C3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	<ol style="list-style-type: none"> 1. Applying previously learned knowledge, construct.... 2. Using your knowledge of Formulate 6 questions... 3. Write a letter to the editor pointing out... 4. Classify the following ... into their correct.... 5. Write a news report... 6. Construct a flow chart for... 	The objective of this indicator is to apply. To apply means to carry out a procedure in familiar and unfamiliar situations; therefore, students should be able to add decimals in a variety of place value combinations through the thousandths. The learning progression to apply requires students to recall place value structure for whole numbers and decimals. Students connect experiences with concrete and pictorial models from fourth grade to symbolic procedures. Students use these models to generalize connections (5-1.6) between their models, their generated strategies and the symbolic procedure. Students use estimation strategies to determine the reasonableness of their answers and explore these procedures in context to further deepen both procedural and conceptual knowledge. As students exchange mathematical ideas with their classmates/teachers and explain and justify their answers (5-1.3), they are supporting conceptual understanding and building computational fluency.
2.6	Classify numbers as prime, composite, or neither.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	<ol style="list-style-type: none"> 1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 	The objective of this indicator is to classify. To understand is to construct meaning and conceptual knowledge is not bound by specific examples; therefore, students should gain a conceptual understanding of prime and composite number in order to classify any number. The learning progression to classify requires students to understand the characteristics of prime and composite numbers. Students analyze a variety of examples and compare the characteristics of each type of number. As students classify number, they explain and justify their answers (5-1.3) using correct, clear and complete oral and written mathematical language (5-1.5).

				7. State three things you know about...	
2.7	Generate strategies to find the greatest common factor and the least common multiple of two whole numbers.	(B6)	Assemble, construct, create, design, develop, formulate, write, compose, originate, produce, invent, improve	<ol style="list-style-type: none"> 1. Design and improved... for... 2. Formulate a set of criteria to judge... 3. Compose a song, jingle or rap to illustrate... 4. Modify ... in order to create a more fair..... 5. Develop and argument to persuade people to.... 6. Generate key questions for... 7. Create an experiment to... 8. Adapt a project studied so that.. 9. Design a personal action plan 	The objective of this indicator is to generate. The create means to put ideas together into a new structure; therefore, students use prior knowledge to generate new strategies. The learning progression to generate requires students to recall basic multiplication facts and understand how to write a number as the product of its factors. Students explore the concepts of LCM and GCF in context (story problems) and analyze information (5-1.1) from these experiences. They generate mathematical statements (5-1.4) about the relationships they observe then explain and justify their strategies (5-1.3) to their classmates and their teachers. Students recognize the limitations of various strategies and representations (5-1.8) and use correct, complete and clearly written and oral language to communicate their ideas (5-1.5).
2.8	Generate strategies to add and subtract fractions with like and unlike denominators.	(B6)	Assemble, construct, create, design, develop, formulate, write, compose, originate, produce, invent, improve	<ol style="list-style-type: none"> 1. Design and improved... for... 2. Formulate a set of criteria to judge... 3. Compose a song, jingle or rap to illustrate... 4. Modify ... in order to create a more fair..... 5. Develop and argument to persuade people to.... 6. Generate key questions for... 7. Create an experiment to... 8. Adapt a project studied so that.. 9. Design a personal action plan 	The objective of this indicator is to generate. The create means to put ideas together into a new structure; therefore, students use prior knowledge to generate new strategies. The learning progression to generate requires students to recall and understand the meaning of numerator and denominator. Students also should understand how to find equivalent fractions. Using concrete and/or pictorial models, students apply their understanding of fractional relationships to solve problems in context. As students analyze information (5-1.1) from these experiences, they generate conjectures and mathematical statements (5-1.4) about the relationships they observe then explain and justify their strategies (5-1.3) to their classmates and their teacher. Students should recognize the limitations of various strategies and representations (5-1.8) and develop strategies for determining the reasonableness of their answers. Students should use correct, complete and clearly written and oral language to communicate their ideas (5-1.5).
2.9	Apply divisibility rules for 3, 6, and 9.	(C3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply,	<ol style="list-style-type: none"> 1. Applying previously learned knowledge, construct.... 2. Using your knowledge of Formulate 6 questions... 3. Write a letter to the editor 	The objective of this indicator is to apply. To apply means to carry out a procedure in a familiar or unfamiliar situation; therefore, students should be able to use divisibility rules in a variety of situations. The learning progression to apply requires students to be able to divide whole numbers. This will be a context in which students analyze problems (5-1.1) and generalize the connection (5-1.6) between the sum of the digits and the divisibility of the

			calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	pointing out... 4. Classify the following ... into their correct... 5. Write a news report... 6. Construct a flow chart for...	number. As students discover these connections, they explain and justify their mathematical ideas (5-1.3) to their classmates and their teacher using correct, complete and clearly written and oral mathematical language (5-1.5).
#5-	Standard	Bloom	Synonyms/Verbs	Sample question starters	Assessment from Standards
3.1	Represent numeric, algebraic, and geometric patterns in words, symbols, algebraic expressions, and algebraic equations.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about...	The objective of this indicator is to represent which is in the “understand conceptual” knowledge cell. To understand means to construct meaning; therefore, the students’ focus is on building conceptual knowledge of the relationships between the forms. The learning progression to represent requires students to analyze patterns (5-1.1) to determine known and unknown values and the operations involved. They generate word descriptions (5-1.4) of the observed pattern and generalize the connection (5-1.6) between the words and structure of expression and equations. Students explain and justify their ideas (5-1.3) with their classmates and teachers using correct, complete and clearly written and oral language to communicate their ideas (5-1.5). Students then compare the pattern form, word form and algebraic form (equation or expression) to verify that each form conveys the same meaning (4-1.5).
3.2	Analyze patterns and functions with words, tables, and graphs.	(B4)	Appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test, categorize, critique, debate, discuss, identify	1. From at least 4 peoples’ viewpoint, analyze... 2. Discuss the similarities and differences of... 3. Compare and contrast... 4. Investigate all the factors that could influence... 5. Summarize the reasons for.... 6. Deduce how the parts interact in... 7. List the pros and cons of...	The objective of this indicator is to analyze. Conceptual knowledge is not bound by specific examples; therefore, the student’s conceptual knowledge of these multiple representations (words, table and graph) should be explored using a variety of examples. The learning progression to analyze requires students to recall the structure of a function table and understand the purpose of function machines. Students evaluate function rules and patterns and translate their understanding to words, tables or graphs. They generalize connections (5-1.6) among the multiple representations and generate descriptions and mathematical statements about these connections (5-1.4) using correct, complete and clearly written and oral mathematical language (5 – 1.5). Students explain and justify answers (5 – 1.3) and place an emphasis on the similar meaning that is conveyed by each representation.
3.3	Match tables, graphs, expressions, equations, and verbal descriptions of the same problem situation.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend,	1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and	The objective of this indicator is to match which is in the “understand conceptual” knowledge cell. Conceptual knowledge is the interrelationships among the basic elements within a larger structure that enable them to function together; therefore, the student’s conceptual knowledge of these multiple representations (words, table and graph) should be explored using a variety of examples. The learning progression to match requires students to analyze each representation and determine relevant and irrelevant

			outline	icons, restate what you know about... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about...	data. They use this data to generalize connections (5-1.6) among the multiple representations and communicate their understanding using correct, complete and clearly written and oral mathematical language (5 – 1.5). Students match representations based on this analysis and explain and justify answers (5 – 1.3) placing an emphasis on the similar meaning that is conveyed by each representation.
3.4	Identify applications of commutative, associative, and distributive properties with whole numbers.	(A1)	Define, duplicate, list, memorize, recall, repeat, reproduce, state, describe, identify, label, find, match, quote	1. Describe what happened at... 2. List all the... 3. Name all the... 4. What is (fact /definition, etc) 5. List the attributes of.. 6. Write 10 facts about... 7. Make an A-Z list of... 8. Recall... 9. In what way are you like...	The objective of this indicator is to identify. Although the focus of the indicator is to recall which is to retrieve from long term memory learning experiences should integrate both memorization and concept building strategies to support retention. The learning progression to identify requires student to explore a variety of examples of these number properties. They analyze these examples and generate descriptions (5-1.4) of what they observe using correct, complete and clearly written and oral language (5-1.5) to communicate their understanding. Students translate these descriptions into mathematical statements and connect these statements to the terms commutative, associative and distributive. Students then develop meaningful and personal strategies that enable them to recall these relationships.
3.5	Analyze situations that show change over time.	(B4)	Appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test, categorize, critique, debate, discuss, identify	1. From at least 4 peoples' viewpoint, analyze... 2. Discuss the similarities and differences of... 3. Compare and contrast... 4. Investigate all the factors that could influence... 5. Summarize the reasons for... 6. Deduce how the parts interact in... 7. List the pros and cons of...	The objective of this indicator is to analyze. To analyze conceptual knowledge is to determine relevant and irrelevant data about a concept; therefore, students should explore a variety of examples to build understanding of the concept of increasing, decreasing, varying and no change. The learning progression to analyze requires students to understand change over time and characteristics of increasing, decreasing and varying change. Students explore teacher generated examples and analyze information (5-1.1) from those examples to determine if change has occurred. They generate descriptions (5-1.4) of the observed change then explain and justify their answer on the basis of mathematical relationships (5-1.3). Students use this understanding to find other examples of increasing, decreasing and varying change and analyze counter-examples (no change) to support conceptual understanding.
#5-	Standard	Bloom	Synonyms/Verbs	Sample question starters	Assessment from Standards
4.1	Apply the relationships of quadrilaterals to make logical arguments about their properties.	(B3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply,	1. Applying previously learned knowledge, construct.... 2. Using your knowledge of Formulate 6 questions... 3. Write a letter to the editor	The objective of this indicator is to apply. To apply conceptual knowledge means to use an understanding of the interrelationships among and between mathematical ideas to solve problems. The learning progression to apply requires students to recall and understand the properties of quadrilaterals. Students generate descriptions of the relationships between and among quadrilaterals (5-1.4) and apply these relationships to construct arguments about

			calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	pointing out... 4. Classify the following ... into their correct... 5. Write a news report... 6. Construct a flow chart for...	their properties. Based on these relationships, students generate mathematical statements (5-1.4) and explain and justify their statements (5-1.3) to their classmates and teacher using correct, complete, and clearly written and oral mathematical language (5-1.5).
4.2	Compare the angles, side lengths, and perimeters of congruent shapes.	(B4)	Appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test, categorize, critique, debate, discuss, identify	1. From at least 4 peoples' viewpoint, analyze... 2. Discuss the similarities and differences of... 3. Compare and contrast... 4. Investigate all the factors that could influence... 5. Summarize the reasons for... 6. Deduce how the parts interact in... 7. List the pros and cons of...	The objective of this indicator is to compare. To compare means to detect similarities and difference between and among ideas; therefore, students build conceptual understanding of congruent shapes by exploring a variety of examples. The learning progression to compare requires students to recall and understand the meaning of angles, sides and perimeter. Students then use their understanding to explore a variety of examples of congruent shapes. Based on simple observations, students construct arguments about the possible relationship between congruent shapes as it relates to their angles, sides and perimeter. Students explain and justify their arguments (5-1.3) to their classmates and teacher. They use appropriate problem solving strategies such as measuring the angles, sides and perimeter to explore the validity of their argument. Students analyze information (5-1.1) from these explorations and generate mathematical statements (5-1.4) about the relationships between angles, sides and perimeter of congruent shapes.
4.3	Classify shapes as congruent.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand... 7. State three things you know about...	The objective of this indicator is to classify. To understand is to construct meaning and conceptual knowledge is not bound by specific examples; therefore, students should gain a conceptual understanding of congruency in order to classify any shape. The learning progression to classify requires students to understand the characteristics of congruent shapes. Students analyze a variety of shapes and compare the corresponding parts of each shape. As students analyze these shapes, they categorize them as congruent or not congruent (non-examples). Students explain and justify their answers (5-1.3) using correct, clear and complete oral and written mathematical language (5-1.5).
4.4	Translate between two-dimensional representations and three-dimensional objects.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-	1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words....	The objective of this indicator is to translate. Translate means to change from one form to another; therefore, the learning progression to translate requires students to use flexibility in mathematical representations (5-1.7). Students analyze (5-1.1) the given representation (2-D net or 3-D object) and generate a description of the relationship between the two dimensional net and

			example, illustrate, summarize, extend, outline	<ol style="list-style-type: none"> 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about... 	the three dimensional object. After using this description to create the three dimensional object or two-dimensional net, the student uses their understanding view and perspective to translate it to the other form. They explain and justify their answers (5-1.3) to their classmate and teacher using correct, clear and compete oral and written mathematical language (5-1.6).
4.5	Predict the results of multiple transformations on a geometric shape when combinations of translation, reflection, and rotation are used.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	<ol style="list-style-type: none"> 1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about... 	The objective of this indicator is predict. Conceptual knowledge is not bound by specific examples; therefore, the student's conceptual knowledge of predicting the results of multiple transformations—either reflection, rotation and translation—of a geometric shape should be explored using a variety of examples. The learning progression to predict requires students to recall the meaning of reflection, translation and rotation. Student use concrete models to visualize and create transformations of their own. They construct arguments (5-1.2) about what the result will be for a series of transformations. They explain and justify their answers to their classmates and their teacher (4-1.3) using correct, complete, and clearly written and oral mathematical language communicate their ideas (5-1.5). Students analyze this information to solve increasingly more difficult problems (5-1.1) without the use of concrete models.
4.6	Analyze shapes to determine line symmetry and/or rotational symmetry.	(B4)	Appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test, categorize, critique, debate, discuss, identify	<ol style="list-style-type: none"> 1. From at least 4 peoples' viewpoint, analyze... 2. Discuss the similarities and differences of... 3. Compare and contrast... 4. Investigate all the factors that could influence... 5. Summarize the reasons for.... 6. Deduce how the parts interact in... 7. List the pros and cons of... 	The objective of this indicator is to analyze. Conceptual knowledge is not bound by specific examples; therefore, the student's conceptual knowledge of rotational and line symmetry should be explored using a variety of examples. The learning progression to analyze requires students to recall and understand the meaning of line symmetry. Students experiment with rotating concrete models and generate descriptions and mathematical statements about their observations (5-1.4). They then experiment with teacher generated problem involving rotational symmetry using terms such as clockwise, counterclockwise, 180 degrees, etc... Students generalize connections between and among line and rotational symmetry. They use this understanding to analyze shapes to determine the type(s) of symmetry. Student explain and justify their answers (5-1.3) using correct, complete and clearly written and oral mathematical language (5 – 1.5).
#5-	Standard	Bloom	Synonyms/Verbs	Sample question starters	Assessment from Standards
5.1	Use appropriate tools and units to	(C3)	Choose, demonstrate, dramatize, employ,	<ol style="list-style-type: none"> 1. Applying previously learned knowledge, 	The objective of the indicator is to use. To apply procedural knowledge is to know how to do something and the criteria for

	measure objects to the precision of one-eighth inch.		illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	construct.... 2. Using your knowledge of Formulate 6 questions... 3. Write a letter to the editor pointing out... 4. Classify the following ... into their correct.... 5. Write a news report... 6. Construct a flow chart for...	determining when to use those procedures. The learning progression to use requires students to understand the concepts of length. Students recall their prior experience with measuring to whole, half and quarter inches and explore a variety of real world situations to generalize connections between eighth of an inch and these related measurements (5-1.6). They also recall their understanding of equivalent fractions related to eighths. Students first estimate the measure using appropriate units. As students measure, they explain and justify their answers (5-1.3) using correct, complete and clearly written and oral mathematical language (5-1.5)
5.2	Use a protractor to measure angles from 0 to 180 degrees.	(C3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	1. Applying previously learned knowledge, construct.... 2. Using your knowledge of Formulate 6 questions... 3. Write a letter to the editor pointing out... 4. Classify the following ... into their correct.... 5. Write a news report... 6. Construct a flow chart for...	The objective of this indicator is to use. To apply is to have knowledge of steps and the criteria for when to use those steps. The learning progression to use requires students to recall and understand the meaning of degrees. Students also understand the referent angles of 45, 90 and 180 degrees and use that understanding to make estimations of angle measure. They understand the structure of a protractor and how to use it. They explore angle measures in a variety of real world situations. Students explain and justify their answers using correct, clear and complete oral and written language (5-1.5).
5.3	Use equivalencies to convert units of measure within the metric system: converting length in millimeters, centimeters, meters, and kilometers; converting liquid volume in milliliters, centiliters, liters, and kiloliters; and converting mass in milligrams, centigrams, grams, and kilograms.	(C3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	1. Applying previously learned knowledge, construct.... 2. Using your knowledge of Formulate 6 questions... 3. Write a letter to the editor pointing out... 4. Classify the following ... into their correct.... 5. Write a news report... 6. Construct a flow chart for...	The objective of this indicator is to use .To use is to have knowledge of steps and the criteria for using those steps. The learning progression to use requires students to understand the concepts of length, mass and volume. They also understand the differences between the Customary and Metric systems. Students explore handson, concrete and/or pictorial models to discover the relationships between and among measures within these concepts, where appropriate. As they analyze information (5-1.1) from these experiences, students generalize connections (5-1.6) among measures and generate descriptions and mathematical statements (5-1.4) summarizing these relationships. They explain and justify their answers (5-1.3) using correct, complete and clearly written and oral mathematical language (5-1.5). Students use these statements and their understanding of powers of ten to convert units of measure.
5.4	Apply formulas to	(C3)	Choose, demonstrate,	1. Applying previously	The objective of this indicator is apply. The focus of the indicator is

	determine the perimeters and areas of triangles, rectangles, and parallelograms.		dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	<p>learned knowledge, construct....</p> <ol style="list-style-type: none"> Using your knowledge of Formulate 6 questions... Write a letter to the editor pointing out... Classify the following ... into their correct.... Write a news report... Construct a flow chart for... 	to apply; therefore, students should gain computational fluency with finding perimeter and area rectangles, triangles and parallelograms. The learning progression to apply requires students to recall and understand the properties of these shapes. To deepen understanding of the formulas, students generalize connections (5-1.6) between concrete/pictorial models and the formulas. They apply the formula in a variety of situations including problems in word form, pictorial form and real world situations. They explain and justify their answers (5-1.3) using correct, clear and complete oral and written language (5-1.6). Students engage in meaningful practice to support retention and understanding of the formulas.
5.5	Apply strategies and formulas to determine the volume of rectangular prisms.	(C3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	<ol style="list-style-type: none"> Applying previously learned knowledge, construct.... Using your knowledge of Formulate 6 questions... Write a letter to the editor pointing out... Classify the following ... into their correct.... Write a news report... Construct a flow chart for... 	The objective of this indicator is to apply. To apply is to have the knowledge of steps and the criteria for when to use those steps. The learning progression to use requires students to recall the properties of a rectangular prism. Students explore a variety of problems in order to develop The objective of this indicator is to apply which is in the “apply procedural” knowledge cell of the Revised Taxonomy. Although the focus of the indicator is to apply, the learning progression should include learning experiences that build both conceptual and procedural knowledge of volume. The learning progression to apply requires students to recall the properties of a rectangular prism. They understand the meaning of volume and use concrete models to explore that understanding. As students analyze information (5-1.1) from these experiences, they generate mathematical statements (5-1.4) about the relationships they observe between length, width and height. They explain and justify their understanding (5-1.3) to their classmates and their teachers. They then develop formal relationships using appropriate notation and units of measure. To support retention, students engage in meaningful practice with problems where information is given in word and pictorial form.
5.6	Apply procedures to determine the amount of elapsed time in hours, minutes, and seconds within a 24-hour period.	(C3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve,	<ol style="list-style-type: none"> Applying previously learned knowledge, construct.... Using your knowledge of Formulate 6 questions... Write a letter to the editor pointing out... Classify the following ... into their correct.... 	The objective of this indicator is to apply. Although the focus of the indicator is to apply a procedure, the learning progression should integrate activities that build both conceptual and procedural knowledge. The learning progression to apply requires students to recall the meaning of a.m. and p.m. and the meaning of a 12- hour interval. They also understand the meaning of past and future dates and the meaning of elapsed time. Students explore a variety of real world examples given in word, pictorial and concrete form and use their understanding to determine either the elapsed time, start time or end time during a 24-hour period. Students explain and justify

			dramatize, classify, categorize	5. Write a news report... 6. Construct a flow chart for...	their answers (5-1.3) using correct, complete and clearly written and oral language (5-1.5)
5.7	Understand the relationship between the Celsius and Fahrenheit temperature scales.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about...	The objective of this indicator is to understand. To understand is to construct meaning; therefore, students construct meaning of the relationship between benchmark temperatures on each scale. The learning progression to understand requires students to recall the structure of a thermometer and the notation for Celsius and Fahrenheit. To demonstrate flexibility in mathematical representations (5-1.7), students recall the benchmark temperatures and analyze information (5- 1.1) to describe a variety of situations involving temperature. Students explain and justify their answers (5-1.3) using correct, complete and clearly written and oral language (5-1.5).
5.8	Recall equivalencies associated with length, liquid volume, and mass: 10 millimeters = 1 centimeter, 100 centimeters = 1 meter, 1,000 meters = 1 kilometer; 10 milliliters = 1 centiliter, 100 (A1)centiliters = 1 liter, 1,000 liters = 1 kiloliter; and 10 milligrams = 1 centigram, 100 centigrams = 1 gram, 1,000 grams = 1 kilogram.	(A1)	Define, duplicate, list, memorize, recall, repeat, reproduce, state, describe, identify, label, find, match, quote	1. Describe what happened at... 2. List all the... 3. Name all the... 4. What is (fact /definition, etc) 5. List the attributes of.. 6. Write 10 facts about... 7. Make an A-Z list of... 8. Recall... 9. In what way are you like...	The objective of this indicator is to recall. Although the focus of the indicator is to recall factual knowledge, learning experience should integrate both memorization and concept building strategies to support retention. The learning progression to recall requires student to explore these measurements in context with concrete and/or pictorial models, where appropriate. They analyze information (5-1.1) from these learning experiences to generate mathematical statements (5-1.4) about the relationship between and among these measures. Students use correct, complete and clearly written and oral language (5-1.5) to communicate their understanding of these relationships and the relationships between larger and smaller units of measure.
#5-	Standard	Bloom	Synonyms/Verbs	Sample question starters	Assessment from Standards
6.1	Design a mathematical investigation to address a question.	(B6)	Assemble, construct, create, design, develop, formulate, write, compose, originate,	1. Design and improved... for... 2. Formulate a set of criteria to judge...	The objective of this indicator is to design. To design is to devise a procedure for accomplishing some task. The learning progression to design requires students to analyze the question and determine relevant and irrelevant data in order to outline their next steps.

			produce, invent, improve	<ol style="list-style-type: none"> 3. Compose a song, jingle or rap to illustrate... 4. Modify ... in order to create a more fair.... 5. Develop and argument to persuade people to.... 6. Generate key questions for... 7. Create an experiment to... 8. Adapt a project studied so that.. 9. Design a personal action plan 	<p>They generate a hypothesis or prediction based on the question. Students determine a target population and when to collect data. They recognize the limitations of various forms of representation (5-1.8) and use that understanding to select the most appropriate methods of collecting and organizing the data. They explain and justify their design using correct, clear and complete oral and written mathematical language (5-1.5).</p>
6.2	Analyze how data-collection methods affect the nature of the data set.	(B4)	Appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test, categorize, critique, debate, discuss, identify	<ol style="list-style-type: none"> 1. From at least 4 peoples' viewpoint, analyze... 2. Discuss the similarities and differences of... 3. Compare and contrast... 4. Investigate all the factors that could influence... 5. Summarize the reasons for.... 6. Deduce how the parts interact in... 7. List the pros and cons of... 	<p>The objective of this indicator is to analyze. To analyze is to break down material into its parts and determine how the parts relate to one another and to an overall. The learning progression to analyze requires students to understand the intent of the question that the data answers. They evaluate the data based on the sample population, when the data was collected, how it was measured and how it was recorded. They use this information to construct arguments (5-1.2) about the impact on the nature of the data. They explain and justify their answers using correct, clear and complete oral and written mathematical language (5-1.5).</p>
6.3	Apply procedures to calculate the measures of central tendency (mean, median, and mode).	(C3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	<ol style="list-style-type: none"> 1. Applying previously learned knowledge, construct.... 2. Using your knowledge of Formulate 6 questions... 3. Write a letter to the editor pointing out... 4. Classify the following ... into their correct.... 5. Write a news report... 6. Construct a flow chart for... 	<p>The objective of this indicator is to apply. Although the focus of the indicator is tom apply, the learning progression should integrate strategies to build conceptual and procedural knowledge. The learning progression to apply requires students to recall and understand the meaning of mean, median and mode. Students explore concrete and pictorial models and generalize connections (5-1.6) between these models and the concepts of mean, median and mode. They generate mathematical descriptions (5-1.4) for each average and recognize the limitations of each (5-1.8). Students engage in meaningful practice to gain computational fluency and explain and justify their answers (5-1.3) using correct, clear and complete mathematical language (5-1.5).</p>
6.4	Interpret the meaning and application of the measures of central tendency.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase,	<ol style="list-style-type: none"> 1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own 	<p>The objective of this indicator is to interpret. To interpret involves changing from one form of representation to another (e.g. from graphic or tabular to verbal). The learning progression to interpret requires students to recall and understand the meaning of mean, median and mode. Students recognize and understand the</p>

			match, restate, give-example, illustrate, summarize, extend, outline	<p>words....</p> <ol style="list-style-type: none"> 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about... 	limitations (5-1.8) of each measure and use their understanding analyze data in graphical, tabular and numeric form. They use inductive and deductive reasoning to reach a conclusion. Students explain and justify (5-1.3) their answers using correct, clear and complete oral and written mathematical language (5-1.5).
6.5	Represent the probability of a single-stage event in words and fractions.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	<ol style="list-style-type: none"> 1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about... 	The objective of this indicator is to represent. To represent is to translate from one form (probability) to another (numerical and words). The learning progression to represent requires students to explore single stage events. Students recall and understand how to find possible outcomes. They use appropriate methods to record these outcomes. Students analyze this information (5-1.1) and generate descriptions (5-1.4) about part/whole relationships they observe. They translate these observations into a probability statement and then to numerical form (fraction) and explain and justify their answers using correct, clear and complete oral and written mathematical language (5-1.5).
6.6	Conclude why the sum of the probabilities of the outcomes of an experiment must equal 1.	(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	<ol style="list-style-type: none"> 1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about... 	The objective of this indicator is to conclude. To conclude is to draw a logical conclusion from presented information. The learning progression to conclude requires students to recall and understand the meaning of probability. Students explore a variety of single stage events and calculate the probability of individual outcomes. Students analyze this information (5-1.1) and look for relationships among the probabilities. They generate mathematical statements (5-1.4) about these relationships and use concrete models to prove or disprove these statements. They conclude that the sum of the probability of the outcomes of an experiment is 1 and explain and justify their answers (5-1.3) using correct, clear and complete oral and written mathematical language (5-1.5).

(A1)	Define, duplicate, list, memorize, recall, repeat, reproduce, state, describe, identify, label, find, match, quote	<ol style="list-style-type: none"> 1. Describe what happened at... 2. List all the... 3. Name all the... 4. What is (fact /definition, etc) 5. List the attributes of.. 6. Write 10 facts about... 7. Make an A-Z list of... 8. Recall... 9. In what way are you like...
(B2)	Classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase, match, restate, give-example, illustrate, summarize, extend, outline	<ol style="list-style-type: none"> 1. Explain how ... has impacted... 2. Describe in clear logical steps.... 3. Paraphrase in your own words.... 4. Give reasons for... 5. Using words, pictures and icons, restate what you know about.... 6. Use the metaphor of ... to help you understand.... 7. State three things you know about...
(C3)	Choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write, organize, generalize, prepare, apply, calculate, compile, complete, demonstrate, illustrate, operate, solve, dramatize, classify, categorize	<ol style="list-style-type: none"> 1. Applying previously learned knowledge, construct.... 2. Using your knowledge of Formulate 6 questions... 3. Write a letter to the editor pointing out... 4. Classify the following ... into their correct.... 5. Write a news report... 6. Construct a flow chart for...
(B4)	Appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test, categorize, critique, debate, discuss, identify	<ol style="list-style-type: none"> 1. From at least 4 peoples' viewpoint, analyze... 2. Discuss the similarities and differences of... 3. Compare and contrast... 4. Investigate all the factors that could influence... 5. Summarize the reasons for.... 6. Deduce how the parts interact in... 7. List the pros and cons of...
(B5)	Argue (for/against), assess, critique, decide, judge, justify, prioritize, recommend, appraise, defend, select, support, value, evaluate, relate, weigh,	<p>Which of the two....would be better for...</p> <p>Choose and justify a theme song for...</p> <p>Justify the decision of...</p> <p>Determine which is the more effective...</p> <p>Evaluate the effectiveness of....</p> <p>Select which is the best option...or..</p> <p>Rank the following from...to most..</p> <p>Debate the issue...</p> <p>Defend the decision to....</p> <p>How would you prove/disprove?</p> <p>What would you cite to defend the actions?</p> <p>How could you determine?</p> <p>How would you prioritize?</p>

(B6)	Assemble, construct, create, design, develop, formulate, write, compose, originate, produce, invent, improve	<ol style="list-style-type: none">1. Design and improved... for...2. Formulate a set of criteria to judge...3. Compose a song, jingle or rap to illustrate...4. Modify ... in order to create a more fair.....5. Develop and argument to persuade people to....6. Generate key questions for...7. Create an experiment to...8. Adapt a project studied so that..9. Design a personal action plan10. What changes would you make to solve?11. What would happen if....12. What would you propose as an alternative method?13. How could you change or modify the plan?14. What could be done to simplify/minimize/maximize...?15. Can you predict the outcome if.....
------	--	--