

Math Achievement Indicators

Grade 3

Content Standard 1.0

Students will accurately calculate and use estimation techniques, number relationships, operation rules and algorithm; they will determine the reasonableness of answers and the accuracy of solutions to solve problems communicate reason and make connections within and beyond the field of mathematics.

Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
1.3.1 Identify, use, and model place value positions of 1's, 10's, 100's, and 1,000's.	difficulty identifying place value to the 10's.	difficulty identifying place value and modeling positions to the 100's.	identification, use, and modeling of place value positions of 1's, 10's, 100's, and 1,000's.	identification, modeling and/or use of place value positions beyond the 1,000's.
Identify the value of a given digit in the 1's, 10's, 100's, and 1,000's place.	difficulty identifying the value of a given digit in the 1's, and 10's places.	difficulty identifying the value of a given digit in the 1's, 10's, and 100's place.	identification of the value of a given digit in the 1's, 10's, 100's, and 1,000's place.	identification of the value of a given digit beyond the 1,000's.
1.3.2 Identify and model the unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, and $\frac{1}{8}$ as equal parts of a whole or sets of objects.	difficulty identifying $\frac{1}{2}$ and/or $\frac{1}{4}$ as equal parts of a whole.	identification of $\frac{1}{2}$ and $\frac{1}{4}$, but demonstrate difficulty identifying $\frac{1}{3}$, $\frac{1}{6}$, and $\frac{1}{8}$ as equal parts of a whole. difficulty identifying and modeling these fractions as a set of objects.	identification and modeling of unit fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, and $\frac{1}{8}$ as equal parts of a whole or sets of objects.	identification and modeling of fractions with denominators to 10 as equal parts of a whole or sets of objects.
Read and write unit fractions with numbers and words.	reading and writing of the unit fraction $\frac{1}{2}$. difficulty reading and writing other unit fractions with words and numbers.	reading and writing unit fractions of $\frac{1}{2}$ and $\frac{1}{4}$. difficulty reading and writing other unit fractions with numbers and words.	reading and writing unit fractions with numbers and words.	reading and writing unit fractions with denominators to 10 using numbers and words.

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Content Standard 1.0 (continued)				
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Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
1.3.3 Read, write, compare, and order numbers from 0 – 9,999. Read and write number words to 100.	difficulty reading, writing, and comparing numbers beyond two digits. difficulty ordering a set of numbers. difficulty reading and writing number words to 100.	reading numbers. difficulty writing and comparing numbers. difficulty ordering a set of numbers. reading numbers to 100. difficulty writing number words to 100.	reading, writing, comparing, and ordering numbers from 0 – 9,999. reading and writing number words to 100.	reading, writing, comparing, and ordering numbers beyond 9,999. reading and writing number words beyond 100.
1.3.4 Model and explain multiplication and division as skip counting patterns. Model and explain multiplication and division as repeated addition or subtraction.	difficulty modeling and explaining multiplication as a skip counting pattern. difficulty modeling and explaining multiplication as repeated addition. inability to model and explain division as repeated subtraction.	difficulty modeling and explaining multiplication and division as a skip counting pattern. modeling of multiplication as repeated addition. difficulty explaining multiplication and/or modeling and explaining division as repeated subtraction.	modeling and explaining multiplication and division as skip counting patterns. modeling and explaining multiplication and division as repeated addition or subtraction.	modeling and explaining multiplication and division using a variety of ways in addition to skip counting. modeling and explaining multiplication and division in a variety of ways.

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Content Standard 1.0 (continued)				
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Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrate...	Work at the Exceeds level demonstrates...
1.3.5 Immediately recall and use of addition and subtraction facts.	use of strategies other than immediate recall to compute addition and subtraction facts.	difficulty recalling and using all addition and subtraction facts. reliance on strategies to find the sum or difference.	immediate recall and use of addition and subtraction facts.	immediate recall, use, and application of addition and subtraction facts in mathematical and practical situations.
Immediately recall multiplication facts (products to 81).	use of strategies other than immediate recall to compute multiplication facts.	difficulty recalling all multiplication facts.	immediate recall of multiplication facts (products to 81).	immediate recall of multiplication facts products to 81 and beyond.
1.3.6 Estimate the number of objects in a set using various techniques.	exaggerated estimates of a set of objects.	difficulty determining reasonable estimates of objects in a set.	estimating the number of objects in a set using various strategies.	application of reasonable estimates in practical situations.
1.3.7 Add and subtract two- and three-digit numbers with and without regrouping.	adding two- and three-digit numbers without regrouping.	students add and subtract two- and three-digit numbers without regrouping but demonstrate difficulty with numbers when regrouping.	adding and subtracting two- and three-digit numbers with and without regrouping.	adding and subtracting multi-digit numbers beyond three-digits with and without regrouping.
Add and subtract decimals using money as a model.	difficulty subtracting two- and three-digit numbers without regrouping. difficulty subtracting decimals using money as a model. omitting or randomly placing the decimal point.	difficulty subtracting decimals using money as a model. incorrect alignment of the decimal point.	adding and subtracting decimals using money as a model.	adding and subtracting money using decimals with numbers ending in something other than 5 or 0.

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Content Standard 1.0 (continued)				
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Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
<p>1.3.8 Generate and solve two-step addition and subtraction problems and one-step multiplication problems based on practical situations.</p> <p>Model addition, subtraction, multiplication and division in a variety of ways.</p> <p>Use mathematical vocabulary and symbols to describe multiplication and division.</p>	<p>difficulty choosing the appropriate operation in practical situations.</p> <p>modeling of addition in a variety of ways.</p> <p>difficulty modeling subtraction and multiplication.</p> <p>inability to model division.</p> <p>limited mathematical vocabulary to describe multiplication and division; confusion of the relationship between symbol and vocabulary.</p>	<p>solving one step addition, subtraction, and multiplication problems based on practical situations.</p> <p>difficulty solving multi-step problems.</p> <p>modeling addition and subtraction in a variety of ways.</p> <p>difficulty modeling multiplication and division in a variety of ways.</p> <p>difficulty using mathematical vocabulary and/or symbols to describe multiplication and division.</p>	<p>generating and solving two-step addition and subtraction problems and one-step multiplication problems based on practical situations.</p> <p>modeling addition, subtraction, multiplication, and division in a variety of ways.</p> <p>use of mathematical vocabulary and symbols to describe multiplication and division.</p>	<p>generating and/or solving multi-step addition and subtraction problems and two-step multiplication problems based on practical situations.</p> <p>modeling and use of addition, subtraction, multiplication, and division in a variety of ways.</p> <p>use and application of mathematical vocabulary and symbols to describe multiplication and division in mathematical and practical situations.</p>

Achievement Indicators for Math
Grade 3

Content Standard 2.0 (continued)				
Students will use various algebraic methods to analyze, illustrate, extend, and create numerous representations (words, numbers, tables, and graphs) of patterns, functions, and algebraic relations as modeled in practical situations to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.				
Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
2.3.2 Model, explain, and solve open number sentences involving addition, subtraction, and multiplication facts.	difficulty modeling and solving open number sentences involving addition and subtraction facts.	modeling, explaining, and solving of open number sentences involving addition, but demonstrate difficulty modeling, explaining, and solving open number sentences involving subtraction, and multiplication facts.	modeling, explaining, and solving of open number sentences involving addition, subtraction, and multiplication facts.	expanded knowledge of number to model, explain, and solve open number sentences involving addition, subtraction and multiplication facts with products beyond 81.
Use variables and open sentences to express relationships.	difficulty recognizing the purpose of variables.	difficulty using variables and open sentence models to express relationships.	use variables and open sentences to express relationships.	creation of open sentences using variables to express relationships.
2.3.3 Complete number sentences with the appropriate words and symbols (+, -, >, <, =).	difficulty completing number sentences with the appropriate symbols (+, -, >, <, =).	students complete number sentences with the appropriate symbols (+, -, >, <, =). difficulty matching the appropriate words to the symbols.	complete number sentences with the appropriate words and symbols (+, -, >, <, =).	complete number sentences with the appropriate words and symbols including multiplication (+, -, >, <, x, =).

Math Achievement Indicators

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Content Standard 3.0

Students will use appropriate tools and techniques of measurement to determine estimate, record, and verify direct and indirect measurements to solve problems, communicate, reason and make connections within and beyond the field of mathematics.

Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
3.3.1 Compare, order, and describe objects by various measurable attributes for area and volume/capacity.	difficulty comparing and ordering objects by various measurable attributes for area. inability to describe objects by various measurable attributes for area and volume/capacity. (non standard and/or customary units of measure)	Comparing and ordering of objects. Difficulty describing objects by various measurable attributes for area and volume/capacity. (non standard and/or customary units of measure)	Comparing, ordering, and describing objects by various measurable attributes for area and volume/capacity. (non standard and/or customary units of measure)	Explanation and/or descriptions of area and/or volume/capacity. (non standard and/or customary units of measure)
3.3.2 Select and use appropriate units of measure. Measure to a required degree of accuracy (to the nearest ½ unit).	difficulty selecting appropriate units of measure. difficulty measuring correctly to the nearest inch.	Selection of the appropriate units of measure. Difficulty using appropriate units of measure. Measurement correctly to the nearest inch. Difficulty measuring to the nearest ½ inch.	Selection and use of appropriate units of measure. Measurement to a required degree of accuracy (to the nearest ½ inch).	Selection and application of various appropriate units of measure in practical situations. Measurement accurately to unit measures other than ½ inch.

Achievement Indicators for Math
Grade 3

Content Standard 3.0 (continued)				
Students will use appropriate tools and techniques of measurement to determine estimate, record, and verify direct and indirect measurements to solve problems, communicate, reason and make connections within and beyond the field of mathematics.				
Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
<p>3.3.4 Determine possible combinations of coins and bills to equal given amounts.</p> <p>Read, write, and use money notation.</p> <p>Recognize equivalent relationships between and among bills and coins.</p>	<p>difficulty recognizing the value of coins.</p> <p>difficulty reading, writing, and/or using correct symbols in monetary notation.</p> <p>difficulty determining equivalent amounts in coin combinations.</p>	<p>difficulty determining the combinations of coins and bills to equal given amounts.</p> <p>reading monetary notation.</p> <p>difficulty writing and/or using money notation.</p> <p>determination of equivalent coin amounts.</p> <p>difficulty recognizing equivalent relationships between and among bills and coins.</p>	<p>determination of possible combinations of coins and bills to equal given amounts.</p> <p>reading, writing, and using money notation.</p> <p>recognition of equivalent relationships between and among bills and coins.</p>	<p>combinations of coins and bills to equal given amounts in practical situations.</p> <p>reading, writing, using and applying of money notation in practical situations.</p> <p>understanding of relationships between and among bills and coins in practical situations.</p>

Achievement Indicators for Math
Grade 3

Content Standard 3.0 (continued)				
Students will use appropriate tools and techniques of measurement to determine estimate, record, and verify direct and indirect measurements to solve problems, communicate, reason and make connections within and beyond the field of mathematics.				
Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
<p>3.3.6 Tell time to the nearest minute, using analog and digital clocks.</p> <p>Use elapsed time in half-hour increments, beginning on the hour or half-hour, to determine start, end, and elapsed time.</p> <p>Recognize that there are 60 minutes in 1 hour.</p>	<p>reading of digital clocks.</p> <p>inability to tell time using analog clocks.</p> <p>difficulty determining elapsed time from the hour and half hour given the start time.</p> <p>inability to recognize how many minutes are in 1 hour.</p>	<p>ability to read digital clocks.</p> <p>difficulty telling time in 5-minute increments using analog clocks.</p> <p>ability to determine elapsed time from the hour given the start time.</p> <p>difficulty determining elapsed time from the half-hour.</p> <p>difficulty calculating elapsed time when given the end time.</p> <p>difficulty identifying how many minutes are in an hour by confusing unit measures of seconds/minutes/hours.</p>	<p>ability to tell time to the nearest minute, using analog and digital clocks.</p> <p>ability to determine elapsed time in half-hour increments, beginning on the hour or half-hour, to determine start, end, and elapsed time.</p> <p>recognition that there are 60 minutes in 1 hour.</p>	<p>ability to differentiate between A.M. and P.M.</p> <p>use of half-hour increments to determine start, end, and elapsed time that do not begin on the hour or half-hour.</p> <p>recognition of other units of time beyond minutes in 1 hour.</p>

Math Achievement Indicators

Grade 3

Content Standard 4.0

Students will identify, represent, verify, and apply spatial relationships and geometric properties to solve problems, communicate, reason and make connections within and beyond the field of mathematics.

Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
4.3.1 Describe, sketch, compare, and contrast plane geometric figures.	ability to sketch plane geometric shapes. difficulty describing and comparing these shapes.	ability to describe and sketch plane geometric shapes. difficulty comparing and contrasting these shapes.	ability to describe, sketch, compare, and contrast plane geometric figures.	ability to realize that plane figures can be used to create 3-dimensional shapes (square to a cube).
4.3.2 Demonstrate and describe the transformational motions of geometric figures (translation/slide, reflection/flip, and rotation/turn).	difficulty differentiating between the common terms (flip) and the transformational vocabulary (reflection).	General understanding of transformational vocabulary difficulty describing transformational motions of geometric figures.	description of the transformational motions of geometric figures (translation/slide, reflection/flip, and rotation/turn).	several different transformational motions using a single geometric figure.
4.3.3 Create two-dimensional designs that contain a line of symmetry.	difficulty creating two-dimensional designs that contain a line of symmetry.	ability to create two-dimensional designs. difficulty recognizing the line symmetry.	ability to create two-dimensional designs that contain a line of symmetry.	ability to create two-dimensional designs and recognize multiple lines of symmetry.
4.3.4 Compare, contrast, sketch, model, and build two- and three-dimensional geometric figures and objects.	difficulty comparing, contrasting, modeling and/or building two-dimensional geometric figures and objects.	ability to compare, contrast, sketch, and model two-dimensional geometric figures. difficulty when working with three-dimensional geometric figures and objects.	ability to compare, contrast, sketch, model, and build two- and three-dimensional geometric figures and objects.	ability to build two and/or three dimensional geometric figures, describing the figures using relevant properties.

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Content Standard 4.0 (continued)				
Students will identify, represent, verify, and apply spatial relationships and geometric properties to solve problems, communicate, reason and make connections within and beyond the field of mathematics.				
Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
4.3.6 Identify, draw, and describe horizontal, vertical, and oblique lines.	difficulty identifying horizontal, vertical, and oblique lines.	difficulty describing and using horizontal, vertical, and oblique lines.	ability to identify, draw and describe horizontal, vertical, and oblique lines.	use of horizontal, vertical, and oblique lines in practical situations.
4.3.9 Use the quantifiers all, some, and none to describe the characteristics of a set.	ability to recognize the members of a set. difficulty describing their relationships.	difficulty using quantifiers to describe the characteristics of a set.	use of the quantifiers all, some, and none to describe the characteristics of a set.	transfer of the use of quantifiers in practical situations.

Math Achievement Indicators

Grade 3

Content Standard **5.0**

Students will collect, organize, display, interpret, and analyze data to determine statistical relationships and probability projections to solve problems, communicate, reason and make connections within and beyond the field of mathematics.

Content Standard Indicator	Work at the Emergent/Developing level may indicate...	Work at the Approaches level may indicate...	Work at the Meets level demonstrates...	Work at the Exceeds level demonstrates...
<p>5.3.1 Pose questions that can be used to guide data collection, organization, and representation.</p> <p>Use graphical representations, including number lines, frequency tables, and pictographs to represent data.</p>	<p>inability to pose an appropriate question for data collection.</p> <p>difficulty using number lines and frequency tables.</p> <p>inability to use pictographs when the value is one.</p>	<p>ability to ask appropriate questions for data collection.</p> <p>difficulty organizing and representing the data.</p> <p>use of frequency tables and number lines.</p> <p>difficulty using pictographs when the value of the image is other than a whole number.</p>	<p>ability to ask questions that can be used to guide data collection, organization, and representation.</p> <p>use of graphical representations, including number lines, frequency tables, and pictographs to represent data.</p>	<p>ability to ask questions that could have been used to collect the represented data collection.</p> <p>independent organization and representation of data using a variety of graphical representations.</p>
<p>5.3.5 Use informal concepts of probability (certain, likely, unlikely, impossible) to make predictions about future events.</p>	<p>confusion of concepts of probability.</p>	<p>difficulty using concepts of probability and demonstrate difficulty making predictions about future events.</p>	<p>use of informal concepts of probability (certain, likely, unlikely, impossible) to make predictions about future events.</p>	<p>explanations of probability in practical situations.</p>