Grade 5
Mathematics
Item Specifications

Table of Contents

Grade 5 Mathematics

Introduction

In 2014 Missouri legislators passed House Bill 1490, mandating the development of the Missouri Learning Expectations. In April of 2016, these Missouri Learning Expectations were adopted by the State Board of Education. Groups of Missouri educators from across the state collaborated to create the documents necessary to support the implementation of these expectations.

One of the documents developed is the item specification document, which includes all Missouri grade level/course expectations arranged by domains/strands. It defines what could be measured on a variety of assessments. The document serves as the foundation of the assessment development process.

Although teachers may use this document to provide clarity to the expectations, these specifications are intended for summative, benchmark, and large-scale assessment purposes.

Components of the item specifications include:

Expectation Unwrapped breaks down a list of clearly delineated content and skills the students are expected to know and be able to do upon mastery of the Expectation.

Depth of Knowledge (DOK) Ceiling indicates the highest level of cognitive complexity that would typically be assessed on a large scale assessment. The DOK ceiling is not intended to limit the complexity one might reach in classroom instruction.

Item Format indicates the types of items used in large scale assessment. For each expectation, the item format specifies the type best suited for that particular expectation.

Text Types suggests a broad list of text types for both literary and informational expectations. This list is not intended to be all inclusive: other text types may be used in the classroom setting. The expectations were written in grade level bands; for this reason, the progression of the expectations relies upon increasing levels of quantitative and qualitative text

complexities.

Content Limits/Assessment Boundaries are parameters that item writers should consider when developing a large scale assessment. For example, some expectations should not be assessed on a large scale assessment but are better suited for local assessment.

Sample stems are examples that address the specific elements of each expectation and address varying DOK levels. The sample stems provided in this document are in no way intended to limit the depth and breadth of possible item stems. The expectation should be assessed in a variety of ways.

Grade 5 Mathematics

Mathematics		5.NBT.A.1
NBT	**Number Sense and Operations in Base Ten**	
A	**Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.**	
1	Read, write and identify numbers from billions to thousandths using number names, base ten numerals and expanded form.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will write or identify numbers using number names (word form), given base ten numerals (standard form).

The student will write or identify numbers using number names (word form), given expanded form.

The student will write or identify numbers using base ten numerals (standard form), given number names (word form).

The student will write or identify numbers using base ten numerals (standard form), given expanded form.

The student will identify numbers using expanded form, given number names (word form).

The student will identify numbers using expanded form, given base ten numerals (standard form).

The student will find multiple equivalent representations in number names (word form), base ten numerals (standard form) and expanded form.

DOK Ceiling
2

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

Which statement is fully expanded?

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension

Use the terminology “standard form” and “base ten numerals” interchangeably in the classroom.
Use the terminology “word forms” and “number names” interchangeably in the classroom.
Assessment terminology will be limited to only base ten numerals and number names.
Expanded form can contain addition and/or multiplication, fully or partially expanded. Expanded form will not include powers of ten.
When **fully expanded** is stated, the answer should be broken down completely by each place value.
Students should not be asked to write expanded form in constructed response.

Calculator Designation

NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NBT.A.2
NBT	**Number Sense and Operations in Base Ten**	
A	**Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.**	
2	Compare two numbers from billions to thousandths using the symbols >, = or <, and justify the solution.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will compare two numbers from billions to thousandths using the symbols >, =, or <.

The student will explain how a given number is >, =, or < another given number.

The student will identify if a given justification is correct.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Does not include ≥ or ≤.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NBT.A.3
NBT	**Number Sense and Operations in Base Ten**	
A	**Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.**	
3	Understand that in a multi-digit number, a digit represents 1/10 times what it would represents in the place to its left.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will recognize that a digit in one place represents ten times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

DOK Ceiling
2

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Comparison of digits is not limited to one place value to the left or right.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NBT.A.4
NBT **A** **4**	**Number Sense and Operations in Base Ten** **Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.** Evaluate the value of powers of 10 and understand the relationship to the place value system.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will calculate the value of powers of ten.

The student will compare how place value changes in relation to powers of ten.

The student will convert between base ten numerals (standard form) and expanded form with powers of ten.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Powers are limited to non-negative integers no greater than ten.
Use the terminology "standard form" and "base ten numerals" interchangeably in the classroom.
Assessment terminology will be limited to only base ten numerals and expanded form.
When given in a question stem, expanded form with powers of ten should include parenthesis, such as $652 = (6x\ 10^2) + (5x10^1) + (2x10^0)$.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NBT.A.5
NBT **A** **5**	**Number Sense and Operations in Base Ten** **Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.** Round numbers from billions to thousandths place.	
Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations. The student will estimate whole numbers with six to eight digits using rounding. The student will estimate decimal numbers up to the thousandths place using rounding.		**DOK Ceiling** 2 **Item Format** Selected Response Constructed Response Technology Enhanced **Sample Stems**
State Assessment Content Limits/Boundaries Classroom Work Should Include Extension		**Calculator Designation** **NO** – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NBT.A.6
NBT **A** **6**	**Number Sense and Operations in Base Ten** **Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.** Add and subtract multi-digit whole numbers and decimals to the thousandths place, and justify the solution.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will add multi-digit whole numbers.

The student will add multi-digit decimals.

The student will subtract multi-digit whole numbers.

The student will subtract multi-digit decimals.

The student will identify or explain an error in adding or subtracting.

The student will explain the reasonableness of the solution.

The student will identify if a given justification is correct.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems
What is the sum of 52.03 and 28.1?

What is the difference between 0.72 and 0.07?

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Whole numbers should be less than one billion and the sum should not exceed ten digits.
The term “decimals” could include a whole number part.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NBT.A.7
NBT	**Number Sense and Operations in Base Ten**	
A	**Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.**	
7	Multiply multi-digit whole numbers and decimals to the hundredths place, and justify the solution.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will multiply multi-digit decimals.

The student will use multiple representations to model real-world and mathematic problems involving multiplication of multi-digit whole numbers.

The student will critique the reasoning of others, identifying errors and alternate approaches to solving problems involving multiplication of multi-digit whole numbers.

The student will decontextualize and contextualize problems and solutions to explain his or her reasoning in multiplication of multi-digit whole numbers.

The student will identify and explain patterns and the structure of the problems with specific focus on the properties of mathematics when solving problems involving multiplication of multi-digit whole numbers.

The student will communicate his or her reasoning precisely to problems involving multiplication of multi-digit whole numbers.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
The product should not exceed ten digits.
The term “decimals” could include a whole number part.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NBT.A.8
NBT **A** **8**	**Number Sense and Operations in Base Ten** **Use place value system understanding to perform operations with multi-digit whole numbers to billions and decimals to thousandths.** Divide multi-digit whole numbers and decimals to the hundredths place using up to two-digit divisors and four-digit dividends, and justify the solution.	
Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations. The student will divide multi-digit whole numbers. The student will divide multi-digit decimals. The student will explain the reasonableness of the solution. The student will identify if a given justification is correct.		**DOK Ceiling** 3 **Item Format** Selected Response Constructed Response Technology Enhanced **Sample Stems**
State Assessment Content Limits/Boundaries Classroom Work Should Include Extension The term "decimals" could include a whole number part. Numbers are limited up to two-digit divisors and four-digit dividends.		**Calculator Designation** **NO** – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NF.A.1
NF A 1	**Number Sense and Operations in Fractions** **Understand the relationship between fractions and decimals (denominators that are factors of 100).** Understand that parts of a whole can be expressed as fractions and/or decimals.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will identify parts of a whole using fractions.

The student will identify parts of a whole using decimals.

The student will identify parts of a whole using fractions and decimals.

DOK Ceiling
2

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems
If I have a circle split in ten equal sections and 3 are shaded, which fraction would represent the unshaded amount?

Pick the correctly shaded circle to represent ½.

Given a box split in 100 pieces with 35 shaded, represent the shaded portion in decimal form.

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Denominators are limited to 1, 2, 4, 5, 10, 20, 25, 50 or 100 when working with fractions and decimals.
Denominators 3, 6, 8 and 12 may be used when decimals are not involved.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NF.A.2
NF A 2	**Number Sense and Operations in Fractions** **Understand the relationship between fractions and decimals (denominators that are factors of 100).** Convert decimals to fractions and fractions to decimals.	
Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations. The student will convert decimals to fractions. The student will convert fractions to decimals.		**DOK Ceiling** 2 **Item Format** Selected Response Constructed Response Technology Enhanced **Sample Stems** Represent 1/20 as a decimal.
State Assessment Content Limits/Boundaries Classroom Work Should Include Extension Denominators are limited to 1, 2, 4, 5, 10, 20, 25, 50 or 100. Fractions include those that are greater than 1 (i.e. mixed numbers and improper fractions)		**Calculator Designation** **NO** – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NF.A.3
NF A 3	**Number Sense and Operations in Fractions** **Understand the relationship between fractions and decimals (denominators that are factors of 100).** Compare and order fractions and/or decimals to the thousandths place using the symbols >, = or <, and justify the solution.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will compare fractions using >, =, or <.

The student will compare decimals using >, =, or <.

The student will compare fractions and decimals using >, =, or <.

The student will place fractions in order.

The student will place decimals in order.

The student will place fractions and decimals in order.

The student will justify the solution by identifying a correct explanation from a list of choices.

The student will justify the solution.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Denominators are limited to 1, 2, 4, 5, 10, 20, 25, 50 or 100 when working with fractions and decimals.
Denominators 3, 6, 8 and 12 may be used when decimals are not involved.
Questions should not include ≥ or ≤.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NF.B.4
NF B 4	**Number Sense and Operations in Fractions** **Perform operations and solve problems with fractions and decimals.** Estimate results of sums, differences and products with fractions and decimals to the thousandths.	
Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations. The student will estimate sums of fractions. The student will estimate sums of decimals to the thousandths place. The student will estimate differences of fractions. The student will estimate differences of decimals to the thousandths place. The student will estimate products of fractions. The student will estimate products of decimals to the thousandths place.		**DOK Ceiling** 2 **Item Format** Selected Response Constructed Response Technology Enhanced **Sample Stems**
State Assessment Content Limits/Boundaries Classroom Work Should Include Extension Problems may include word problems with or without context, or solving a given expression or equation. This expectation does NOT cover division.		**Calculator Designation** **NO** – a calculator will not be available for items

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.NF.B.5.a</th></tr>
<tr><td>NF
B
5
a</td><td colspan="2">Number Sense and Operations in Fractions
Perform operations and solve problems with fractions and decimals.
Justify the reasonableness of a product when multiplying with fractions.
Estimate the size of the product based on the size of the two factors.</td></tr>
<tr><td colspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will determine how large/small the product of two fractions will be compared to benchmarks with estimation.

The student will select the correct model representing the estimate of multiplying two fractions.</td><td><u>DOK Ceiling</u>
3

<u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u></td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Fractions will include denominators of 1, 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50 or 100.
Problems may include word problems with or without context, or solving a given expression or equation.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.NF.B.5.b</th></tr>
<tr><td>NF</td><td colspan="2">Number Sense and Operations in Fractions</td></tr>
<tr><td>B</td><td colspan="2">Perform operations and solve problems with fractions and decimals.</td></tr>
<tr><td>5</td><td colspan="2">Justify the reasonableness of a product when multiplying with fractions.</td></tr>
<tr><td>b</td><td colspan="2">Explain why multiplying a given number by a fraction greater than 1 results in a product larger than the given number.</td></tr>
<tr><td colspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will explain why multiplying a given number by an improper fraction will result in a product larger than the given number.

The student will explain why multiplying a given number by a mixed number will result in a product larger than the given number.

The student will explain why multiplying a given number by a whole number, greater than 1, will result in a product larger than the given number.

The student will select the correct model representing what would happen when multiplying a fraction by a number greater than one.</td><td><u>DOK Ceiling</u>
3

<u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u></td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Students do not need to do the process but be able to explain what happens when multiplying by a number greater than one.
Problems may include word problems with or without context, or solving a given expression or equation.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

Mathematics		5.NF.B.5.c
NF	**Number Sense and Operations in Fractions**	
B	**Perform operations and solve problems with fractions and decimals.**	
5	Justify the reasonableness of a product when multiplying with fractions.	
c	Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will explain why multiplying a given number by a fraction between zero and one will result in a product smaller than the given number.

The student will select the correct model representing what would happen when multiplying a fraction between zero and one.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Students do not need to be able to do the process, but be able to explain what happens when multiplying between zero and one.
Problems may include word problems with or without context, or solving a given expression or equation.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NF.B.5.d
NF	**Number Sense and Operations in Fractions**	
B	**Perform operations and solve problems with fractions and decimals.**	
5	Justify the reasonableness of a product when multiplying with fractions.	
d	Explain why multiplying the numerator and denominator by the same number is equivalent to multiplying the fraction by 1.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student should explain that a fraction containing the same number in the numerator and denominator is equal to one.

The student will explain why multiplying a numerator and denominator by the same number is equivalent to multiplying by one.

The student will select the correct answer representing what would happen when multiplying a fraction by a fraction equivalent to one.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension

Problems may include word problems with or without context, or solving a given expression or equation.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NF.B.6
NF B 6	**Number Sense and Operations in Fractions** **Perform operations and solve problems with fractions and decimals.** Solve problems involving addition and subtraction of fractions and mixed numbers with unlike denominators, and justify the solution.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will add fractions with unlike denominators.

The student will add mixed numbers with unlike denominators.

The student will add fractions and mixed numbers with unlike denominators.

The student will subtract fractions with unlike denominators.

The student will subtract mixed numbers with unlike denominators.

The student will subtract mixed numbers and fractions with unlike denominators.

The student will explain the reasonableness of an answer.

The student will identify the mistake in the steps taken to solve a problem.

The student will identify if a given justification is correct.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Problems may include word problems with or without context, or solving a given expression or equation.
Fractions could include improper fractions.
Equivalent or reduced fractions may be expected, but not assumed.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.NF.B.7.a</th></tr>
<tr><td>NF</td><td colspan="2">Number Sense and Operations in Fractions</td></tr>
<tr><td>B</td><td colspan="2">Perform operations and solve problems with fractions and decimals.</td></tr>
<tr><td>7</td><td colspan="2">Extend the concept of multiplication to multiply a fraction or whole number by a fraction.</td></tr>
<tr><td>a</td><td colspan="2">Recognize the relationship between multiplying fractions and finding the areas of rectangles with fractional side lengths.</td></tr>
<tr><td colspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will identify the correct equation of a given area model showing a fraction by a fraction.

The student will identify the correct equation of a given area model showing a whole number by a fraction.

The student will identify the model that represents multiplying a fraction by a fraction.

The student will identify the model that represents multiplying a whole number by a fraction.

The student will describe how multiplying fractions relates to finding the areas of rectangles with fractional side lengths.</td><td><u>DOK Ceiling</u>
2

<u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u>
Which of these pictures (rectangles shaded in by the LxW) represent the equation?</td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Rectangles should have at least one side less than one.
Side lengths should not contain mixed numbers.
Problems may include word problems with or without context.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

Mathematics		5.NF.B.7.b
NF	**Number Sense and Operations in Fractions**	
B	**Perform operations and solve problems with fractions and decimals.**	
7	Extend the concept of multiplication to multiply a fraction or whole number by a fraction.	
b	Calculate and interpret the product of a fraction by a whole number and a whole number by a fraction.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will calculate the product of a fraction by a whole number.

The student will calculate the product of a whole number by a fraction.

The student will select the correct restatement of a problem involving multiplication of whole numbers and fractions.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Questions should not include mixed numbers or improper fractions.
Problems may include word problems with or without context, or solving a given expression or equation.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NF.B.7.c
NF	**Number Sense and Operations in Fractions**	
B	**Perform operations and solve problems with fractions and decimals.**	
7	Extend the concept of multiplication to multiply a fraction or whole number by a fraction.	
c	Calculate and interpret the product of two fractions less than one.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will calculate the product of two fractions between zero and one.

The student will select the correct restatement of a problem involving multiplication of two fractions between zero and one.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
For assessment purposes, the interpret component should be written as a selected response.
Fractions should be less than one with denominators 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50 or 100.
Problems may include word problems with or without context, or solving a given expression or equation.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NF.B.8.a
NF	**Number Sense and Operations in Fractions**	
B	**Perform operations and solve problems with fractions and decimals.**	
8	Extend the concept of division to divide unit fractions and whole numbers by using visual fraction models and equations.	
a	Calculate and interpret the quotient of a unit fraction by a non-zero whole number.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.	**DOK Ceiling** 2
The student will calculate the quotient of a unit fraction by a non-zero whole number. The student will identify a visual model that represents the quotient of a unit fraction by a non-zero whole number. The student will identify an equation that represents the quotient of a unit fraction by a non-zero whole number.	**Item Format** Selected Response Constructed Response Technology Enhanced **Sample Stems**
State Assessment Content Limits/Boundaries Classroom Work Should Include Extension Unit fractions should have denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50 or 100. A unit fraction consists of a numerator of one. Specific visual models should not be named. Problems may include word problems with or without context, or solving a given expression or equation.	**Calculator Designation** **NO** – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.NF.B.8.b
NF	**Number Sense and Operations in Fractions**	
B	**Perform operations and solve problems with fractions and decimals.**	
8	Extend the concept of division to divide unit fractions and whole numbers by using visual fraction models and equations.	
b	Calculate and interpret the quotient of a whole number by a unit fraction.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will calculate the quotient of a whole number by a unit fraction.

The student will identify a visual model that represents the quotient of a whole number by a unit fraction.

The student will identify an equation that represents the quotient of a whole number by a unit fraction.

DOK Ceiling
2

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Unit fractions should have denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50 or 100.
A unit fraction consists of a numerator of one.
Specific visual models should not be named.
Problems may include word problems with or without context, or solving a given expression or equation.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.RA.A.1.a
RA	**Relationships and Algebraic Thinking**	
A	**Represent and analyze patterns and relationships.**	
1	Investigate the relationship between two numeric patterns.	
a	Generate two numeric patterns given two rules.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.	**DOK Ceiling** 2
The student will generate two numeric patterns (up to five terms) given starting numbers and rules. The student will fill in the missing terms given two incomplete patterns and their rules. The student will extend two numeric patterns given the rules.	**Item Format** Selected Response Constructed Response Technology Enhanced **Sample Stems**
State Assessment Content Limits/Boundaries Classroom Work Should Include Extension Patterns should only contain positive integers and zero. Patterns can include addition, subtraction, multiplication and division. Rules may use only one operation for each pattern. Patterns can be organized in lists or tables. Note: Expectation indicates that there are two patterns being used with two rules	**Calculator Designation** **NO** – a calculator will not be available for items

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.RA.A.1.b</th></tr>
<tr><td>RA</td><td colspan="2">Relationships and Algebraic Thinking</td></tr>
<tr><td>A</td><td colspan="2">Represent and analyze patterns and relationships.</td></tr>
<tr><td>1</td><td colspan="2">Investigate the relationship between two numeric patterns.</td></tr>
<tr><td>b</td><td colspan="2">Translate two numeric patterns into two sets of ordered pairs.</td></tr>
<tr><td colspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will write corresponding ordered pairs given two numeric patterns.</td><td><u>DOK Ceiling</u>
2

<u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u></td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Patterns can be organized in lists or tables.
Patterns should only contain positive integers and zero.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.RA.A.1.c</th></tr>
<tr><td>RA</td><td colspan="2">Relationships and Algebraic Thinking</td></tr>
<tr><td>A</td><td colspan="2">Represent and analyze patterns and relationships.</td></tr>
<tr><td>1</td><td colspan="2">Investigate the relationship between two numeric patterns.</td></tr>
<tr><td>c</td><td colspan="2">Graph numeric patterns on the Cartesian coordinate plane.</td></tr>
<tr><td colspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will graph ordered pairs given two numeric patterns on the Cartesian coordinate plane.</td><td><u>DOK Ceiling</u>
2

<u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u></td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Questions testing RA.A.1.c should be combined with 5.RA.A.1.b
Questions should not ask the student to generate numeric patterns from the graph.
Patterns should only contain positive integers and zero.
Patterns can be organized in lists or tables.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.RA.A.1.d</th></tr>
<tr><td>RA
A
1
d</td><td colspan="2">Relationships and Algebraic Thinking
Represent and analyze patterns and relationships.
Investigate the relationship between two numeric patterns.
Identify the relationship between two numeric patterns.</td></tr>
<tr><td colspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will describe the relationship between two given numeric patterns.</td><td><u>DOK Ceiling</u>
2

<u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u>
What is the first number the two patterns above share?

Which statement describes the relationship between the two terms?
A. Pattern X’s terms are twice the amount of Pattern Y’s terms.</td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Relationships should be related to multiplicative comparisons.
Patterns can be organized in lists, tables or graphs (such as 5.RA.A.1.c).</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

Mathematics		5.RA.A.2
RA **A** **2**	**Relationships and Algebraic Thinking** **Represent and analyze patterns and relationships.** Write a rule to describe or explain a given numeric pattern.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will identify a rule to describe a numeric pattern (rules should include the starting number).

The student will fill in a missing number(s) in a numeric pattern.

The student will extend a given numeric pattern.

The student will choose the sequence of numbers that matches a given rule.

DOK Ceiling
2

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems
Given the pattern 64, 32, 16…generate the rule.
Answer: Starting at 64, divide by 2

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Rules include the starting number and the change in the sequence.
Limit constructed response to missing numbers.
Patterns should only contain positive integers and zero.
Patterns can be organized in lists or tables.
Each pattern is limited to one operation (addition, subtraction, multiplication and division).

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.RA.B.3
RA **B** **3**	**Relationships and Algebraic Thinking** **Write and interpret numerical expressions.** Write, evaluate and interpret numeric expressions using the order of operations.	
Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations. The student will evaluate numeric expressions containing positive integers using the order of operations. The student will determine where to place parenthesis given an expression in word form. The student will determine if the given process for solving an expression with two operations is correct. The student will determine if the given process for solving an expression with two operations and grouping symbols is correct.		**DOK Ceiling** 3 **Item Format** Selected Response Constructed Response Technology Enhanced **Sample Stems** Third one can be a true/false table with different reasons (false because Suzy multiplied) for the expression to be false. Solve the expression: 4 x (5+3) Solve the expression: 4 x 5 +3 Choose the expression equivalent to 20 + 3 A. 4 x(5+3) B. 4 x 5 +3 C. 4 +15 D. 3 + 17
State Assessment Content Limits/Boundaries Classroom Work Should Include Extension Numeric expressions should not include exponents. Expressions should include and only result in positive integers.		**Calculator Designation** **NO** – a calculator will not be available for items

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.RA.B.4</th></tr>
<tr><td>RA
B
4</td><td colspan="2">Relationships and Algebraic Thinking
Write and interpret numerical expressions.
Translate written expressions into algebraic expressions.</td></tr>
<tr><td colspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will rewrite a written expression into an algebraic expression using numbers and a variable.</td><td><u>DOK Ceiling</u>
3

<u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u>
Jim has three times as many oranges as Sam. Choose the algebraic expression that describes the number of oranges Jim has in terms of x, the number of oranges Sam has.

John has some cookies. Jane has four fewer than John. Write an expression to represent the number of cookies John has.</td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Expressions should be limited to one variable.
An expression does not include the = sign, an equation does.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

Mathematics		5.RA.C.5
RA **C** **5**	**Relationships and Algebraic Thinking** **Use the four operations to represent and solve problems.** Solve and justify multi-step problems involving variables, whole numbers, fractions and decimals.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will solve multi-step problems involving variables, whole numbers, fractions and decimals.

The student will use estimation to assess the reasonableness of answers.

The student will identify the mistake in the steps taken to solve a problem.

The student will identify if a given justification is correct.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems
Billy has 5 ½ times the number of cookies that Julie has. Julie has 2 cookies. How many cookies are there all together?

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension

Exclude division of fractions by fractions.
Measurement should be tested using expectation 5.GM.D.9.
Variable is represented as a letter standing for the unknown quantify.
Problems may include word problems with or without context, or solving a given expression or equation.

Note limitations on values to use from 5.NF.B.7b

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.GM.A.1</th></tr>
<tr><td>GM
A
1</td><td colspan="2">Geometry and Measurement
Classify two- and three- dimensional geometric shapes.
Understand that attributes belonging to a category of figures also belong to all subcategories.</td></tr>
<tr><td colspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will identify two-dimensional shapes based on their attributes.

The student will identify three-dimensional shapes based on their attributes.

The student will describe a shape within a category (e.g., prisms) regardless of the subcategory</td><td><u>DOK Ceiling</u>
3

<u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u></td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Shapes should be only categorized into one category for this expectation.
Categories are limited to: circles, polygons (limited to all triangles, all quadrilaterals, pentagons, hexagons or octagons), prisms, cylinders, cones, spheres and pyramids.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.GM.A.2</th></tr>
<tr><td>GM
A
2</td><td colspan="2">Geometry and Measurement
Classify two- and three- dimensional geometric shapes.
Classify figures in a hierarchy based on properties.</td></tr>
<tr><td colspan="2" rowspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will select all categories that describe a two-dimensional shape.

The student will select all categories that describe a three-dimensional shape.</td><td><u>DOK Ceiling</u>
3</td></tr>
<tr><td><u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u>
Multi-select…A square is a ?
quadrilateral, triangle, trapezoid, rectangle, polygon, rhombus</td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Categories are limited to: circles, polygons (limited to all triangles, quadrilaterals, pentagons, hexagons or octagons), prisms, cylinders, cones, spheres and pyramids.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.GM.A.3</th></tr>
<tr><td>GM
A
3</td><td colspan="2">Geometry and Measurement
Classify two- and three- dimensional geometric shapes.
Analyze and describe the properties of prisms and pyramids.</td></tr>
<tr><td colspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will describe the properties of prisms according to the number of edges, faces or vertices as well as the types of bases.

The student will describe the properties of pyramids according to the number of edges, faces or vertices as well as the types of bases.

The student will compare/contrast prisms and/or pyramids.</td><td><u>DOK Ceiling</u>
2

<u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u></td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Categories are limited to: prisms and pyramids.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

Mathematics		5.GM.B.4.a
GM	**Geometry and Measurement**	
B	**Understand and compute volume.**	
4	Understand the concept of volume and recognize that volume is measured in cubic units.	
a	Describe a cube with edge length 1 unit as a “unit cube” and is said to have “one cubic unit” of volume and can be used to measure volume.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will define volume.

The student will distinguish the difference between volume and area.

The student will determine if volume, area or perimeter should be found in a given situation.

The student will use volume units correctly, using cubic units.

DOK Ceiling
2

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.GM.B.4.b</th></tr>
<tr><td>GM</td><td colspan="2">Geometry and Measurement</td></tr>
<tr><td>B</td><td colspan="2">Understand and compute volume.</td></tr>
<tr><td>4</td><td colspan="2">Understand the concept of volume and recognize that volume is measured in cubic units.</td></tr>
<tr><td>b</td><td colspan="2">Understand that the volume of a right rectangular prism can be found by stacking multiple layers of the base.</td></tr>
<tr><td colspan="2" rowspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will count cubic units in a given container to determine the volume.

The student will determine the number of cubic units needed to fill the box, given the base.</td><td><u>DOK Ceiling</u>
3</td></tr>
<tr><td><u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u></td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u></td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

Mathematics		5.GM.B.5
GM **B** **5**	**Geometry and Measurement** **Understand and compute volume.** Apply the formulas V = l × w × h and V = B × h for volume of right rectangular prisms with whole-number edge lengths.	
Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations. The student will apply the formula for volume on a right rectangular prism with labeled sides.		**DOK Ceiling** 3 **Item Format** Selected Response Constructed Response Technology Enhanced **Sample Stems**
State Assessment Content Limits/Boundaries Classroom Work Should Include Extension Side lengths should be only whole numbers. Cubes may be labeled on only one edge.		**Calculator Designation** **NO** – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.GM.C.6.a
GM	**Geometry and Measurement**	
C	**Graph points on the Cartesian coordinate plane within the first quadrant to solve problems.**	
6	Define a first quadrant Cartesian coordinate system.	
a	Represent the axes as scaled perpendicular number lines that both intersect at 0, the origin.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will define the origin as the point (0, 0).

The student will pick the correctly drawn Cartesian coordinate plane.

The student will use perpendicular number lines to construct a first quadrant Cartesian coordinate plane.

The student will place the x and y axis as well as numbers on a given coordinate plane.

DOK Ceiling
2

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems
X and Y labeled incorrectly
Y intersects X at a point other than (0,0)
X intersects Y at a point other than (0,0)
Drawn correctly

From the choices above, pick the correctly drawn coordinate plane.

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Graphs are limited to the first quadrant.
Problems will not include word problems.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

<table>
<tr><th colspan="2">Mathematics</th><th>5.GM.C.6.b</th></tr>
<tr><td>GM</td><td colspan="2">Geometry and Measurement</td></tr>
<tr><td>C</td><td colspan="2">Graph points on the Cartesian coordinate plane within the first quadrant to solve problems.</td></tr>
<tr><td>6</td><td colspan="2">Define a first quadrant Cartesian coordinate system.</td></tr>
<tr><td>b</td><td colspan="2">Identify any point on the Cartesian coordinate plane by its ordered pair coordinates.</td></tr>
<tr><td colspan="2" rowspan="2"><u>Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.</u>

The student will identify the ordered pair of a given point in the first quadrant of the Cartesian coordinate plane.

The student will identify the correct point from choices on a Cartesian coordinate plane, given the ordered pair.</td><td><u>DOK Ceiling</u>
2</td></tr>
<tr><td><u>Item Format</u>
Selected Response
Constructed Response
Technology Enhanced

<u>Sample Stems</u>
Points A, B, Cand D will be plotted. The ordered pair will be given and the student asked which letter goes with it.</td></tr>
<tr><td colspan="2"><u>State Assessment Content Limits/Boundaries Classroom Work Should Include Extension</u>
Graph points on the Cartesian coordinate plane within the first quadrant.</td><td><u>Calculator Designation</u>
NO – a calculator will not be available for items</td></tr>
</table>

Grade 5 Mathematics

Mathematics		5.GM.C.6.c
GM	**Geometry and Measurement**	
C	**Graph points on the Cartesian coordinate plane within the first quadrant to solve problems.**	
6	Define a first quadrant Cartesian coordinate system.	
c	Define the first number in an ordered pair as the horizontal distance from the origin.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will identify what the x coordinate represents.

The student will name the x coordinate given a point in the first quadrant of the Cartesian coordinate plane.

DOK Ceiling
2

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Graph points on the Cartesian coordinate plane within the first quadrant.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.GM.C.6.d
GM	**Geometry and Measurement**	
C	**Graph points on the Cartesian coordinate plane within the first quadrant to solve problems.**	
6	Define a first quadrant Cartesian coordinate system.	
d	Define the second number in an ordered pair as the vertical distance from the origin.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will identify what the y coordinate represents.

The student will name the y coordinate given a point in the first quadrant of the Cartesian coordinate plane.

DOK Ceiling
2

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Graph points on the Cartesian coordinate plane within the first quadrant.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.GM.C.7
GM C 7	**Geometry and Measurement** **Graph points on the Cartesian coordinate plane within the first quadrant to solve problems.** Plot and interpret points in the first quadrant of the Cartesian coordinate plane.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will plot a point in the first quadrant of the Cartesian coordinate plane given an ordered pair.

The student will interpret points using real-world examples.

The student will interpret points using mathematical situations.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Graph points on the Cartesian coordinate plane within the first quadrant.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.GM.D.8
GM D 8	**Geometry and Measurement** **Solve problems involving measurement and conversions within a measurement system.** Convert measurements of capacity, length and weight within a given measurement system.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.	**DOK Ceiling** 2
The student will convert measures of capacity within the metric system. The student will convert measures of capacity within the customary system. The student will convert measures of length within the metric system. The student will convert measures of length within the customary system. The student will convert measures of weight within the metric system. The student will convert measures of weight within the customary system.	**Item Format** Selected Response Constructed Response Technology Enhanced **Sample Stems**
State Assessment Content Limits/Boundaries Classroom Work Should Include Extension Conversions should only be in the same system. Units should include in., ft., yd., miles, km, m, cm, mm; kg, g, mg, oz., lb., ton; L, mL, cup, pt., qt. and gal.	**Calculator Designation** **NO** – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.GM.D.9
GM D 9	**Geometry and Measurement** **Solve problems involving measurement and conversions within a measurement system.** Solve multi-step problems that require measurement conversions.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will conduct multiple operations within a problem to determine an answer and convert it into a new unit.

The student will be given a problem containing two different units requiring one to be converted before an answer is determined.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems
Johnny ran 3 miles per day for 5 days each week. How many miles did he run after 4 weeks? How many feet in all?

Given 5 tons of dirt, how many truckloads are needed to carry it if each truck will hold 500 pounds?

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Conversions should only be in the same system.
Questions can be as simple as converting units and then performing one operation.
Units should include in., ft., yd., miles, km, m, cm, mm; kg, g, mg, oz., lb., ton; L, mL, cup, pt., qt. and gal.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.DS.A.1
DS A 1	**Data and Statistics** **Represent and analyze data** Create a line graph to represent a data set, and analyze the data to answer questions and solve problems.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will choose appropriate axis labels.

The student will choose reasonable scales for the x and y axis.

The student will choose an appropriate title for the line graph.

The student will create a line graph to represent given data by placing points correctly.

The student will choose the correct graph representing a given data set.

The student will choose the correct data set given a line graph.

The student will identify the least occurring or most occurring (i.e. mode) data.

The student will identify trends in the data.

The student will identify the range of the data.

The student will answer questions about trends on the graph (i.e. increasing/decreasing) by using data.

The student will make predictions using the data

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems
Predict why the water usage in the house increases at 5PM.

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
Fraction should have denominators of 2, 3, 4, 5, 6, 8, 10, 12 or 100.
Line graphs should not include double line graphs.

Calculator Designation
NO – a calculator will not be available for items

Grade 5 Mathematics

Mathematics		5.DS.A.2
DS A 2	**Data and Statistics** **Represent and analyze data** Create a line plot to represent a given or generated data set, and analyze the data to answer questions and solve problems, recognizing the outliers and generating the median.	

Expectation Unwrapped – the intent of this section is to describe the elements of the expectation, but are NOT additional standards or expectations.

The student will choose an appropriate title for the line plot.

The student will create a line plot to represent given data by placing points (x) correctly.

The student will choose the correct line plot representing a given data set.

The student will choose the correct data set given a line plot.

The student will identify the least/most occurring (mode) data.

The student will identify trends in the data.

The student will identify the range of the data.

The student will identify the median of the data.

The student will identify the outlier(s) of the data.

The student will answer questions by using data from the line plot.

DOK Ceiling
3

Item Format
Selected Response
Constructed Response
Technology Enhanced

Sample Stems
How many more students read 12 books than ten books?

State Assessment Content Limits/Boundaries Classroom Work Should Include Extension
There will be no formal process to determine outliers, but they should clearly be outside of a group of data points.
Data sets in which the median should be found may include an odd number of data points or an even number of data points.
Line plot and dot plot may be used interchangeably. The graph may or may not have a vertical axis. For assessment purposes use line plot.

Calculator Designation
NO – a calculator will not be available for items