LOUISIANA DEPARTMENT OF EDUCATION

Office of Assessments, Analytics, and Accountability

Grade 6 Mathematics

Achievement Level Descriptors

Major Content

The student solves problems involving the Major Content for the course with connections to the Standards for Mathematical Practice.

Major Content				
Content	**Level 5: Advanced**	**Level 4: Mastery**	**Level 3: Basic**	**Level 2: Approaching Basic**
Multiply and Divide Fractions 6.NS.A.1	Divides fractions with unlike denominators and solves word problems.	Divides fractions with **unlike** denominators and solves word problems with scaffolding.	Divides fractions with common denominators **and solves word problems with scaffolding**.	Divides fractions with common denominators.
Ratio and Rate 6.RP.A.1 6.RP.A.2 6.RP.A.3	Uses ratio and rate reasoning to solve real-world and mathematical problems, including ratio, unit rate, percent, and unit conversion problems, **using and connecting a variety of representations and strategies.**	Uses ratio and rate reasoning to solve **real-world and** mathematical problems, including ratio, unit rate, percent, and unit conversion problems using a limited variety of representations and strategies.	**Uses ratio and rate reasoning to** solve **mathematical** problems, including ratio, unit rate, percent, and unit conversion problems using a limited variety of representations and strategies.	Solves problems including ratio, unit rate, percent, and unit conversion problems using a limited variety of representations and strategies.
	Finds missing values in tables and plots pairs of values on the coordinate plane.	Finds missing values in tables and locates **and plots** pairs of values on the coordinate plane.	**Finds missing values in tables and locates pairs of values on the coordinate plane.**	

Major Content				
Content	**Level 5: Advanced**	**Level 4: Mastery**	**Level 3: Basic**	**Level 2: Approaching Basic**
Rational Numbers 6.NS.C.5 6.NS.C.6 6.NS.C.7 6.NS.C.8	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line and compared with or without the use of a number line.	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line **and compared with or without the use of a number line**.	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line.	Understands that positive and negative numbers describe mathematical or real-world quantities which have opposite values or directions and can be represented on a number line.
	Understands the concept of **and interprets** the absolute value of a rational number.	**Understands the concept of** absolute value of a rational number.	Determines the absolute value of a rational number.	Determines the absolute value of a rational number.
	Plots ordered pairs on a coordinate plane to solve real-world and mathematical problems.	Plots ordered pairs on a coordinate plane to solve **real-world and** mathematical problems.	**Locates or plots ordered pairs on a coordinate plane to solve mathematical problems.**	
	Recognizes the locations of points are related by reflections across one or both axes when two ordered pairs differ only by signs.			
	Distinguishes comparisons of absolute value from statements about order.			
Expressions, Inequalities, and Equations 6.EE.A.1 6.EE.A.2	Writes, reads, and evaluates numerical and algebraic expressions, including those that contain whole number exponents.	**Writes,** reads, **and evaluates** numerical and algebraic expressions, including those that contain whole number exponents.	Reads numerical **and algebraic expressions including those that contain whole number exponents.**	

Major Content				
Content	**Level 5: Advanced**	**Level 4: Mastery**	**Level 3: Basic**	**Level 2: Approaching Basic**
6.EE.A.4 6.EE.B.5 6.EE.B.6 6.EE.B.7 6.EE.B.8 6.EE.C.9	Identifies parts of algebraic and numerical expressions using mathematical terms **and views one or more parts of an expression as a single entity**.	Identifies parts of algebraic and numerical expressions using mathematical terms.	Identifies parts of algebraic **and** numerical expressions using mathematical terms.	Identifies parts of algebraic or numerical expressions using mathematical terms.
	Identifies equivalent expressions using properties of operations.	**Identifies equivalent expressions using properties of operations.**		
	Uses variables to represent numbers and writes expressions and single-step equations to solve real-world **and** mathematical problems **and understands their solutions.**	Uses variables to represent numbers and writes expressions and single-step equations to solve **real-world or** mathematical problems.	Uses variables to represent numbers and writes expressions (without exponents) and single-step equations to solve mathematical problems.	Uses variables to represent numbers and writes expressions (without exponents) and single-step equations to solve mathematical problems.
	Expresses a relationship between dependent and independent variables and relates tables and graphs to equations.	Relates tables and graphs to equations.	**Relates tables and graphs to equations.**	
	Writes and graphs inequalities to represent a constraint or condition in a real-world or mathematical problem.	Writes and graphs inequalities to represent a constraint or condition in a **real-world or** mathematical problem.	Writes and graphs inequalities to represent a constraint or condition in a mathematical problem.	Writes and graphs inequalities to represent a constraint or condition in a mathematical problem.
	Understands that there are an infinite number of solutions for an inequality.			

Additional & Supporting Content

The student solves problems involving the Additional & Supporting Content for the course with connections to the Standards for Mathematical Practice.

Additional & Supporting Content				
Content	**Level 5: Advanced**	**Level 4: Mastery**	**Level 3: Basic**	**Level 2: Approaching Basic**
Factors and Multiples 6.NS.B.4	Determines greatest common factors and least common multiples.	**Determines** greatest common factors and least common multiples.	Identifies greatest common factors and least common multiples.	Identifies greatest common factors and least common multiples.
	Uses the distributive property to rewrite a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.	**Uses the distributive property to rewrite a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.**		
Solve Area, Surface Area, and Volume Problems 6.G.A.1 6.G.A.2 6.G.A.3 6.G.A.4	Solves real-world and mathematical problems involving area of polygons by composing into rectangles or decomposing into triangles and other shapes.	Solves **real-world and** mathematical problems involving area of polygons by either composing into rectangles or decomposing into triangles and other shapes.	Solves mathematical problems involving area of polygons by **either** composing into rectangles **or decomposing into triangles and other shapes.**	Solves mathematical problems involving area of polygons by composing into rectangles.
	Determines measurements of polygons in the coordinate plane.	Determines measurements of polygons in the coordinate plane.	**Determines measurements of polygons in the coordinate plane.**	
	Identifies and uses nets of three-dimensional figures to find surface area.	**Identifies and** uses nets of three-dimensional figures to find surface area.	**Uses nets of three-dimensional figures to find surface area.**	
	Determines volume of right rectangular prisms with fractional edge lengths by packing them with unit cubes and using formulas.	Determines volume of right rectangular prisms with fractional edge lengths by packing them with unit cubes **and using formulas.**	**Determines volume of right rectangular prisms with fractional edge lengths by packing them with unit cubes.**	
	Uses volume formulas to find unknown measurements.	**Uses volume formulas to find unknown measurements.**		
	Applies concepts of area and volume to solve problems **without** scaffolding.	**Applies concepts of area and volume to solve problems with scaffolding.**		

Additional & Supporting Content				
Content	**Level 5: Advanced**	**Level 4: Mastery**	**Level 3: Basic**	**Level 2: Approaching Basic**
Statistical Variability and Data Distributions 6.SP.A.1 6.SP.A.2 6.SP.A.3 6.SP.B.4 6.SP.B.5	Recognizes a statistical question and understands a set of collected data has a distribution which can be described by its center, spread, and overall shape.	Recognizes a statistical question and understands a set of collected data has a distribution which can be described by its center, spread, and overall shape.	**Recognizes a statistical question and** understands a set of collected data has a distribution which can be described by its center, spread, and overall shape.	Understands a set of collected data has a distribution which can be described by its center, spread, and overall shape.
	Understands the purpose of center **and variability** and the center of a set of data can be summarized with a single number.	Understands the purpose of center and the center of a set of data can be summarized with a single number.	Understands **the purpose of center and** the center of a set of data can be summarized with a single number.	Understands the center of a set of data can be summarized with a single number.
	Displays numerical data in plots on a number line, including dot plots, histograms, and box plots.	Displays numerical data in plots on a number line, including dot plots, histograms, **and box plots**.	Displays numerical data on a number line including dot plots **and histograms**.	Displays numerical data on a number line including dot plots.
	Summarizes numerical data sets in relation to a context, such as reporting the number of observations, describing the nature of the attributes under investigation, and using measures of center and variability.	Summarizes numerical data sets in relation to a context, such as reporting the number of observations, **describing the nature of the attributes under investigation, and using measures of center and variability.**	**Summarizes numerical data sets in relation to a context, such as reporting the number of observations, describing and using measures of center, and using the interquartile range as a measure of variability.**	
	Determines which measures of center and variability are the most appropriate for a set of data.			
Operations with Multi-Digit Numbers 6.NS.B.2 6.NS.B.3	Fluently divide multi-digit numbers using the standard algorithm.	**Fluently** divide multi-digit numbers **using the standard algorithm.**	Divide multi-digit numbers with limited accuracy.	Divide multi-digit numbers with limited accuracy.
	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	**Fluently** add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	Add, subtract, **multiply, and divide** multi-digit decimals **using the standard algorithm for each operation** with limited accuracy.	Add and subtract multi-digit decimals with limited accuracy.

Mathematical Reasoning & Modeling

In connection with course content, the student: expresses course-level appropriate mathematical reasoning by constructing viable arguments and critiquing the reasoning of others; attends to precision when making mathematical statements; solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses); engages in the modeling practice by using mathematics to solve problems arising in everyday scenarios; makes sense of problems and perseveres when solving them; uses appropriate tools strategically; and looks for and makes use of structure.

<table>
<tr><th colspan="5">Type II</th></tr>
<tr><th>Content</th><th>Level 5: Advanced</th><th>Level 4: Mastery</th><th>Level 3: Basic</th><th>Level 2: Approaching Basic</th></tr>
<tr><td></td><td colspan="2">In connection with the content knowledge and skills described in Major Content, the student clearly constructs and communicates a complete</td><td colspan="2">In connection with the content knowledge and skills described in Major Content, the student constructs and communicates a</td></tr>
<tr><td rowspan="11">LEAP.II.6.1
LEAP.II.6.2
LEAP.II.6.3
LEAP.II.6.4
LEAP.II.6.5
LEAP.II.6.6
LEAP.II.6.7
LEAP.II.6.8
LEAP.II.6.9</td><td colspan="4">written response based on properties of operations; and the relationships between addition and subtraction and between multiplication and division</td></tr>
<tr><td colspan="4">response based on concrete referents provided in the prompt or constructed by the student such as: diagrams that are connected to a written (symbolic) method, number line diagrams, or coordinate plane diagrams</td></tr>
<tr><td colspan="4">response to a given equation, multi-step problem, proposition or conjecture</td></tr>
<tr><td colspan="4">Responses may include:</td></tr>
<tr><td>a logical approach based on a conjecture and/or stated assumptions</td><td>a logical approach based on a conjecture and/or stated assumptions</td><td>a logical approach based on a conjecture and/or stated assumptions</td><td>a faulty approach based on a conjecture and/or stated assumptions</td></tr>
<tr><td>a logical and complete progression of steps</td><td>a logical and complete progression of steps</td><td>a logical, but incomplete, progression of steps</td><td>an incomplete or illogical progression of steps</td></tr>
<tr><td>precise calculation</td><td>precise calculation</td><td>minor calculation errors</td><td>major calculation errors</td></tr>
<tr><td>fluent use of grade-level vocabulary, symbols, and labels</td><td>fluent use of grade-level vocabulary, symbols, and labels</td><td>limited use of grade-level vocabulary, symbols, and labels</td><td>limited use of grade-level vocabulary, symbols, and labels</td></tr>
<tr><td>complete justification of a conclusion</td><td>complete justification of a conclusion</td><td>partial justification of a conclusion</td><td>partial justification of a conclusion</td></tr>
<tr><td>generalization of an argument or conclusion</td><td></td><td></td><td></td></tr>
</table>

Type II				
Content	**Level 5: Advanced**	**Level 4: Mastery**	**Level 3: Basic**	**Level 2: Approaching Basic**
	evaluating, interpreting and critiquing the validity **and efficiency** of responses, reasoning, approaches, and conclusions**, using mathematical connections and providing counter-examples where applicable**	evaluating, **interpreting, and critiquing** the validity of **responses, reasoning,** approaches, and conclusions	**evaluating the validity of approaches and conclusions**	
	identifying and describing errors in solutions and presenting correct solutions	identifying and describing errors in solutions **and presenting correct solutions**	**identifying and describing errors in solutions**	
	distinguishing correct and flawed reasoning and correcting flawed reasoning	**identifying and describing flaws in reasoning and presenting correct reasoning**		

Type III				
Content	**Level 5: Advanced**	**Level 4: Mastery**	**Level 3: Basic**	**Level 2: Approaching Basic**
	In connection with the content knowledge, skills, and abilities described in Major Content, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:			
LEAP.III.6.1 LEAP.III.6.2 LEAP.III.6.3	using stated assumptions and making assumptions and approximations to simplify a real-world situation	using stated assumptions **or making assumptions** and approximations to simplify a real-world situation	using stated assumptions and approximations to simplify a real-world situation	using stated assumptions and approximations to simplify a real-world situation
	analyzing and/or creating limitations, **relationships, and interpreting goals** within a model	**creating limitations and goals within a model**		
	analyzing, justifying and defending models which lead to a conclusion	**using models which lead to a conclusion**		
	mapping relationships between quantities by selecting appropriate tools to create models	**mapping relationships** between quantities by **selecting appropriate** tools to create models	**illustrating relationships between quantities** by using provided tools to create models	identifying quantities by using provided tools to create models
	analyzing relationships mathematically between quantities to draw conclusions	analyzing relationships mathematically between quantities to draw conclusions	analyzing relationships mathematically **between quantities** to draw conclusions	analyzing relationships mathematically to draw conclusions
	applying proportional reasoning	applying proportional reasoning	applying proportional reasoning	applying proportional reasoning
	writing/using equations to describe how one quantity of interest depends on another	writing/using equations to describe how one quantity of interest depends on another	**writing**/using equations to describe how one quantity of interest depends on another	using equations to describe how one quantity of interest depends on another
	using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	using reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	using **reasonable** estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity	using unreasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity

Type III				
Content	**Level 5: Advanced**	**Level 4: Mastery**	**Level 3: Basic**	**Level 2: Approaching Basic**
	In connection with the content knowledge, skills, and abilities described in Major Content, the student devises a plan to apply mathematics in solving problems arising in everyday life, society and the workplace by:			
	interpreting mathematical results in an applied context	interpreting mathematical results **in an applied context**	**interpreting mathematical results in a simplified context**	
	determining whether results make sense	determining whether results make sense	**determining whether results make sense**	
	improving a model if it has not served its purpose	**improving** a model if it has not served its purpose	**altering a model if it has not served its purpose**	
	writing a complete, clear, and correct algebraic expression or equation to describe a situation	writing a **complete, clear, and correct** algebraic expression or equation to describe a situation	writing an incomplete algebraic expression or equation to describe a situation	writing an incomplete algebraic expression or equation to describe a situation