

Grade 5

Mathematical Practices

Students will be able to demonstrate the following practices at the cognitive level of this grade:

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.



Operations and Algebraic Thinking

Content	District Code	Essential Skill	Instructional Mastery			
			1	2	3	4
Numeric Expressions Evaluation <i>ILS10 5.OA.1</i>	5.OA.1	Use order of operations including parenthesis, brackets, or braces.	I			M
	5.OA.2	Evaluate expressions using the order of operations (including using parenthesis, brackets, or braces).	I			M
Numeric Expressions Interpretation <i>ILS10 5.OA.2</i>	5.OA.3	Write numerical expressions for given numbers with operation words.	I			M
	5.OA.4	Write operation words to describe a given numerical expression.	I			M
	5.OA.5	Interpret numerical expressions without evaluating them.	I			M
Patterns and Relationships <i>ILS10 5.OA.3</i>	5.OA.6	Generate two numerical patterns using two given rules.				M
	5.OA.7	Form ordered pairs consisting of corresponding terms for the two patterns.				M
	5.OA.8	Graph generated ordered pairs on a coordinate plain.				M
	5.OA.9	Analyze and explain the relationships between corresponding terms in the two numerical patterns.				M
Place Value System <i>ILS10 5.NBT.1</i>	5.NBT.1	Recognize that in a multi-digit number a digit in one place represents 10 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.	M			
	5.NBT.2	Represent powers of ten using whole number exponents.	M			
Place Value System Powers of Ten <i>ILS10 5.NBT.2</i>	5.NBT.3	Fluently translate between powers of ten written as ten raised to a whole number exponent, the expanded form, and standard notation ($10^3 = 10 \times 10 \times 10 = 1,000$).	M			
	5.NBT.4	Explain the patterns in the number of zeros of the product when multiplying a number by powers of ten.	M			
	5.NBT.5	Explain the pattern in the placement of the decimal point when a decimal is multiplied or divided by a power of ten.	M			
Place Value System Writing Decimals <i>ILS10 5.NBT.3</i>	5.NBT.6	Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.	M			
Place Value System Comparing Decimals <i>ILS10 5.NBT.3</i>	5.NBT.7	Use $<$, $=$, and $>$ symbols to record the results of comparisons between decimals.	M			
	5.NBT.8	Compare two decimals to the thousandths based on the place value of each digit.	M			
Place Value System Rounding <i>ILS10 5.NBT.4</i>	5.NBT.9	Use knowledge of base ten and place value to round decimals to any place.	M			
Multi-Digit Whole Number Operations with Decimals to the Hundredths Multiplication <i>ILS10 5.NBT.5</i>	5.NBT.10	Fluently multiply multi-digit whole numbers using the standard algorithm.	M			

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Content	District Code	Essential Skill	Instructional Mastery			
			1	2	3	4
Multi-Digit Whole Number Operations with Decimals to the Hundredths Division <i>ILS10 5.NBT.6</i>	5.NBT.11	Find whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors.	M			
	5.NBT.12	Use strategies based on place value, the properties of operations, and/or the relationship between multiplication and division to solve division problems.	M			
	5.NBT.13	Illustrate and explain division calculations by using equations, rectangular arrays, and/or area models.	M			
Multi-Digit Whole Number Operations with Decimals to the Hundredths All Operations <i>ILS10 5.NBT.7</i>	5.NBT.14	Add, subtract, multiply, and divide decimals to the hundredths using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	M			
	5.NBT.15	Relate the strategy to a written method and explain the reasoning used to solve decimal operation calculations.	M			
Add and Subtract Equivalent Fractions <i>ILS10 5.NF.1</i>	5.NF.1	Generate equivalent fractions to find the like denominator.		M		
	5.NF.2	Solve addition and subtraction problems involving fractions (including mixed numbers) with like and unlike denominators using an equivalent fraction strategy		M		
Add and Subtract Equivalent Fractions Word Problems <i>ILS10 5.NF.2</i>	5.NF.3	Generate equivalent fractions to find like denominators.		M		
	5.NF.4	Solve word problems involving addition and subtraction of fractions with like and unlike denominators referring to the same whole (e.g. by using visual fraction models or equations to represent the problem)		M		
	5.NF.5	Evaluate the reasonableness of an answer using fractional number sense, by comparing it to a benchmark fraction		M		
Multiplication and Division Fractions in Division <i>ILS10 5.NF.3</i>	5.NF.6	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$).	I	M		
	5.NF.7	Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers (e.g. using visual fraction models or equations to represent the problem)	I	M		
	5.NF.8	Interpret the remainder as a fractional part of the problem	I	M		
Multiplication and Division Multiplication <i>ILS10 5.NF.4</i>	5.NF.9	Multiply fractions by whole numbers.		M		
	5.NF.10	Multiply fractions by fractions		M		
	5.NF.11	Interpret the product of a fraction times a whole number as a total number of parts of the whole (for example $\frac{3}{4} \times 3 = \frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{9}{4}$).		M		
	5.NF.12	Determine the sequence of operations that result in the total number of parts of the whole (for example $\frac{3}{4} \times 3 = (3 \times 3)/4 = 9/4$).		M		
	5.NF.13	Interpret the product of a fraction times a fractions as the total number of parts of the whole		M		
Multiplication and Division Rectangular Area <i>ILS10 5.NF.4</i>	5.NF.14	Find area of a rectangle with fractional side lengths using different strategies. (e.g. tiling with unit squares of the appropriate unit fraction side lengths, multiplying side lengths)		M		
	5.NF.15	Represent fraction products as rectangular areas		M		
	5.NF.16	Justify multiplying fractional side lengths to find the area is the same as tiling a rectangle with unit squares of the appropriate unit fraction side lengths		M		
	5.NF.17	Model the area of rectangles with fractional side lengths with unit squares to show the area of rectangles		M		
Multiplication and Division Scaling/Resizing <i>ILS10 5.NF.5</i>	5.NF.18	Demonstrate that scaling (resizing) involves multiplication.		M		
	5.NF.19	Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. (for example, a 2x3 rectangle would have an area twice the length of three).		M		
	5.NF.20	Explain that multiplying whole numbers and fractions result in products greater than or less than one depending upon the factors.		M		
	5.NF.21	Draw a conclusion that multiplying a number by a fraction greater than one will result in a product greater than the given number.		M		
	5.NF.22	Draw a conclusion that when you multiply a fraction by one (which can be written as various fractions, ex 2/2, 3/3, etc.) the resulting fraction is equivalent.		M		
	5.NF.23	Draw a conclusion that when you multiply a number by a fraction less than one, the product will be smaller than the given number		M		
Multiplication and Division of Fractions Word Problems <i>ILS10 5.NF.6</i>	5.NF.24	Represent word problems involving multiplication of fractions and mixed numbers. (e.g. by using visual fraction models or equations to represent the problem.)		M		
	5.NF.25	Solve real world problems involving multiplication of fractions and mixed numbers.		M		

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Multiplication and Division Relationship Between Multiplication and Division <i>ILS10 5.NF.7</i>	5.NF.26	Demonstrate the relationship between multiplication and division.		I	M	
Multiplication and Division Fraction by Whole Number <i>ILS10 5.NF.7</i>	5.NF.27	Interpret division of a unit fraction by a whole number and justify your answer using the relationship between multiplication and division, and by creating story problems, using visual models, and relationship to multiplication, etc.		I	M	
Multiplication and Division Whole Number by Fraction <i>ILS10 5.NF.7</i>	5.NF.28	Interpret division of a whole number by a unit fraction and justify your answer using the relationship between multiplication and division, and by representing the quotient with a visual fraction model.		I	M	
Multiplication and Division Real World Problems <i>ILS10 5.NF.7</i>	5.NF.29	Solve real world problems involving division of unit fractions by whole numbers other than zero and division of whole numbers by unit fractions using strategies such as visual fractions models and equations.		I	M	
Convert Measurement Units <i>ILS10 5.MD.1</i>	5.MD.1	Recognize units of measurement within the same system.			M	
	5.MD.2	Divide and multiply two change units			M	
	5.MD.3	Convert units of measurement within the same system.			M	
	5.MD.4	Solve multi-step, real world problems that involve converting units.			M	
Represent and Interpret Data <i>ILS10 5.MD.2</i>	5.MD.5	Identify benchmark fractions (1/2, 1/4, 1/8).		M		
	5.MD.6	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8).			M	
	5.MD.7	Solve problems involving information presented in line plots which use fractions of a unit (1/2, 1/4, 1/8) by adding, subtracting, multiplying, and dividing fractions.			M	
Geometric Measurement Recognizing Volume <i>ILS10 5.MD.3</i> <i>ILS10 5.MD.4</i> <i>ILS10 5.MD.5</i>	5.MD.8	Recognize that volume is the measurement of the space inside a solid, three-dimensional figure.			M	
	5.MD.9	Recognize a unit cube has one unit cube of volume and is used to measure volume of three-dimensional shapes.			M	
	5.MD.10	Recognize any solid figure packed without gaps or overlaps and filled with (n) "unit cubes" indicates the total cubic units or volume.			M	
	5.MD.11	Measure volume by counting unit cubes, cubic cm, cubic in., cubic ft., and improvised units.	M			
	5.MD.12	Identify a right rectangular prism.			M	
	5.MD.13	Multiply the three dimensions in any order to calculate volume (commutative and associative properties).			M	
	5.MD.14	Develop volume formula for a rectangle prism by comparing volume when filled with cubes to volume by multiplying the height by the area of the base, or when multiplying the edge lengths (LxWxH).			M	
	5.MD.15	Find the volume of a right rectangular prism with whole number side lengths by packing it with unit cubes.			M	
	5.MD.16	Explain that "B" is the area of the base.			M	
	5.MD.17	Apply the following formulas to right rectangular prisms having whole number edge lengths in the context of real world mathematical problems: Volume = length x width x height; Volume = area of base x height			M	
5.MD.18	Recognize volume as additive.			M		
5.MD.19	Solve real world problems by decomposing a solid figure into two non-overlapping right rectangular prisms and adding their volumes.			M		
Graph Points on the Coordinate Plane Identifying <i>ILS10 5.G.1</i> <i>ILS10 5.G.2</i>	5.G.1	Define the coordinate system.				M
	5.G.2	Identify the x- and y-axis.				M
	5.G.3	Locate the origin on the coordinate system.				M
	5.G.4	Identify the coordinates of a point on a coordinate system.				M
	5.G.5	Recognize and describe the connection between the ordered pair and the x- and y-axis (from the origin).				M

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	5.G.6	Graph points in the first quadrant.				M
	5.G.7	Represent real-world and mathematical problems by graphing points in the first quadrant.				M
	5.G.8	Interpret coordinate values of points in real-world contexts and mathematical problems.				M
Classifying Two-Dimensional Figures <i>ILS10 5.G.3</i> <i>ILS10 5.G.4</i>	5.G.9	Recognize that some two-dimensional shapes can be classified into more than one category based on their attributes.			I	M
	5.G.10	Recognize if a two-dimensional shape is classified into a category, that belongs to a subcategories of the category.			I	M
	5.G.11	Recognize the hierarchy of two-dimensional shapes based on their attributes.			I	M
	5.G.12	Analyze properties of two-dimensional figures in order to place into a hierarchy.			I	M
	5.G.13	Classify two-dimensional figures into categories and/or sub-categories based on their attributes.			I	M

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