

**DIOCESE OF DES MOINES
MATHEMATICS
Grade-Level Expectations
Grades K-1-2**

STANDARD 1: The student will understand and apply properties of number sense and process of computation.

The student will/can....

Benchmark

K-2.Math.S1.B1: Explain the symbolic, concrete and pictorial representations of numbers, such as written numerals, objects in sets, number lines.

- Grade K: Identify numbers 0-31.
Counts and creates number of objects in sets up to 20.
Order numbers to 20.
Write numbers sequentially 0-9.
- Grade 1: Write numbers to 100.
Creates and count sets to 100.
Order numbers through 100.
- Grade 2: Identify numbers to 1,000.
Order numbers through 1,000.

Benchmark

K-2.Math.S1.B2: Add and subtract whole numbers and demonstrate understanding of the inverse relationship between addition and subtraction.

- Grade K: Demonstrate and explain that addition and subtraction is the relationship to whole.
- Grade 1: Use fact families to demonstrate and explain the understanding of inverse relationship between addition and subtraction to 12.
- Grade 2: Use fact families to demonstrate the understanding of inverse relationship between addition and subtraction to 18.

Benchmark

K-2.Math.S1.B3: Mentally add and subtract whole numbers.

- Grade K: Mentally add and subtract one.
- Grade 1: Mentally add and subtract whole numbers to 12.
- Grade 2: Mentally add and subtract whole numbers to 18.

Benchmark

K-2.Math.S1.B4: Count whole numbers, such as both cardinal and ordinal numbers and skip count.

- Grade K: Count cardinal numbers by ones to 31.
Skip count by 10's to 100.
Count ordinal numbers to 5th position.
- Grade 1: Write cardinal numbers to 100. Skip count by 5's to 100.
Count ordinal numbers to 10th position.
- Grade 2: Write cardinal numbers to from 100 to 200. Skip count by 2's to 50.
Count ordinal numbers to 20th position.

Benchmark

K-2.Math.S1.B5: Express basic whole number relationships.

- Grade K: Demonstrate knowledge of *greater than*, *less than*, and *equal to* to 20.
- Grade 1: Demonstrate knowledge of *greater than*, *less than*, and *equal to* to 100.
- Grade 2: Demonstrate knowledge of *greater than*, *less than*, and *equal to* to 1000.

Benchmark

K-2.Math.S1.B6: Explain and identify the concept of a whole and its subdivisions into equal parts.

- Grade K: Explain and identify equal parts and halves.
- Grade 1: Explain and identify fractions for halves, thirds, and quarters.
- Grade 2: Explain and identify and write fractions with a denominator of 10 or less.

**DIOCESE OF DES MOINES
MATHEMATICS
Grade-Level Expectations
Grades K-1-2**

STANDARD 2: The student will understand and apply mathematical concepts and procedures of mathematics.

The student will/can....

Benchmark

K-2.Math.S2.B1: Use place value (1, 10's, 100's).

Grade K: Use ones and tens place to 20.

Grade 1: Identify and model ones and tens place up to 100.

Grade 2: Identify and model ones, tens, and hundreds place up to 1,000.

Benchmark

K-2.Math.S2.B2: Utilize appropriate strategies and solve basic computation in addition and subtraction.

Grade K: Use manipulatives to solve basic computation in addition and subtraction.

Grade 1: Use a variety of strategies to solve basic addition and subtraction through 12.

Grade 2: Use a variety of strategies to solve basic addition and subtraction with: one and two digit numbers with and without regrouping.

Benchmark

K-2.Math.S2.B3: Identify and apply basic properties of simple geometric shapes.

Grade K: Identify circle, square, triangle, trapezoid, hexagon and rectangle and count sides and corners.

Identify the solid shapes of sphere, cube, and cylinder.

Grade 1: Identify rhombus, octagon and pentagon and count sides and corners, Identify shapes with symmetry.

Name solid shapes and identify basic properties.

Grade 2: Identify and compare plane shapes, solid shapes, congruent shapes and shapes with symmetry.

Benchmark

K-2.Math.S2.B4: Use basic standard and non-standard units to measure time, length, weight, and capacity.

Grade K: Tell time to the hour with analog and digital clocks.

Measure length with non-standard units.

Compare weights and capacity using standard units.

Grade 1: Tell time to the hour and half hour with analog and digital clocks.

Measure length with non-standard and standard units.

Measure weight and capacity with non-standard and standard units.

Grade 2: Tell time to 5 minute intervals with analog and digital clocks.

Calculate elapsed time in hours.

Measure length, weight, and capacity in standard units.

Benchmark

K-2.Math.S2.B5: Identify and count money.

- Grade K: Identify penny, nickel, and dime and know value.
- Grade 1: Identify and know value of penny, nickel, dime, and quarter.
Count coins up to 50¢.
- Grade 2: Count coins to one dollar.

Benchmark

K-2.Math.S2.B6: Gather and classify data to construct a graph or chart to show understanding that observations about objects or events can be organized and displayed.

- Grade K: Sort and classify objects and construct a simple graph in a group.
- Grade 1: Sort and classify objects and construct a simple graph independently.
- Grade 2: Gather and classify data to construct a graph or chart to show understanding that observations about objects or events can be organized and displayed.

Benchmark

K-2.Math.S2.B7: Use common language of mathematics.

- Grade K: Use common language as appropriate to Kindergarten skills.
- Grade 1: Use common language as appropriate to Grade 1 skills.
- Grade 2: Use common language as appropriate to Grade 2 skills.

Benchmark

K-2.Math.S2.B8: Recognize and communicate the use of mathematical operations in real-life situations.

- Grade K: Recognize and communicate the use of mathematical operations in real-life situations with teacher guidance.
- Grade 1: Recognize and communicate the use of mathematical operations in real-life situations with teacher prompting.
- Grade 2: Recognize and communicate the use of mathematical operations in real-life situations.

**DIOCESE OF DES MOINES
MATHEMATICS
Grade-Level Expectations
Grades K-1-2**

STANDARD 3: The student will use a variety of strategies and mathematical reasoning in the problem solving process.

The student will/can....

Benchmark

K-2.Math.S3.B1: Use appropriate problem-solving strategies (find patterns; use manipulatives; create pictures, charts, graphs, or tables; or use appropriate operations) to solve story problems.

Grade K: Use appropriate problem-solving strategies to solve story problems at grade level.

Grade 1: Use appropriate problem-solving strategies to solve story problems at grade level.

Grade 2: Use appropriate problem-solving strategies to solve story problems at grade level.

Benchmark

K-2.Math.S3.B2: Recognize and extend patterns.

Grade K: Use manipulatives to identify, extend and create a variety of patterns beyond AB.

Grade 1: Identify odd and even numbers.

Identify number patterns (5's and 10's) using a number line and a chart to 100.

Grade 2: Extend number pattern by 2's, 3's.

Recognize and extend growing patterns.

Benchmark

K-2.Math.S3.B3: Use logical reasoning and critical thinking to explain the process used to solve a problem appropriate to grade level.

Grade K: Communicate (ie words, pictures, physical objects, etc) the process used to solve a problem

Grade 1: Communicate in more than one way the process used to solve a problem.

Grade 2: Use pictures, numbers, and words to explain the process used to solve a problem.

Benchmark

K-2.Math.S3.B4: Apply common strategies used with estimation.

Grade K: Recognize that estimation is a best guess.

Grade 1: Estimate using comparison and guess and check

Grade 2: Use rounding and/or comparing to estimate.

Benchmark

K-2.Math.S3.B5: Assess the reasonableness of an answer appropriate to grade level.

Grade K: Estimate to determine if the answer makes sense with teacher guidance.

Grade 1: Estimate to determine if the answer makes sense with teacher assistance.

Grade 2: Estimate to determine if the answer makes sense with teacher prompting.

DIOCESE OF DES MOINES
MATHEMATICS
Grade-Level Expectations
Grades 3-4-5

STANDARD 1: The student will understand and apply properties of number sense and process of computation.

The student will/can....

Benchmark

3-5.Math.S1.B1: Explain relationships among fractions, decimals, mixed and whole numbers; and identify, order and compare numbers.

- Grade 3: Identify, order, and compare whole numbers to the hundred thousands.
 Identify and represent fractions.
- Grade 4: Identify, order, and compare whole numbers to the hundred millions.
 Determine relationships between fractions, decimals, mixed and whole numbers.
- Grade 5: Explain and apply relationships among simple fractions, decimals, and whole numbers.

Benchmark

3-5.Math.S.1.B2: Use specific strategies to estimate computation and to check for reasonableness of results.

- Grade 3: Apply strategies of front-end estimation and rounding to estimate computation to 10, 100, 1000, and check for reasonableness of results.
- Grade 4: Apply strategies of front-end estimation, rounding, and compatible numbers to estimate computation to the nearest million and check for reasonableness of results.
- Grade 5: Apply strategies of front-end estimation, rounding, and compatible numbers to estimate computation to nearest billion and check for reasonableness of results.

Benchmark

3-5.Math.S1.B3: Add, subtract, multiply, and divide decimals and whole numbers.

- Grade 3: Add with regrouping to the thousands.
 Subtract with regrouping to the thousands.
 Multiply basic facts 0-10s.
 Apply knowledge of basic division as an inverse of multiplication.
- Grade 4: Add and subtract whole numbers with multiple steps.
 Multiply whole numbers with multiple steps.
 Divide by 1 digit divisors.
- Grade 5: Add and subtract decimals and whole numbers.
 Multiply and divide whole numbers.

Benchmark

3-5.Math.S1.B4: Add and subtract simple fractions and mixed numbers.

- Grade 3: Not assessed at this level.
- Grade 4: Add and subtract simple fractions and mixed numbers, without regrouping, with a common denominator.
- Grade 5: Add and subtract fractions with unlike denominators, without regrouping.
 Apply knowledge of basic simplification of fractions.

Benchmark

3-5.Math.S1.B5: Use mental computation to add, subtract, multiply, and divide whole numbers.

Grade 3: Use basic facts to add and subtract mentally.

Grade 4: Use basic facts to multiply and divide mentally.

Grade 5: Use mental computation to add, subtract, multiply, and divide whole numbers.

Benchmark

3-5.Math.S1.B6: Explain the properties of and relationships among basic operations.

Grade 3: Explain the properties and relationships of basic operations using fact families.

Grade 4: Identify and give examples of commutative, zero, and one properties.

Apply knowledge of the associative property.

Grade 5: Identify and give examples of distributive property in mental math.

**DIOCESE OF DES MOINES
MATHEMATICS
Grade-Level Expectations
Grades 3-4-5**

STANDARD 2: The student will understand and apply mathematical concepts and procedures.

The student will/can....

Benchmark

- 3-5.Math.S2.B1: Use place value to read, write, and order numbers.**
 Grade 3: Use place value to read, write, and order to the hundred thousands.
 Grade 4: Use place value to read, write, and order to the hundred millions.
 Grade 5: Use place value to read, write, and order to the hundred billions.

Benchmark

- 3-5.Math.S2.B2: Apply the processes of addition, subtraction, multiplication, and division.**
 Grade 3: Apply the process of addition and subtraction with regrouping and basic multiplication and division.
 Grade 4: Apply the processes of multiplication using double digits and division using single digit divisors.
 Grade 5: Apply the processes of multiplication of triple digits or higher numbers and division using double digit divisors.

Benchmark

- 3-5.Math.S2.B3: Apply the basic properties of geometry.**
 Grade 3: Identify basic geometric figures including plane and solid figures.
 Grade 4: Identify basic properties of lines, angles, and polygons.
 Grade 5: Apply the basic properties of geometry through the measurement and drawing of geometric figures.

Benchmark

- 3-5.Math.S2.B4: Measure and/or calculate perimeter and area using customary and metric units.**
 Grade 3: Measure perimeter.
 Grade 4: Measure and calculate perimeter.
 Grade 5: Measure and calculate perimeter and area.

Benchmark

- 3-5.Math.S2.B5: Apply measurements of time.**
 Grade 3: Determine time after the hour to the nearest minute.
 Calculate elapsed time to the half and quarter hours.
 Grade 4: Calculate elapsed time to the five minute.
 Grade 5: Calculate elapsed time to the nearest minute before and after the hour.

Benchmark**3-5.Math.S2.B6:****Count money.**

Grade 3: Count coins too \$1.00 and bills to \$100.

Grade 4: Count coins and bills needed to make change back to \$5 with the fewest number of coins.

Grade 5: N/A

Benchmark**3-5.Math.S2.B7:****Measure length, weight, capacity, and temperature.**Grade 3: Measure length to the nearest inch, $\frac{1}{2}$ inch and cm.

Identify units of capacity and weight.

Read thermometer to the nearest 10°F .Grade 4: Measure length to the nearest $\frac{1}{4}$ inch, and mm.

Apply knowledge of capacity and weight.

Read thermometer to the nearest 5°F .

Grade 5: Determine exact measurement.

Convert customary and metric measurements with a prompt.

Benchmark**3-5.Math.S2.B8:****Gather data and construct tables, graphs, and diagrams.**

Grade 3: Gather, construct, and interpret a simple bar graph with appropriate labels.

Grade 4: Gather data and construct tables, pictographs, single-line-bar graphs with appropriate labels.

Grade 5: Gather data and construct circle graphs, stem and leaf plots, tree diagrams, double-bar graphs, and double-line graphs.

Benchmark**3-5.Math.S2.B9:****Use common language of mathematics.**

Grade 3: Use basic mathematical terms including basic operations.

Grade 4: Use basic mathematical terms including basic operations and fractions independently in written or oral responses.

Grade 5: Use common language of mathematics including basic operations, fractions, algebra and geometry to explain strategies used to arrive at solution.

DIOCESE OF DES MOINES
MATHEMATICS
Grade-Level Expectations
Grades 3-4-5

STANDARD 3: The student will use a variety of strategies and mathematical reasoning in the problem-solving process.

The student will/can....

Benchmark

3-5.Math.S3.B1: Use logical reasoning and critical thinking to explain the processes used to solve a problem.

- Grade 3: Identify a process and use steps needed for problem solving.
- Grade 4: Explain the process using words, pictures, and numbers to solve a problem.
- Grade 5: Explain the processes using words, pictures, and numbers to solve a problem.

Benchmark

3-5.Math.S3.B2: Restate and clarify a problem choosing relevant information.

- Grade 3: Identify relevant information to solve problems with assistance.
- Grade 4: Recognize relevant information in problems with too much or too little data.
- Grade 5: Restate and clarify a problem choosing relevant information.

Benchmark

3-5.Math.S3.B3: Use appropriate problem-solving strategies (find a pattern, draw a picture, guess and check, make a model, uses manipulative, make a table, chart or graph) to solve mathematical problems using real-world situations.

- Grade 3: Use manipulatives, patterns, or tables and charts, to solve addition and subtraction problems with assistance.
- Grade 4: Find a pattern, make a picture or model, or use manipulatives to solve addition, subtraction, multiplication, and division problems.
- Grade 5: Use appropriate problem-solving strategies to solve multi-step addition, subtraction, multiplication, and division problems.

Benchmark

3-5.Math.S3.B4: Identify and use appropriate strategies to estimate.

- Grade 3: Identify and use rounding and front-end estimation.
- Grade 4: Identify and use rounding, front-end estimation, and compatible numbers.
- Grade 5: Identify and use appropriate strategies to estimate.

Benchmark

3-5.Math.S3.B5: Read and interpret complex bar graphs, circle graphs and line graphs.

- Grade 3: Read and interpret simple bar graphs.
- Grade 4: Read and interpret single-bar graphs, single-line graphs, and pictographs.
- Grade 5: Read and interpret double-bar, double-line, and circle graphs.

**DIOCESE OF DES MOINES
MATHEMATICS
Expectations
Grades 6-7-8**

STANDARD 1: The student will understand and apply properties of number sense and process of computation.

The student will/can....

Benchmark

6-8.Math.S1.B1: Use strategies to estimate, check for reasonableness, and apply to the real-world.

Grade 6: Use general strategies to estimate computation.

Grade 7: Choose an appropriate strategy to estimate computation and to check for reasonableness of results.

Grade 8: Use strategies to estimate, to check for reasonableness, and apply to the real-world.

Benchmark

6-8.Math.S1.B2: Add, subtract, multiply and divide real numbers without a calculator.

Grade 6: Subtract decimals.

 Add and subtract fractions.

Grade 7: Multiply and divide decimals and fractions.

Grade 8: Add, subtract, multiply, and divide real numbers.

Benchmark

6-8.Math.S1.B3: Demonstrate and connect the concepts of ratios (fractions, probability and odds), proportions, decimals, and percents.

Grade 6: Show and explain ratios, equivalent ratios, and percents.

Grade 7: Show and explain relationships of ratios, decimals, and percents.

Grade 8: Demonstrate and connect the concepts of ratios (fractions, probability and odds), proportions, decimals and percents.

Benchmark

6-8.Math.S1.B4: Mentally add, subtract, multiply decimals, simple fractions, and integers.

Grade 6: Mentally add and subtract whole numbers and simple fractions.

Grade 7: Mentally add and subtract simple decimals.

Grade 8: Mentally add, subtract, and multiply decimals, simple fractions, and integers

Benchmark

6-8.Math.S1.B5: Utilize order of operations to simplify numeric expressions.

Grade 6: Evaluate expressions using addition, subtraction, multiplication, and division by order of operations.

Grade 7: Evaluate numeric expressions including exponents.

Grade 8: Evaluate numeric expressions utilizing order of operations including grouping symbols.

Benchmark

6-8.Math.S1.B6: Identify and utilize number concepts and number theory.

Grade 6: Identify number concepts and number theory.

Grade 7: Connect number concepts and number theory.

Grade 8: Apply number concepts and number theory.

**DIOCESE OF DES MOINES
MATHEMATICS
Expectations
Grades 6-7-8**

STANDARD 2: The student will understand and apply mathematical concepts and procedures.

The student will/can....

Benchmark

6-8.Math.S2.B1: Express and compare numbers in scientific notation.

- Grade 6: Write numbers in exponential form.
- Grade 7: Express and compare numbers in scientific notation with positive exponents.
- Grade 8: Express and compare numbers in scientific notation with positive and negative exponents.

Benchmark

6-8.Math.S2.B2: Identify and evaluate algebraic expressions, equations, and inequalities.

- Grade 6: Translate one operation expressions from word to number form (and vice versa) and solve one-step equations.
- Grade 7: Translate two operation expressions from word to number form (and vice versa) and solve two-step equations.
- Grade 8: Translate, identify and evaluate algebraic expressions, equations, and inequalities with up to three steps.

Benchmark

6-8.Math.S2.B3: Utilize basic properties of geometry to solve problems.

- Grade 6: Connect geometric symbols and vocabulary to basic 2-D geometric figures and use formulas to calculate area, circumference, and perimeter.
- Grade 7: Calculate the surface area and volume of basic 3-D figures, with correct labels.
- Grade 8: State and use the Pythagorean Theorem.

Benchmark

6-8.Math.S2.B4: Demonstrate an understanding of geometric angles.

- Grade 6: Identify and define basic angles and polygons.
Draw and measure basic angles.
- Grade 7: Classify angles in a complex geometric drawing.
Name corresponding parts on congruent polygons.
- Grade 8: Calculate the total angle measure of a polygon and the single angle measure of a regular polygon.

Benchmark

- 6-8.Math.S2.B5: Apply basic units of measurements.**
 Grade 6: Estimate and measure in customary and metric units.
 Grade 7: Identify and convert within the customary or metric units system.
 Grade 8: Apply basic units of measurement to real-world problems.

Benchmark

- 6-8.Math.S2.B6: Collect, represent, interpret, and analyze data.**
 Grade 6: Collect and display data in tables and graphs.
 Grade 7: Interpret data in tables and graphs.
 Grade 8: Collect, represent, interpret, and analyze data.

Benchmark

- 6-8.Math.S2.B7: Demonstrate understanding of basic characteristics of measures of central tendency, frequency and distributions.**
 Grade 6: Know the basic characteristics of the measures of central tendency, frequency, and distribution.
 Grade 7: Calculate the measures of central tendency, create frequency and distribution tables.
 Grade 8: Demonstrate understanding of basic characteristics of the measures of central tendency, frequency, and distribution.

Benchmark

- 6-8.Math.S2.B8: Use the properties of addition and multiplication to evaluate expressions and equations.**
 Grade 6: Identify the properties of addition and multiplication used to evaluate expressions.
 Grade 7: Use the properties of addition and multiplication to evaluate expressions.
 Grade 8: Use the properties of addition and multiplication to evaluate expressions and equations. Identify the distributive property.

**DIOCESE OF DES MOINES
MATHEMATICS
Expectations
Grades 6-7-8**

STANDARD 3: The student will use a variety of strategies and mathematical reasoning in the problem-solving process.

The student will/can....

Benchmark

6-8.Math.S3.B1: Apply problem-solving strategies, to solve real-world problems numbers.

Grade 6: Solve a problem using the given strategy.

Grade 7: Choose and use a problem-solving strategy to solve a problem.

Grade 8: Analyze the problem-solving strategies, choose how to solve the problem, and decide if the answer and strategy are reasonable.

Benchmark

6-8.Math.S3.B2: Communicate in words, pictures and numbers the mathematical reasoning used to solve a problem.

Grade 6: Communicate in words, pictures, and numbers, the mathematical reasoning used to solve problems at grade level.

Grade 7: Communicate in words, pictures, and numbers, the mathematical reasoning used to solve problems at grade level.

Grade 8: Communicate in words, pictures, and numbers, the mathematical reasoning used to solve problems at grade level.