Numbers and Operations

Benchmark A: Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

Benchmark B: Understand the meaning of operations and how they relate to one another.

Benchmark C: Compute fluently and make reasonable estimates.

The teacher will:

- Provide practice to foster mastery, to help students learn to see patterns, relationships, and find shortcuts.
- Provide practice to help students become fluent with number facts and computation.
- Use flash cards.
- Use memory games.

- Teach the language, symbols and vocabulary of estimation.
- Use real-life examples for relevance.
- Demonstrate how solutions are derived.
- Demonstrate how to check solutions for reasonableness and accuracy.
- Use graphic organizers to demonstrate relationships among numbers and number systems.
- Use pattern blocks.
- Use money to simulate real life.
- Use number lines (visual aids).
- Embed drill and practice re number systems into daily instruction.
- Provide computerized programs for practice.
- Ask questions that require the application of skills taught/learned.
    - Teacher demonstrates solutions.
    - Student demonstrates solutions.
- Provide student with self testing quizzes.
- Have students explore a real life mathematical problem in depth.
    - Have students express their mathematical thinking through talking, drawing and writing.
- Provide practice to help students become fluent with number facts and computation.
- Model the language, symbols and vocabulary of number systems within the context of the daily lesson.
- Use visualizations for fractions.
- Attach drill and practice to a game.
- Model for students application of math concepts and problem solving strategies through independent math projects.

- Teach math through integrated math projects connected to interdisciplinary learning.

- Model efficient problem-solving techniques.
- Model how to analyze and make sense of errors
- Provide opportunities for students to show the thinking behind their answers through numbers, words, graphs, and diagrams.

Algebra

Benchmark A: Understand patterns, relations, and functions.

Benchmark B: Represent and analyze mathematical situations and structures using algebraic symbols.

Benchmark C: Use mathematical models to represent and understand.

Benchmark D: Analyze changes in various contexts.

The teacher will:

- Teach the language, symbols and vocabulary of patterns, relations, and functions within context of daily, hands-on instructional activities.
- Use real-life examples for relevance.
- Demonstrate how solutions are derived.
- Demonstrate how to check solutions for reasonableness and accuracy.
- Use graphic organizers to demonstrate patterns, number relations and functions.
- Introduce students to algebraic concepts by making links to the learner's experiences.
- Pay attention to instructional pace.
- Vary teaching strategies to accommodate students' learning styles.
- Use number lines (visual aids).
- Provide computerized programs for practice.
- Ask questions that require the application of skills taught/learned.
    - Teacher demonstrates solutions.
    - Student demonstrates solutions.
- Provide student with self testing quizzes.
- Have students explore a real life mathematical problem in depth.
    - Have students express their mathematical thinking through talking, drawing and writing.
- Provide opportunities for students to apply concepts to real-world problems.
- Provide assignments focused on open-ended problems, investigations, and projects.
- Model comprehension strategies to improve understanding and to build a common language for talking about math.
- Foster mathematical discourse by asking open-ended questions.

- Teach math through integrated math projects connected to interdisciplinary learning.

- Model efficient problem-solving techniques.
- Demonstrate how to analyze and make sense of errors.
- Expect students to show the thinking behind their answers through numbers, words, graphs, and diagrams.
- Provide students opportunities to pose as well as solve mathematical problems.
- Model critical thinking through rich mathematical discourse.

Geometry

Benchmark A: Analyze characteristics and properties of two and three dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Benchmark B: Specify locations and describe spatial relationships using coordinate geometry and other representational systems.

Benchmark C: Apply transformations and use symmetry to analyze mathematical situations.

Benchmark D: Use visualization, spatial reasoning, and geometric modeling to solve problems.

The teacher will:

- Teach the language, symbols and vocabulary of geometric shapes, spatial relationships, and symmetry.
- Use real-life examples for relevance.
- Demonstrate how solutions are derived.
- Demonstrate how to check solutions for reasonableness and accuracy.
- Use graphic organizers to demonstrate geometrical relationships.
- Use two and three dimensional models.
- Use number lines (visual aids).
- Provide computerized programs for practice.
- Ask questions that require the application of skills taught/learned.
    - Teacher demonstrates solutions.
    - Student demonstrates solutions.
- Provide student with self testing quizzes.
- Have students explore a real life mathematical problem in depth.
    - Have students express their mathematical thinking through talking, drawing and writing.

- Focus instruction on authentic application.

- Provide opportunities for students to work on open-ended problems, investigations, and projects.
- Model comprehension strategies to improve understanding and to build a common language for talking about math.
- Model mathematical discourse by asking open-ended questions.
- Model aloud the vocabulary of the discipline within the context of daily instruction.
- Present concepts through integrated math projects connected to interdisciplinary learning.

- Demonstrate aloud efficient problem-solving techniques.
- Model how to analyze and make sense of errors.
- Provide opportunities for students to show the thinking behind their answers through numbers, words, graphs, and diagrams.
- Expect students to pose as well as solve mathematical problems.
- Model critical thinking through rich mathematical discourse.

Measurement

Benchmark A: Understand measurable attributes of objects and units, systems, and process of measurement.

Benchmark B: Apply appropriate techniques, tools, and formulas to determine measurements.

The teacher will:

- Teach the language, symbols and vocabulary of measurement units and systems.

Within context of daily, hands-on instructional activities:

- Use real-life examples for relevance.
- Demonstrate how solutions are derived.
- Demonstrate how to check solutions for reasonableness and accuracy.
- Use graphic organizers to demonstrate measurement units and systems.
- Introduce students to concepts by making links to the learners' experiences.
- Pay attention to instructional pace.
- Vary teaching strategies to accommodate students' learning styles.
- Use number lines (visual aids).
- Provide computerized programs for practice.
- Ask questions that require the application of skills taught/learned.
    - Teacher demonstrates solutions.
    - Student demonstrates solutions.
- Provide student with self testing quizzes.

- Have students explore a real life mathematical problem in depth.
    - Have students express their mathematical thinking through talking, drawing and writing.

- Provide opportunities for students to apply concepts to real-world problems.
- Provide assignments focused on open-ended problems, investigations, and projects.
- Model comprehension strategies to improve understanding and to build a common language for talking about math.
- Foster mathematical discourse by asking open-ended questions.
- Teach math through integrated math projects connected to interdisciplinary learning.

- Model efficient problem-solving techniques.
- Demonstrate how to analyze and make sense of errors.
- Expect students to show the thinking behind their answers through numbers, words, graphs, and diagrams.
- Provide students opportunities to pose as well as solve mathematical problems.
- Model critical thinking through rich mathematical discourse.

Within context of daily, hands-on instructional activities.

- Use real-life examples for relevance.
- Demonstrate how solutions are derived.
- Demonstrate how to check solutions for reasonableness and accuracy.
- Use graphic organizers to demonstrate measurement units and systems.
- Introduce students to concepts by making links to the learners' experiences.
- Pay attention to instructional pace.
- Vary teaching strategies to accommodate students' learning styles.
- Use number lines (visual aids).
- Provide computerized programs for practice.
- Ask questions that require the application of skills taught/learned.
    - Teacher demonstrates solutions.
    - Student demonstrates solutions.
- Provide student with self testing quizzes.
- Have students explore a real life mathematical problem in depth.
    - Have students express their mathematical thinking through talking, drawing and writing.

- Provide opportunities for students to apply concepts to real-world problems.
- Provide assignments focused on open-ended problems, investigations, and projects.

- Model comprehension strategies to improve understanding and to build a common language for talking about math.
- Foster mathematical discourse by asking open-ended questions.
- Teach math through integrated math projects connected to interdisciplinary learning.

- Model efficient problem-solving techniques.
- Demonstrate how to analyze and make sense of errors.
- Expect students to show the thinking behind their answers through numbers, words, graphs, and diagrams.
- Provide students opportunities to pose as well as solve mathematical problems.
- Model critical thinking through rich mathematical discourse.

Data Analysis and Probability

Benchmark A: Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

Benchmark B: Select and use appropriate statistical methods to analyze data.

Benchmark C: Develop and evaluate inferences and predictions that are based on data.

Benchmark D: Understand and apply basic concepts of probability

The teacher will:

- Teach the language, symbols and vocabulary of statistical methods.
- Use real-life examples for relevance.
- Demonstrate how solutions are derived.
- Demonstrate how to check solutions for reasonableness and accuracy.
- Use graphic organizers to demonstrate statistical methods and predictions.
- Use dice (manipulatives).
- Use number lines (visual aids).
- Provide computerized programs for practice.
- Ask questions that require the application of skills taught/learned.
    - Teacher demonstrates solutions.
    - Student demonstrates solutions.
- Provide student with self testing quizzes.
- Have students explore a real life mathematical problem in depth.
    - Have students express their mathematical thinking through talking, drawing and writing.

- Focus on authentic application.
- Provide students opportunities to engage in open-ended problems, investigations, and projects.

- Model comprehension strategies to improve understanding and to build a common language for talking about math.
- Foster mathematical discourse by asking open-ended questions.
- Model aloud the vocabulary of the discipline within the context of hands-on activities.
- Teach math through integrated math projects connected to interdisciplinary learning.

- Model efficient problem-solving techniques.
- Provide opportunities for students to analyze and make sense of errors.
- Expect students to show the thinking behind their answers through numbers, words, graphs, and diagrams.
- Expect students to pose as well as solve mathematical problems.
- Promote critical thinking through rich mathematical discourse.