

MP1-4-Math Fluency with Math Talks

Content Area: **Math**
Course(s): **Math 4**
Time Period: **MP1-4**
Length: **Entire Year**
Status: **Published**

Essential Questions

- How can strategies be used to increase fluency?

Big Ideas

- **Fluency Strategies:** The program includes Math Talks, and Number Strings, and Solve and Share problems which provide students with the opportunity to discuss numbers while building strong mathematical reasoning skills. The program engages students in mathematical discussions that involve the use of modeling and numerical strategies. Students will cover the following strategies: splitting, use a friendly number, get to a friendly number, give and take, over and adjust, find the distance, keep the same distance, double, use partial products, use five times, use ten times, double and half, factor and group flexibility, multiply up, partial quotients and use relationships.

Enduring Understandings

Numbers and Operations in Base Ten

4.NBT.B Use place value understanding and properties of operations to perform multi-digit arithmetic.

Numbers and Operations – Fractions

4.NF.B Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Mathematical Practices Focus

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

MP1a-Generalize Place Value Understanding

Content Area: **Mathematics**
Course(s): **Math 4**
Time Period: **Marking Period 1**
Length: **MP1 Topic 1 1-1 to 1-5**
Status: **Published**

Essential Questions

- How are greater numbers written?
- How can whole numbers be compared?
- How are place values related?

Big Ideas

- **Read and Write Multi-Digit Whole Numbers:** Students draw on these understandings throughout the topic.
- **Place-Value Relationships and Comparison:** Introduce the concept of the place value to the left of a given place is 10 times as great as that of the given place.
- **Round Whole Numbers:** Students use their understanding of place value to round whole numbers. They analyze the place values of digits and use that analysis to determine which multiple of 10, 100, or 1,000.

Technology Integration

8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

Activity:

Post an assignment in Google Classroom where students watch a Math Antics Place Value video to introduce the topic. Afterwards, students will complete a guided Google Classroom reflection.

Enduring Understandings

Number and Operations in Base Ten

4.NBT.A.1 [M] Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.

4.NBT.A.2 [M] Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

4.NBT.A.3 [M] Use place value understanding to round multi-digit whole numbers to any place.

Mathematical Practices Focus

3. Construct viable arguments and critique the reasoning of others.

MP1b-Fluently Add and Subtract Multi-Digit Whole Numbers

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 1**
Length: **MP1 Topic 2 2-1 to 2-8**
Status: **Published**

Essential Questions

- How can sums and differences of whole numbers be estimated?
- What are standard procedures for adding and subtracting whole numbers?

Big Ideas

- **Addition Properties:** Students will employ the following addition properties: the Associative Property, the Commutative Property, and the Identity Property. Students will use these properties throughout the topic as they use mental math, estimation, and the standard algorithms to find sums and differences and to check their answers.
- **Mental Math and Estimation:** Students will use mental math and estimation to find sums and differences. They will draw on these procedures to check the reasonableness of their answers.
- **The Relationship Between Addition and Subtraction:** Students will use the standard algorithm to check their answers to subtraction problems.
- **Problem Solving:** Students will apply their proficiency with addition and subtraction to solve real-world problems.

Diversity Integration

Objective: Students will be able to find the difference between various country populations.

Description of Activity: Students will be given four sets of two countries. They will need to find the difference between the countries. Then, students will describe which country has a larger population and by how.

Technology Integration

8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Activity:

Students will work independently in the IXL program to answer questions about addition and subtraction. The specific skills in IXL related to this standard are B1 - B11 and C1 - C9. The program will track students' progress and mastery of these skills.

Enduring Understandings

Operations and Algebraic Thinking

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. [Students may obtain data and information to describe that energy and fuels are derived from natural resources and their uses affect the climate and solve multistep word problems based on the data collected.](#)

Number and Operations in Base Ten

4.NBT.B.4 [M] [Fluently With accuracy and efficiency](#) add and subtract multi-digit whole numbers using the standard algorithm.

Mathematical Practices Focus

2. Reason abstractly and quantitatively.

MP1c-Use Strategies And Properties To Multiply By 1-Digit Numbers

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 1**
Length: **MP1 Topic 3 3-1 to 3-8**
Status: **Published**

Essential Questions

- How can you multiply by multiples of 10, 100, and 1,000?
- How can you multiply whole numbers?

Big Ideas

- **Estimation:** Students will multiply multiples of 10, 100, and 1,000 by 1-digit numbers to estimate. Students will use estimation to check the reasonableness of answers.
- **Distributive Property:** Students will apply the Distributive Property throughout the topic as they use partial products to find the product of a t-digit number and a multi-digit number.
- **Problem Solving:** Students will apply strategies for whole-number multiplication to solve real-world problems.

Technology Connection

8.1.5.AP.1 Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

Career Education Integration

9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

9.2.5.CAP.3: Identify qualifications needed to pursue traditional and non-traditional careers and occupations.

9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.

Connection:

Use real world mathematical problems involving perimeter and/or area. Include job roles such as architects, construction workers, etc. to solve perimeter and/or area word/story problems.

Enduring Understandings

Operations and Algebraic Thinking

4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. [Students may obtain data and information to describe that energy and fuels are derived from natural resources and their uses affect the climate and solve multistep word problems based on the data collected.](#)

Number and Operations in Base Ten

4.NBT.B.5 [M] Multiply a whole number of up to four digits by a one-digit whole number, (and multiply two two-digit numbers), using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Mathematical Practices Focus

4. Model with mathematics.

MP2a-Use Strategies And Properties To Multiply By 2-Digit Numbers

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 2**
Length: **MP1 Topic 4 4-1 to 4-7**
Status: **Published**

Essential Questions

- How can you use a model to multiply?
- How can you use the Distributive Property to multiply?
- How can you use multiplication to solve problems?

Big Ideas

- **Estimation:** Students will use rounding to estimate products. Students will use estimation to check the reasonableness of their answers.
- **Models and the Distributive Property:** Students will use arrays, area models, and the Distributive Property throughout the topic as they use partial products to find the product of two 2-digit numbers.
- **Problem Solving:** Students will apply strategies for whole-number multiplication to solve real-world problems.

Technology Connection

8.1.5.AP.1 Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

Career Education Integration

9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.

9.2.5.CAP.3: Identify qualifications needed to pursue traditional and non-traditional careers and occupations.

9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.

Connection:

Use real world mathematical problems involving perimeter and/or area. Include job roles such as architects, construction workers, etc. to solve perimeter and/or area word/story problems.

Cross-Curricular Integration

Integration Area: Language Arts

L.4.1.f Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.

L.4.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Activity:

Students will create word problems involving one or more of the four mathematical operations. They will need to use proper sentence structure, grammar, and conventions.

Enduring Understandings

Operations and Algebraic Thinking

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. [Students may obtain data and information to describe that energy and fuels are derived from natural resources and their uses affect the climate and solve multistep word problems based on the data collected.](#)

Number and Operations in Base Ten

4.NBT.B.5 [M] Multiply (a whole number of up to four digits by a one-digit whole number, and) multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Mathematical Practices Focus

1. Make sense of problems and persevere in solving them.

MP2b-Use Strategies & Properties To Divide By 1-Digit Divisors

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 2**
Length: **MP2 Topic 5 5-1 to 5-10**
Status: **Published**

Essential Questions

- How can mental math be used to divide?
- How can quotients be estimated?
- How can the steps for dividing be explained?

Big Ideas

- **Estimation:** Students will use compatible numbers or multiplication to estimate quotients. Students will use estimation to help them determine partial quotients and to check the reasonableness of their answers.
- **Relationship Between Multiplication and Division:** Students will explore how multiplication plays a key role in using the strategies of partial quotients and sharing to divide.
- **Models:** Students will use place-value blocks, drawings, counters, arrays, and area models throughout the topic to enhance their understanding of division.
- **Choose a Strategy to Divide:** Students will choose a strategy from the topic to divide and solve problems.
- **Problem Solving:** Students will apply strategies for whole-number division to solve real-world problems. Students will model math problems with drawings or diagrams to solve.

Technology Integration

8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Activity:

Students will work independently in the IXL program to answer questions about division. The specific skills in IXL related to this standard are E4 - E15. The program will track students progress and mastery of these skills.

Enduring Understandings

Operations and Algebraic Thinking

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including

rounding. Students may obtain data and information to describe that energy and fuels are derived from natural resources and their uses affect the climate and solve multistep word problems based on the data collected.

Number and Operations in Base Ten

4.NBT.B.5 Multiply (a whole number of up to four digits by a one-digit whole number, and) multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

4.NBT.B.6 [M] Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Mathematical Practices Focus

4. Model with mathematics.

MP2c-Use Operations With Whole Numbers To Solve Problems

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 2**
Length: **MP2 Topic 6 6-1 to 6-6**
Status: **Published**

Essential Questions

- How is comparing with multiplication different from comparing with addition?
- How can you use equations to solve multi-step problems?

Big Ideas

- **Comparison:** Students will learn how to solve problems involving multiplicative comparison and additive comparison. They learn the difference between multiplicative comparison and additive comparison.
- **Multi-Step Word Problems:** Students solve multi-step word problems, some of which involve the concepts of multiplicative comparison and additive comparison.
- **Algebra:** Students will work with equations that contain an unknown quantity.

Diversity Integration

Objective: Students will be able to answer word problems based on sports in different countries.

Description of Activity: Students will be given word problems that include information about sports in other countries. They will solve the problems and share their answers. Students will also have time to create their own problems using information that they researched online.

Technology Integration

8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Activity:

Students will create their own multi-step word problem. They will type the problem in Google Classroom and choose an image related to the problem. Once completed, students will solve their classmates' problems.

Enduring Understandings

Operations and Algebraic Thinking

4.OA.A.1 [M] Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

4.OA.A.2 [M] Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

4.OA.A.3 [M] Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. [Students may obtain data and information to describe that energy and fuels are derived from natural resources and their uses affect the climate and solve multistep word problems based on the data collected.](#)

Number and Operations in Base Ten

4.NBT.B.4 **Fluently** With accuracy and efficiency add and subtract multi-digit whole numbers using the standard algorithm.

4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, (and multiply two two-digit numbers), using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Mathematical Practices Focus

1. Make sense of problems and persevere in solving them.

MP2d-Factors and Multiples

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 2**
Length: **MP2 Topic 7 7-1 to 7-3**
Status: **Published**

Essential Questions

- How can you use arrays or multiplication to find the factors of a number?
- How can you identify prime and composite numbers?
- How can you find multiples of a number?

Big Ideas

- **Factors and Factor Pairs:** Students find factors and factor pairs for a given number.
- **Prime and Composite Numbers:** Students classify whole numbers greater than 1 as either prime or composite.
- **Relationships Between Factors and Multiples:** Students come to understand that a whole number is a multiple of each of its factors.
- **Factors and Equivalent Fractions:** Students will work to find factor pairs which will lay the foundation for generating an equivalent fraction by dividing the numerator and denominator by a common factor greater than 1.

Technology Connection

8.1.5.AP.1 Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

Enduring Understandings

Operations and Algebraic Thinking

4.OA.B.4 [M] Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Number and Operations in Base Ten

4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, (and multiply two two-digit numbers), using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Mathematical Practices Focus

8. Look for and express regularity in repeated reasoning

MP3a-Extend Understanding of Fraction Equivalence and Ordering

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 3**
Length: **MP3 Topic 8 8-1 to 8-7**
Status: **Published**

Essential Questions

- What are some ways to name the same part of a whole?
- How can you compare fractions with unlike numerators and denominators?

Big Ideas

- **Equivalent Fractions:** Students learn how to recognize and generate equivalent fractions. They use these understandings to compare fractions by rewriting the fractions in equivalent forms.

-
- **Visual Models:** Students use area models, fraction strips, and number lines to find equivalent fractions and to compare fractions. They also use models to justify their thinking.
 - **Word Problems Involving Fractions:** Students apply their knowledge of equivalent fractions and fraction comparison to solve real-world word problems.

Technology Connection

8.1.5.AP.1 Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

Cross-Curricular Integration

Integration Area: Social Studies

6.1.5.GeoPP.3: Use geographic models to describe how human movement relates to the location of natural resources and sometimes results in conflict.

Activity:

Use benchmark fractions to describe/compare the population of various groups of people in NJ during 1850 (SS text page 100). ie- close to a whole, close to zero, less than half, etc.

Enduring Understandings

Number and Operations—Fractions

4.NF.A.1 [M] Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

4.NF.A.2 [M] Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Number and Operations in Base Ten

4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, (and multiply two two-digit numbers), using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Operations and Algebraic Thinking

4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

Mathematical Practices Focus

3. Construct viable arguments and critique the reasoning of others.

MP3b-Understand Addition And Subtraction Of Fractions

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 3**
Length: **MP3 Topic 9 9-1 to 9-10**
Status: **Published**

Essential Questions

- How do you add and subtract fractions and mixed numbers with like denominators?
- How can fractions be added and subtracted on a number line?

Big Ideas

- **Add and Subtract Fractions:** Students will use visual models and procedures for adding fractions with like denominators to connect subtracting fractions with like denominators.
- **Mixed Numbers:** Students will extend their knowledge of adding and subtracting fractions with like denominators to mixed numbers.
- **Word Problems Involving Fractions:** Students apply their knowledge of fraction addition and subtraction to solve real-world problems.

Technology Integration

8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Activity:

Students will work independently in the IXL program to answer questions about adding and subtracting fractions. The specific skills in IXL related to this standard are Q1 - Q9. The program will track students progress and mastery of these skills.

Enduring Understandings

Number and Operations—Fractions

4.NF.B.3 [M] Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.

4.NF.B.3a [M] Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

4.NF.B.3b [M] Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.

4.NF.B.3c [M] Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

4.NF.B.3d [M] Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Mathematical Practices Focus

4. Model with mathematics.

MP3c-Extend Multiplication Concepts to Fractions

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 3**
Length: **MP3 Topic 10 10-1 to 10-5**
Status: **Published**

Essential Questions

- How can you describe a fraction using a unit fraction?
- How can you multiply a fraction by a whole number?

Big Ideas

- **Multiplication and Unit Fractions:** Students come to understand that they can think of a fraction as a product of a whole number and a unit fraction. This foundation is incorporated in the development of strategies for multiplying a fraction by a whole number.
- **Time Problems:** Students apply their knowledge of fraction multiplication to solve problems about time.

Technology Connection

8.1.5.AP.1 Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

Enduring Understandings

Number and Operations—Fractions

4.NF.B.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

4.NF.B.4 [M] Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

4.NF.B.4a [M] Understand a fraction a/b as a multiple of $1/b$.

4.NF.B.4b [M] Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number.

4.NF.B.4c [M] Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.

Measurement and Data

4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft

snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...

4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. [Students may perform bench science investigations that model global systems. These investigations may involve distances, time, liquid volumes, and the mass of objects.](#)

Mathematical Practices Focus

4. Model with mathematics.

MP3d-Represent And Interpret Data On Line Plots

Content Area: **Mathematics**
Course(s): **Math 4**
Time Period: **Marking Period 3**
Length: **MP3 Topic 11 11-1 to 11-4**
Status: **Published**

Essential Questions

- How can you read data on a line plot?
- How can you make a line plot?

Big Ideas

- **Line Plots:** Students read and interpret line plots and use data from line plots to solve problems involving addition and subtraction.
- **Outliers:** Students consider outliers in data sets.
- **Use Fractions in Data Problems:** Students solve problems involving adding and subtracting fractions and mixed numbers with like denominators.

Cross-Curricular Integration

Integration Area: Science

4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

Activity:

Students will use the internet and other sources to learn about earth formation to support understanding of rock layers and how it created change over time on earth's surface. Create a line plot of different land formations that are found within a specific state of the students choosing, not to be repeated. The following landforms can be used; canyons, bodies of water, plateau, etc. Students will count the number of landforms that are in the specific state. For example, 3 canyons, 2 bodies of water. With that information, students will then make their own line plot to show the number of landforms. Once completed, students will compare with their peers. When finished

comparing the information amongst peers, students will then create a whole class line plot including all of the states that were used in the classroom.

Technology Integration

8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Activity:

Students will work independently in the IXL program and use a data set to create a line plot, as well as interpreting the line plot to answer questions that involve addition and subtraction. The specific skills in IXL related to this standard are BB2 - BB6. The program will track students' progress and mastery of these skills.

Data Literacy

4.DL.a Organize data and understand data visualizations

4.DL.a.1 Create data-based questions, generate ideas based on the questions, and then refine the questions.

4.DL.a.2 Develop strategies to collect various types of data and organize data digitally.

4.DL.a.3 Understand that subsets of data can be selected and analyzed for a particular purpose.

4.DL.a.4 Analyze visualizations of a single data set, share explanations and draw conclusions that the data supports.

Enduring Understandings

Number and Operations—Fractions

4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

4.NF.B.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to

Measurement

4.DL.B.5[M] Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. Students may perform bench science

investigations that model global systems. These investigations may involve distances, time, liquid volumes, and the mass of objects. This data can be used to create a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots.

Mathematical Practices Focus

3. Construct viable arguments and critique the reasoning of others

MP3e-Understand and Compare Decimals

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 3**
Length: **MP3 Topic 12 12-1 to 12-6**
Status: **Published**

Essential Questions

- How can you write a fraction as a decimal?
- How can you locate points on a number line?
- How do you compare decimals?

Big Ideas

- **Fractions and Decimals:** Students will develop conceptual understanding of decimals and learn how to use decimal notation. Students will learn the relationship between fractions and decimals. This understanding is used as students learn to compare decimals and solve decimal problems. Students will gain a deeper understanding of decimals by realizing the size of a decimal depends on the size of the whole.
- **Compare Decimals:** Students draw on their understanding of decimals to develop understanding and procedural skill in comparing decimals.
- **Money and Decimals:** The connection between money and decimals is introduced. Students use this understanding to solve problems involving money.

Diversity Integration

Objective: Students will be able to compare decimals within different elevations in various countries.

Description of Activity: Students will be given a list of five countries and their highest point of elevation. They must compare the elevations and list them in order from greatest to least.

Technology Integration

8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Activity:

Students will apply knowledge of skills taught in class during the mini lesson to an online or [paper](#) assessment through [the Pearson EnVisions website](#). Each student has a login and password, and the teacher will assign a “Quick Check” that utilizes standardized testing like tools.

Enduring Understandings

Number and Operations—Fractions

4.NF.C.5 [M] Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. (ex: express $\frac{3}{10}$ as $\frac{30}{100}$, and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$) Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.

4.NF.C.6 [M] Use decimal notation for fractions with denominators 10 or 100.

4.NF.C.7 [M] Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.

Measurement and Data

4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. [Students may perform bench science investigations that model global systems. These investigations may involve distances, time, liquid volumes, and the mass of objects.](#)

Mathematical Practices Focus

7. Look for and make use of structure.

MP4a-Measurement: Find Equivalence in Units of Measure

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 4**
Length: **MP4 Topic 13 13-1 to 13-7**
Status: **Published**

Essential Questions

- How can you convert from one unit to another?
- How can you be precise when solving math problems?

Big Ideas

- **Convert Measurements:** Students develop the ideas and procedures for using multiplication to convert larger measurement units to smaller measurement units. The students will multiply the given measure by the conversion factor.
- **Use Tables:** Students will use tables to record measurement equivalents.
- **Solve Real-World Problems:** Students use what they have learned to attend to precision to solve real-world problems. The problems involve conversions, or area and perimeter formulas.
- **Fraction Computation:** Students use fraction operations to solve measurement problems involving measurements given in fraction form.

Technology Connection

8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

Enduring Understandings

Number and Operations—Fractions

4.NF.B.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

4.NF.B.4c Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.

4.NF.C.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.

Measurement and Data

4.MD.A.1 [M] Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table.

4.MD.A.2 [M] Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. [Students may perform bench science investigations that model global systems. These investigations may involve distances, time, liquid volumes, and the mass of objects.](#)

4.MD.A.3 [M] Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

Operations and Algebraic Thinking

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. [Students may obtain data and information to describe that energy and fuels are derived from natural resources and their uses affect the climate and solve multistep word problems based on the data collected.](#)

Mathematical Practices Focus

6. Attend to precision.

MP4b-Algebra: Generate and Analyze Patterns

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 4**
Length: **MP4 Topic 14 14-1 to 14-4**
Status: **Published**

Essential Questions

- How can you use a rule to continue a pattern?
- How can you use a table to extend a pattern?
- How can you use a repeating pattern to predict a shape?

Big Ideas

- **Extend and Analyze Patterns:** Students develop an understanding of patterns. Students apply an addition or subtraction rule to generate one or more numbers in a number sequence. Students extend patterns in tables, with a focus on multiplication or division rules. For both, they analyze the patterns and look for features not given in the rule. Students will extend repeating patterns that consist of either shapes or numbers. They use the given rule to predict a term in the pattern.

-
- **Solve Pattern Problems:** Students will connect their work across the lessons to solve problems. Students extend shape patterns. Students will describe the shape pattern using a table, find a feature in the pattern, make a prediction, and solve a problem.

Technology Connection

8.1.5.DA.3 Organize and present collected data visually to communicate insights gained from different views of the data.

Operations and Algebraic Thinking

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. [Students may obtain data and information to describe that energy and fuels are derived from natural resources and their uses affect the climate and solve multistep word problems based on the data collected.](#)

4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1– 100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

4.OA.C.5 [M] Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

Number and Operations in Base Ten

4.NBT.B.4 **Fluently** [With accuracy and efficiency](#) add and subtract multi-digit whole numbers using the standard algorithm.

4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, (and multiply two two-digit numbers), using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Mathematical Practices Focus

7. Look for and make use of structure.

MP4c-Geometric Measurement: Understand Concepts Of Angles and Angle Measurement

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 4**
Length: **MP4 Topic 15 15-1 to 15-6**
Status: **Published**

Essential Questions

- What are some common geometric terms?
- How can you measure angles?

Big Ideas

- **Geometric Concepts:** Students will draw and identify points, line segments, lines, rays, and angles. Students will distinguish between right, acute, obtuse, and straight angles. Students will measure angles with a protractor while showing an understanding of identifying the vertex and using their knowledge of acute and obtuse angles to decide which scale to use.
- **Measure Angles:** Students will learn what a unit angle is and how to determine the measure of an angle from the fraction of a circle cut by the rays. Students will learn how to find the measure of an angle using known angles. Students will use their skill in measuring angles with a protractor to solve problems.
- **Add Angle Measures:** Students will use their understanding of angle measures to the additive nature of these measures. Students will solve problems by adding angle measures.

Technology Integration

8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

Activity:

Students will collaborate in groups to create a video using Flipgrid demonstrating how to use a protractor to measure an angle. Students will be able to view classmates' videos.

Cross-Curricular Integration

Integration Area: Science

Standards:

4-PS3-1 Use evidence to construct an explanation relating the speed of an object to the energy of that object.

4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Activity:

Create a ramp to investigate how friction affects motion. Measure and record the angle of the ramp during each trial (Science text pages 68-69)

Enduring Understandings**Operations and Algebraic Thinking**

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Number and Operations in Base Ten

4.NBT.B.4 **Fluently** **With accuracy and efficiency** add and subtract multi-digit whole numbers using the standard algorithm.

Number and Operations—Fractions

4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

4.NF.B.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Measurement and Data

4.MD.B.4 [M] Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.

4.MD.B.4a [M] An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the

two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a “one-degree angle,” and can be used to measure angles.

4.MD.B.4b [M] An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

4.4.MD.B.5 [M] Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

4.MD.B.6 [M] Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Geometry

4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

Mathematical Practices Focus

5. Use appropriate tools strategically.

MP4d-Lines, Angles, and Shapes

Content Area: **Math**
Course(s): **Math 4**
Time Period: **Marking Period 4**
Length: **MP4 Topic 16 16-1 to 16-6**
Status: **Published**

Essential Questions

- How can you classify triangles and quadrilaterals?
- What is line symmetry?

Big Ideas

- **Use Line Relationships in Classifying Quadrilaterals:** Students learn about relationships between lines: parallel lines, intersecting, and perpendicular. Students use these relationships when they classify quadrilaterals.
- **Classify Triangles and Quadrilaterals:** Students gain a deeper conceptual understanding of the classification process by analyzing both triangles and quadrilaterals. Students will learn

to analyze shapes based on their attributes and that one shape can have more than one classification.

- **Recognize and Draw Line-Symmetric Figures:** Students recognize line-symmetric figures and draw their lines of symmetry. Students use a given figure and a line of symmetry to draw a line-symmetric figure. Students' understanding of attributes of triangles and quadrilaterals help them find or describe lines of symmetry.

Diversity Integration

Objective: Students will be able to identify lines, angles and shapes on the flags of various countries.

Description of Activity: Students will be given three flags of different countries. They will be required to identify a line segment, an acute angle, an obtuse angle, a right angle, and shapes that they see. Students will share their findings with the class.

Technology Integration

8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Activity:

Students will work independently in the IXL program to answer questions about lines, angles, and shapes. The specific skills in IXL related to these standards are lines (X1-X3, V3-V-5), angles (Y1-Y10), and shapes (W1-W12). The program will track students progress and mastery of these skills.

Enduring Understandings

Operations and Algebraic Thinking

4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.

Geometry

4.G.A.1 [M] Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

4.G.A.2 [M] Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

4.G.A.3 [M] Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Measurement and Data

4.MD.B.4 [M] Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.

Mathematical Practices Focus

3. Construct viable arguments and critique the reasoning of others.