Washington Township School District

The mission of the Washington Township Public Schools *is to provide a safe, positive, and progressive educational environment that provides opportunity for all students to attain the knowledge and skills specified in the NJ Learning Standards at all grade levels, so as to ensure their full participation in an ever-changing world as responsible, self-directed and civic-minded citizens.*

Course Title:	**6th Grade Math Resource Center**
Grade Level(s):	**6th**

Duration:	*Full Year:*	**X**	*Semester:*		*Marking Period:*	
Course Description:	This course is to prepare the students for their 7th grade math class. It focuses on rates, ratios and percent, operations with fractions and multi digits numbers, rational numbers, expressions and one step equations, area, surface area, and volume, and statistics.					
Grading Procedures:	Supportives: 15% Minors: 35% Majors: 50%					
Primary Resources:	**Eureka Math²**					

Washington Township Principles for Effective Teaching and Learning

- Implementing a standards-based curriculum
- Facilitating a learner-centered environment
- Using academic target language and providing comprehensible instruction
- Adapting and using age-appropriate authentic materials
- Providing performance-based assessment experiences
- Infusing 21st century skills for College and Career Readiness in a global society

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Under the Direction of:	Joanne Henry

Written: _____

Revised: _____

BOE Approval: _____

Unit One: Ratios, Rates, and Percents

Unit Description: Students use tape diagrams, double number lines, tables, and graphs to model and compare ratio relationships, determine equivalent ratios, and solve real-world problems. Then, students develop an understanding of rates associated with ratio relationships. They calculate unit rates and use them to solve problems involving speed, unit pricing, measurement conversions, and other real-world applications. At the end of the module, students understand a percent as a fraction with a denominator of 100, and they apply their ratio and rate reasoning to solve the unknown percent, part, or whole in real-world problems.

Unit Duration: 6 weeks

Desired Results

Standard(s):

6.RP.A.1
6.RP.A.2
6.RP.A.3
6.RP.A.3.a
6.RP.A.3.b
6.RP.A.3.c
6.RP.A.3.d

Indicators:

Write and explain ratios that describe relationships between two quantities.
Write and explain the unit rate that describes a relationship between two quantities.
Solve real-world and mathematical problems by using ratio reasoning.
Represent ratio relationships by using tables and the coordinate plane.
Compare ratio relationships by using various representations.
Solve real-world problems by using unit rates.
Model and explain percents and problems involving percents.
Solve problems that involve finding the part, whole, or percent.
Convert among units by using ratio reasoning to solve problems.

Understandings:
Students will understand that…

- When grouping and comparing objects to develop an understanding of equivalent ratios by the end of the topic.
- Using ratio tables, double number lines, and points in the coordinate plane for representing ratio relationships.
- Using a variety of strategies to compare ratio relationships, including making direct comparisons by using a ratio table, by creating equivalent ratios, and by calculating the value of the ratio.
- The rates associated with ratio relationships. They calculate unit rates and use them to solve problems involving

Essential Questions:

- How can we write an equivalent ratio so that one number in the ratio is 1?
- Why do we want to compare ratio relationships?
- When we cannot make a direct comparison between two ratios, what strategies can we use to compare ratio relationships?
- What are the differences between ratios and rates?
- Why can any pair of quantities be described by two different unit rates?
- How does knowing the unit rate help us find unknown quantities?
- How can we use unit rates to compare two situations?

speed, unit pricing, measurement conversions, and other real-world rate applications. • Percent as a fraction with a denominator of 100, and they apply their ratio and rate reasoning from previous topics to solve percent problems. Students use double number lines, mental math, and other computational strategies to solve for the unknown percent, part, or whole.	• How do unit rates help when converting units of measurement? • How can we use rate reasoning to solve real-world problems? • What is a percent, and what does it represent? • What are the relationships between percents, fractions, and decimals?

Assessment Evidence

Performance Tasks: Lesson 5-> Learn Section-> Solve and Seek Lesson 7->Learn Section-> Digital Activity Lesson 12-> Learn Section-> Digital Activity Lesson 13-> Learn Section-> Digital Activity Lesson 14-> Learn Section-> Stations Lesson 22 -> Learn Section -> Digital Activity	**Other Evidence:** **Topic A Quiz-1-5** **Topic B Quiz 6-11** **Topic C Quiz 12-15** **Topic D Quiz 16-21** **Topic E Quiz 22-26**

Benchmarks:

Module 1 Assessment

Learning Plan

Learning Activities:
Each lesson consists of the following

Fluency Activities
Launch
Learn
Exit Tickets

Resources:

- Eureka Math^2- Module Overview (Explains in detail the different Fluency activities)

Unit Two: Operations with Fractions and Multi-Digit Numbers

Unit Description:

Students will use visual models and an understanding of divisibility to find the greatest common factor and least common multiple of pairs of numbers. Students apply their previous understanding of multiplication and division to divide fractions by fractions. They model fraction division expressions with tape diagrams and double number lines, use common denominators to divide fractions by fractions, and then develop and apply the invert and multiply strategy. Students use standard algorithms to fluently add, subtract, and multiply decimals, and apply those skills in real-world applications. They extend their understanding of division from prior grades to use the standard division algorithm to divide multi-digit numbers and decimals.

Unit Duration: 6 weeks

Desired Results

Standard(s):

6.NS

6.NS.A

6.NS.B

6.NS.A.1

6.NS.B.2

6.NS.B.3

6.NS.B.4

Indicators:

Solve word problems by dividing multi-digit numbers by using the standard algorithm.
Multiply multi-digit decimals.
Divide multi-digit decimals.
Determine the greatest common factor of two whole numbers less than or equal to 100.
Determine the least common multiple of two whole numbers less than or equal to 12.
Solve word problems by performing operations on multi-digit decimals.
Reason about the size of quotients of fractions and mixed numbers.
Divide two fractions or mixed numbers.
Solve and interpret word problems involving division of fractions and mixed numbers.
Interpret division of fractions and mixed numbers by using models.
Reason about the size of quotients of two multi-digit numbers.
Divide multi-digit whole numbers by using the standard algorithm.
Add and subtract multi-digit decimals.

Understandings:

Students will understand that… *U*

- Strategies help determine divisibility by 3 and 6
- GCF means greatest common factor and LCM means least common multiple. They will also use a variety of strategies to find GCF and LCM, including

Essential Questions:

- How can we tell if a number is divisible by another number without dividing the numbers?
- What does it mean for a number to be the greatest common factor of two numbers?

organized lists of factors and multiples, prime factorization, and Venn diagrams. • In topic B, students divide fractions by whole numbers and whole numbers by fractions. They model fraction division with tape diagrams and number lines, reason about the relationship between multiplication and division, and interpret fraction division problems as number of groups unknown or group size unknown. At the end of the topic, students divide fractions by fractions by creating common denominators. • Tape diagrams can help see why the strategy works. Then they apply the strategy to fluently divide fractions and mixed numbers. • Using number sense and place value reasoning to add and subtract decimals and determine the placement of the decimal point in sums and differences. • Using division and use the standard algorithm to fluently divide whole numbers. They reason about the size of the quotient and the placement of its decimal point by using place value reasoning, and they estimate to determine the reasonableness of their answers. Students also learn to express quotients as decimals and round quotients when needed. • Standard division algorithm to fluently divide decimals. First, they divide decimals by whole numbers and then progress to dividing decimals by decimals and applying decimal division to solve multi-step real-world problems. At the end of the topic, students practice decimal division in a multi-step task involving calculations about resources needed to survive on Mars.	• How does the prime factorization of a number compare to a factor pair of a number? • How can knowing the greatest common factor of two numbers help us find the least common multiple of the two numbers? • What patterns did you notice when dividing a whole number by a fraction? • How is division by a whole number related to multiplication? • Are common denominators useful when dividing fractions? Why? • What kinds of real-world situations use addition, subtraction, multiplication, or division of fractions and mixed numbers? • Why is place value important when adding and subtracting decimals? • How do we use the standard algorithm to divide a decimal by a decimal? Why does it work? • What real-world situations can be represented by decimal division expressions? • What real-world situations use multiplication or division of decimals?

Assessment Evidence

Performance Tasks: Lesson 1 -> Learning -> Digital Activities Lesson 12 -> Launch-> Digital Activities Lesson 13 -> Learn-> Decimal Point Puzzle Lesson 14 -> Learn->Digital Activity Lesson 20->Learn-> Writing Stories Lesson 23-> Learn-> Stations Lesson 24->Learn-> Digital Activities	**Other Evidence:** **Topic A Quiz 1-5** **Topic B Quiz 6-8** **Topic C Quiz 9-12** **Topic D Quiz 13-16** **Topic E Quiz 17-20** **Topic F Quiz 21-24**

Benchmarks:

Module 2 Assessment

Learning Plan

Learning Activities:
Each lesson consists of the following

Fluency Activities
Launch
Learn
Exit Tickets

Resources:

- Eureka Math^2- Module Overview (Explains in detail the different Fluency activities)

Unit Three: Rational Numbers

Unit Description:

Students develop an understanding of rational numbers and use rational numbers to describe real-world quantities. Students plot rational numbers and their opposites on a number line, calculate absolute values, order and compare rational numbers, and apply the concept of magnitude to describe and compare real-world quantities. Students explore the structure of the four quadrants of the coordinate plane. They plot and locate points with rational number coordinates, reflect points across one or both axes, calculate the lengths of lines segments, graph geometric figures, and use the coordinate plane to solve problems.

Unit Duration: 4 weeks

Desired Results

Standard(s):

6.NS.C.5
6.NS.C.6
6.NS.C.6.a
6.NS.C.6.b
6.NS.C.6.c
6.NS.C.7
6.NS.C.7.a
6.NS.C.7.b
6.NS.C.7.c
6.NS.C.7.d
6.NS.C.8

Indicators:
Interpret meanings of positive numbers, negative numbers, and zero within contexts.
Write, interpret, and explain inequalities involving two rational numbers in real-world contexts.
Describe the absolute value of a number in relation to the number's position on a number line.
Interpret a quantity and its absolute value in context.
Interpret comparisons of rational numbers and their absolute values.
Solve problems involving lengths of horizontal and vertical line segments in a coordinate plane.
Plot numbers and their opposites on a number line.
Evaluate the opposite of zero and the opposite of the opposite of a number.
Identify relationships between the signs of the numbers in an ordered pair and the point's location in a coordinate plane.
Identify properties of points that are reflections across one or both axes.
Plot and write rational numbers to describe points on a number line.
Plot and write ordered pairs of numbers to describe points in a coordinate plane.
Order rational numbers and absolute values of rational numbers.
Interpret statements of inequality as statements about the relative position of two numbers on a number line.

Understandings:
Students will understand that… *U*

- Using positive and negative numbers and 0 to describe real-world quantities such as elevation and temperature.
- Plotting whole numbers and opposites of whole numbers on horizontal and vertical number lines and discover that these numbers are called integers.
- Integers can be positive and negative rational numbers on the number line, and they represent opposite quantities in real-world situations by using rational numbers.
- You can compare and order sets of rational numbers in topic B.
- A number and its opposite are the same distance from 0 and use this understanding to calculate absolute value. Students use rational numbers to describe and compare real-world quantities.
- There are four quadrants of the coordinate plane and how to plot points.
- You can reflect points on the coordinate plane across one or both axes.
- There are appropriate scales for the x- and y-axes for a given set of points.
- The lengths of horizontal and vertical line segments in the coordinate plane can be calculated by counting units and by applying their understanding of absolute value.
- You can use distance and symmetry to solve problems such as finding unknown

Essential Questions:

- How are positive and negative numbers useful in describing real-world quantities?
- What does it mean for a number to be the opposite of the opposite of a number?
- How are rational numbers like integers? How are they different?
- How are rational numbers useful in describing situations in the real world?
- What does the absolute value of a number tell us about that number?
- How does the order of a set of positive rational numbers compare to the order of their absolute values? Why?
- How can we use absolute value to determine the distance between a positive number and a negative number?
- How do the x- and y-coordinates of a point tell us the location of the point in the coordinate plane?
- How do we use the x- and y-coordinates of a point to plot the point in the coordinate plane?
- What is the relationship between the location of a point and the location of its reflection across the x-axis or the y-axis?
- What is the relationship between the coordinates of a point and the coordinates of its reflection across the x-axis or the y-axis?
- What must we consider when choosing scales for the x- and y-axes?
- Why do we use grids on maps?

vertices of rectangles or calculating perimeter and area.	

Assessment Evidence

Performance Tasks: Lesson 2 ->Learn Section->Digital Activities Lesson 4-> Learn Section-> Poster Lesson 6-> Learn Section ->Number Line Up Activity Lesson 7-> Learn Section-> Digital Activities Lesson 12 -> Learn Section -> Digital Activities Lesson 17->Learn Section-> Create a Town	**Other Evidence:** **Topic A Quiz 1- 4** **Topic B Quiz 5-9** **Topic C Quiz 10-14** **Topic D Quiz 15-17**

Benchmarks:

Module 3 Assessment

Learning Plan

Learning Activities:
Each lesson consists of the following

Fluency Activities
Launch
Learn
Exit Tickets

Resources:

- Eureka Math^2- Module Overview (Explains in detail the different Fluency activities)

Unit Four: Expressions and One Step Equations

Unit Description:

Students work with numerical and algebraic expressions and equations. They learn that exponents represent repeated multiplication, evaluate powers with whole number, fraction, and decimal bases, and use the order of operations to evaluate numerical expressions. Students learn why and how to use variables to represent unknown numbers and quantities. They write and evaluate algebraic expressions and use properties of operations to generate equivalent expressions. Students reason about and solve single-variable, one-step equations, and they understand the meaning of a solution to an equation or inequality. Students will revisit ratio relationships and write and graph equations in two variables, identifying independent and dependent variables in real-world situations.

Unit Duration: 6 weeks

Desired Results

Standard(s):

6.RP.A.3
6.NS.B.4
6.EE.A.1
6.EE.A.3
6.EE.A.4
6.EE.B.5
6.EE.B.6
6.EE.B.7
6.EE.B.8
6.EE.C.9
6.EE.A.2.a
6.EE.A.2.b
6.EE.A.2.c

Indicators:

Solve real-world and mathematical problems with equations by using ratio and rate reasoning.

Identify solutions to inequalities.

Write expressions with variables to represent numbers when solving real-world or mathematical problems.

Solve equations of the form x + p = q and px = q for cases in which p, q, and x are all nonnegative rational numbers.

Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all nonnegative rational numbers.

Write inequalities to represent constraints or conditions in real-world or mathematical problems.

Graph solutions to inequalities of the form x > c or x < c on number lines.

Define independent and dependent variables in a real-world problem and write equations to represent one quantity in terms of another quantity by using variables in a real-world problem.

Represent relationships between independent and dependent variables by using graphs and tables and by relating these to an equation.

Express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor by using the distributive property.

Write and evaluate numerical expressions involving whole number exponents.

Write expressions that record operations with numbers and with letters standing for numbers.

Identify parts of an expression by using mathematical terms.

Evaluate expressions, including those within formulas, at specific values of their variables.

Generate equivalent expressions by using the properties of operations.

Identify equivalent expressions.

Determine whether a given value is a solution to an equation.

Understandings:

Students will understand that… *U*

- Exponents represent repeated multiplication, and they evaluate powers with whole number, fraction, and decimal bases. Through an exploration of the hierarchy of operations, students learn the conventional order of operations and then apply it to evaluate numerical expressions.

Essential Questions:

- What does it mean to square a number?
- What does it mean to cube a number?
- How do we evaluate numerical expressions that are written in exponential notation?
- How do we evaluate expressions with addition, subtraction, multiplication, and division if there are no parentheses?

- Variables represent unknown numbers and quantities. Students learn to precisely define variables as values with units and to identify constraints on variables. When representing mathematical and real-world descriptions with algebraic expressions, students use common conventions and recognize how subtle variations in wording indicate different meanings.
- They can use the distributive property to write products as sums or differences, to factor algebraic expressions, and to combine like terms.
- Using substitution can determine whether a given number makes an equation or inequality a true number sentence, and they develop an understanding of the meaning of a solution. Students graph solutions to inequalities on number lines and interpret solutions graphed on number lines by writing inequalities. Students solve single-variable equations by using tape diagrams and algebraic reasoning, and they apply their understanding of equations to solve geometric problems involving angle measures.
- Representing ratio relationships with graphs and two-variable equations, students transition to representing relationships of the form $y=x+b$ and $y=x-b$. Students interpret the meanings of points on graphs and interpret the meanings of coefficients, variables, operators, and constants in equations that represent real-world situations. At the end of the topic, students analyze and model relationships between two quantities when they complete a modeling task about climbing the steps of the Statue of Liberty.

- How does the process we use to evaluate operations change if an expression has parentheses?
- What and why do we use the order of operations?
- Why do we use variables to represent numbers?
- What words can describe an addition expression? What words can describe a subtraction expression?
- What words can describe a multiplication expression? What words can describe a division expression?
- Why is it important to clearly define variables?
- When writing an algebraic expression to represent a real-world situation, how do we know whether we should add, subtract, multiply, and divide?
- Why can we factor an expression in more than one way?
- How do we use the distributive property to add or subtract like terms?
- What is the difference between an expression and an equation?
- Why can inequalities have infinitely many solutions?
- How do we keep the expressions on both sides of an addition, subtraction, multiplication, division equation equal?
- When solving equations, why does it make sense to write expressions with as few terms as possible before solving for the variable?
- How can we represent a ratio relationship with an equation?
- What is the difference between independent and dependent variables in a situation? What is the difference between independent and dependent variables in an equation? How are the table, graph, and equation of a ratio relationship related? Q

Assessment Evidence

Performance Tasks:

Lesson 3->Learn Section-> Digital Assignments
Lesson 11 -> Learn Section -> Digital Assignments
Lesson 12 -> Learn Section -> Expression Bingo
Lesson 15 -> Learn Section -> Digital Activities
Lesson 16 -> Learn Section -> Be an Author
Lesson 23 -> Learn Section -> Digital Assignments

Other Evidence:

Topic A Quiz 1-6

Topic B Quiz 7-11

Topic C Quiz 12-16

Topic D Quiz 17-21

	Topic E Quiz 22-25

Benchmarks:

Module 4 Assessment

Learning Plan

Learning Activities:
Each lesson consists of the following

Fluency Activities
Launch
Learn
Exit Tickets

Resources:

- Eureka Math^2- Module Overview (Explains in detail the different Fluency activities)

Unit Five: Area, Surface Area, and Volume

Unit Description:

Students use their understanding of the areas of rectangles to develop formulas for the area of a parallelogram and the area of a triangle. Students apply their prior knowledge of area, equivalent numerical expressions, the properties of operations, and coordinate graphing as they find the areas of composite polygons and trapezoids. They identify attributes of the faces of right prisms and pyramids and use the net of a solid to determine its surface area. By packing right rectangular prisms with cubes of fractional edge lengths, students determine that the formulas $V=l \times w \times h$ and $V=B \times h$ can be applied to find the volume of any right rectangular prism with positive, rational number edge lengths. Students apply these formulas to solve real-world and mathematical problems, and they write and solve single-variable equations to determine unknown measurements of a prism.

Unit Duration: 5 weeks

Desired Results

Standard(s):

6.RP.A.3
6.RP.A.3.b
6.NS.C.8
6.EE.A.2
6.EE.A.2.c
6.EE.A.3

6.EE.A.4
6.EE.B.7
6.G.A.1
6.G.A.2
6.G.A.3
6.G.A.4

Indicators:

Solve real-world problems by using unit rates.

Solve problems involving lengths of horizontal and vertical line segments in a coordinate plane.

Evaluate expressions, including those within formulas, at specific values of their variables.

Generate equivalent expressions by using the properties of operations.

Identify equivalent expressions.

Find the areas of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes.

Solve real-world and mathematical problems involving finding the areas of polygons by composing into rectangles or decomposing into triangles and other shapes.

Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all nonnegative rational numbers.

Find the volumes of right rectangular prisms with edge lengths that are fractions, mixed numbers, and decimals.

Solve real-world and mathematical problems by finding volumes of right rectangular prisms.

Solve real-world and mathematical problems by drawing polygons with given coordinates for the vertices and by finding the side lengths of polygons with the same first coordinate or the same second coordinate.

Represent three-dimensional figures by using nets made up of rectangles and triangles.

Solve real-world and mathematical problems by finding the surface areas of three-dimensional figures.

Understandings:

Students will understand that… *U*

- The formula $A=b\times h$ is parallelograms, recognizing that the area of a parallelogram is equal to the area of a rectangle with the same base and the same height as the parallelogram. They compose two identical triangles into rectangles or parallelograms to develop the formula $A=12b\times\times h$, recognizing that the area of a triangle is exactly half the area of a parallelogram with the same base and the same height as the triangle. Finally, students solve real-world and mathematical problems by finding the areas of triangles.
- The areas of rectangles and triangles to find the areas of composite polygons and trapezoids. First, they solve problems involving figures graphed in the coordinate plane, using their understanding of rational number coordinates to determine side lengths

Essential Questions:

- How does knowing how to find the area of a rectangle help us find the area of a parallelogram?
- What is the relationship among the base, height, and area of a parallelogram?
- How are the areas of rectangles and right triangles related?
- How are the area formulas of rectangles and right triangles related?
- How are the areas and area formulas of triangles and parallelograms related?
- How can triangles that look different from each other have the same area?
- How can we use composition and decomposition to calculate the area of a trapezoid or other polygon?
- What real-world situations require calculating the areas of composite figures?
- What are nets?
- Is a net helpful when calculating the surface area of a solid? How?

and find the perimeters and areas of figures. Then students transition to working with trapezoids and composite figures not in the coordinate plane. They use known measurements to determine unknown measurements in a figure and explore multiple strategies to find the areas of polygons, including composition, decomposition, and subtraction.

- The properties of right prisms and pyramids and identifying attributes of the faces of right prisms and pyramids. Then students represent right prisms and pyramids with nets and determine whether a given figure is a net of a solid. Students find the surface areas of solids by using a net and then generalize a formula for the surface area of a right rectangular prism. They apply their understanding of surface area in a modeling task that involves designing boxes for a pack of 12 ice cream sandwiches to meet given criteria.
- Find the volumes of right rectangular prisms that have fractional edge lengths. Building from prior knowledge about packing prisms with unit cubes, students explore packing right rectangular prisms with cubes of fractional edge lengths. Students determine that the formulas $V=l \times w \times h$ and $V=B \times h$ can be applied to find the volume of any right rectangular prism. They apply these formulas to solve real-world and mathematical problems, including problems about solids composed of right rectangular prisms.

- What types of solids require the fewest calculations when finding surface area?
- What should we consider when designing a box for a product?
- What real-world situations involve surface area?
- What real-world situations involve volume?
- How can two solids have the same volume but different surface areas?

Assessment Evidence

Performance Tasks:
Lesson 1 -> Learn Section -> Digital Activities
Lesson 7 -> Learn Section -> Digital Activities
Lesson 9 -> Learn Section -> Digital Activities
Lesson 11 -> Learn Section -> Tracing Nets
Lesson 13-> Learn Section -> Wrapping a Gift
Lesson 14-> Learn Section -> Designing a Box
Lesson 15 -> Launch Section -> Digital Activities

Other Evidence:

Topic A Quiz-1-4

Topic B Quiz 5-8

Topic C Quiz 9-14

Topic D Quiz 15-19

Benchmarks:

Module 5 Assessment

Learning Plan

Learning Activities:
Each lesson consists of the following

Fluency Activities
Launch
Learn
Exit Tickets

Resources:
- Eureka Math^2- Module Overview (Explains in detail the different Fluency activities)

Unit Six: Statistics

Unit Description:

Students begin to think and reason statistically. They identify statistical questions and represent data distributions by using dot plots, histograms, relative frequency histograms, and box plots. Students describe the center, spread, and shape of a data distribution. They calculate and interpret measures of center and spread including mean, mean absolute deviation, median, and interquartile range, and they use these measures to describe the typical value and variability of a data distribution.

Unit Duration: 6 weeks

Desired Results

Standard(s):

6.SP.A.1
6.SP.A.2
6.SP.A.3
6.SP.B.4
6.SP.B.5
6.SP.B.5.a
6.SP.B.5.b
6.SP.B.5.c
6.SP.B.5.d

Indicators:

Recognize statistical questions and explain that they can be answered by collecting data values that can vary.
Describe data distributions in terms of center, spread, and shape.
Draw conclusions about a numerical data distribution based on measures of center and variability.
Create plots to represent numerical data on a number line.
Report the number of observations in numerical data sets.
Describe the attribute under investigation, including the unit of measurement.
Calculate quantitative measures of center and variability and describe an overall pattern or deviations from the pattern.
Choose measures of center and variability and explain choices based on the shape of the distribution and the context.

Understandings:
Students will understand that…

- A statistical question can be one that can be answered by collecting data values that can vary. They also learn that they can describe a data distribution by describing the center, spread, and shape. In this topic and throughout the module, students visualize and represent data distributions by using dot plots, histograms, and relative frequency histograms.
- The mean as the value of one equal share and then as the balance point of a data distribution. This allows students to calculate the mean from a data set or to estimate the location of the mean in a data display. Students later discover that the mean alone is not sufficient to describe a data distribution. Building upon their experiences finding the balance point of a distribution, students find the mean absolute deviation as a measure of variability.
- The mean does not seem to represent a typical value in a distribution that is skewed, students find that they need other measures of center and spread. They calculate the median as a measure of center and the interquartile range as a measure of variability. Students also find the five-number summaries of data distributions and use these values to create box plots. Students interpret these values in context and use the interpretations to help them compare data distributions represented in box plots.
  They can implement the four-step investigative process. They develop a statistical question and then create and use a plan to collect data. The topic culminates with students analyzing the data by creating data displays and calculating numerical summaries. They interpret their results to answer a statistical question and present their findings to their peers. U

Essential Questions:

- How can we tell a statistical question from other questions?
- What are two types of data that are collected to answer statistical questions?
- When might we construct a histogram instead of a dot plot to analyze a data distribution?
- What features of a data set should we consider when choosing a data display?
- What is one way to describe the center of a data distribution?
- What does the mean represent?
- How does variability affect how well the mean represents all the values in a data distribution?
- How can we use the mean absolute deviation to describe a data distribution?
- How can we determine the shape, center, and spread of a data distribution from a box plot?
- How can box plots, the median, and the interquartile range help us answer statistical questions?
- How do we use the investigative process to learn more about topics we are interested in?
- How do different data displays help us compare data distributions?
- What is measurement variability? How can we reduce it when collecting data values?
- What information does each measure of variability tell us about data distribution?

Assessment Evidence

Performance Tasks: Lesson 4-> Learn Section-> Digital Activities Lesson 14-> Learn Section -> Human Box Plot Lesson 15 -> Learn Section -> Digital Activities Lesson 20->Learn Section -> Digital Activities	**Other Evidence:** **Topic A Quiz 1-6** **Topic B Quiz 7-11** **Topic C Quiz 12-16** **Topic D Quiz 17-22**

Benchmarks:

Module 6 Assessment

Learning Plan

Learning Activities:
Each lesson consists of the following

Fluency Activities
Launch
Learn
Exit Tickets

Resources:

- Eureka Math^2- Module Overview (Explains in detail the different Fluency activities)

Unit Modifications for Special Population Students

English Language Learners	Pair students who have different levels of mathematical proficiency. Pair students who have different levels of English language proficiency. Join pairs to form small groups of four. Models
Learners with an IEP	Each special education student has in Individualized Educational Plan (IEP) that details the specific accommodations, modifications, services, and support needed to level the playing field. This will enable that student to access the curriculum to the greatest extent possible in the least restrictive environment. These include: • Variation of time: adapting the time allotted for learning, task completion, or testing • Variation of input: adapting the way instruction is delivered • Variation of output: adapting how a student can respond to instruction • Variation of size: adapting the number of items the student is expected to complete • Modifying the content, process or product Additional resources are outlined to facilitate appropriate behavior and increase student engagement. The most frequently used modifications and accommodations can be viewed here. Teachers are encouraged to use the Understanding by Design Learning Guidelines (UDL). These guidelines offer a set of concrete suggestions that can be applied to any discipline to ensure that all learners can access and participate in learning opportunities. The framework can be viewed here www.udlguidelines.cast.org
Learners with a 504	Refer to page four in the Parent and Educator Guide to Section 504 to assist in the development of appropriate plans.

Interdisciplinary Connections

Indicators:

Life Skills: Reading labels and using ratios to work out recipes

Music: Problems with different rates of tempo

Integration of 21st Century Skills

Indicators:

Collaboration- working in pairs and small groups

Communication- discusses held during the lesson

Social Skills- discussing different problems in pairs or small groups.