Curriculum Map: Grade 6 Math 2019

Course: MATH 6 Sub-topic: General

Grade(s): 6

Course Description:

Students at this level will:

Make sense of problems and persevere in solving them

- Solve problems involving ratios and rates and discuss how they solved them
- Solve real world problems through the application of algebraic and geometric concepts
- Seek the meaning of a problem and look for efficient ways to represent and solve it
- Check their thinking by asking themselves, "What is the most efficient way to solve the problem?", "Does this make sense?" and "Can I solve the problem in a different way?"

Reason abstractly and quantitatively

- Represent a wide variety of real world contexts through the use of real numbers and variables in mathematical expressions, equations, and inequalities
- Contextualize to understand the meaning of the number or variable as related to the problem
- Decontextualize to manipulate symbolic representations by applying properties of operations

Construct viable arguments and critique the reasoning of others

- Construct arguments using verbal or written explanations accompanied by expressions, equations, inequalities, models, and graphs, tables, and other data displays (i.e. box plots, dot plots, histograms, etc.)
- Refine their mathematical communication skills through mathematical discussions in which they critically evaluate their own thinking and the thinking of other students
- Pose questions like, "How did you get that?", "Why is that true?", "Does that always work?"
- Explain their thinking to others and respond to others' thinking

Model with mathematics

- Model problem situations symbolically, graphically, tabularly, and contextually
- Form expressions, equations, or inequalities from real world contexts and connect symbolic and graphical representations
- Begin to explore covariance and represent two quantities simultaneously
- Use number lines to compare numbers and represent inequalities
- Use measures of center and variability and data displays (i.e. box plots and histograms) to draw inferences about and make comparisons between data sets
- Connect and explain the connections between the different representations
- Use all representations as appropriate to a problem context

Use appropriate tools strategically

- Consider available tools (including estimation and technology) when solving a mathematical problem and decide when certain tools might be helpful
- Decide to represent similar data sets using dot plots with the same scale to visually compare the center and variability of the data
- Use physical objects or applets to construct nets and calculate the surface area of three dimensional figures

Attend of precision

- Continue to refine their mathematical communication skills by using clear and precise language in their discussions with others and in their own reasoning
- Use appropriate terminology when referring to rates, ratios, geometric figures, data displays, and components of expressions, equations or inequalities

Look for and make use of structure

- Routinely seek patters or structures to model and solve problems
- Recognize patterns that exist in ratio tables recognizing both the additive and multiplicative properties

- Apply properties to generate equivalent expressions (i.e. 6+2x=15, 2c=12 by subtraction property of equality, c=6 by division property of equality)
- Compose and decompose two- and three- dimensional figures to solve real world problems involving area and volume

Look for and express regularity in repeated reasoning

- Use repeated reasoning to understand algorithms and make generalizations about patterns
- Solve and model problems. They may notice that a/b ÷ c/d= ad/bc and construction other examples and models that confirm their generalization
- Connect place value and their prior work with operations to understand algorithms to fluently divide multi-digit numbers and perform all operations with multi-digit decimals
- Informally begin to make connections between covariance, rates and representations showing the relationships between quantities

Course Textbooks, Workbooks, Materials Citations: GO Math 6th Grade Textbooks (1 book per chapter)

Unit: The Number System-Chapters 1,2 and 3
Timeline: September to November

Month: September-November

Skills:

1. Solve problems and compute fluently with whole numbers and decimals.

2. Find common multiples and factors including greatest common factor and least common multiple.

3. Use the distributive property to express a sum of two numbers.

4. Solve problems involving fraction/mixed number multiplication and division.

5. Solve problems involving integers, rational numbers and absolute value.

6. Solve problems using ordered pairs, the coordinate plane and distances on the coordinate plane.

Essential Questions:

1. How do you divide multi-digit numbers?

2. How do you prime factor a number?

3. How do you find the LCM and GCF?

4. How can you apply the GCF to a word problem via the distributive property?

5. How do you add, subtract, multiply and divide decimals?

6. How can you convert between fractions and decimals?

7.How can you order fractions and decimals?

8. How can you divide fractions?

9. How do you divide mixed numbers?

10. How do you estimate quotients?

11. How do you use positive and negative numbers to describe a situation?

12. How do you compare and order integers, rational numbers and absolute value?

13. How can you use the coordinate plane, ordered pairs and distance on the coordinate plane to solve problems?

Content:

1. Mathematical relationships among numbers can be represented, compared, and communicated.

2. Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

3. Fractions and decimals can be used to represent less than one whole.

4. Integers and rational numbers can be used to represent real life scenarios.

5. There is a relationship between ordered pairs, the coordinate plane and the quadrants that compromise the coordinate plane.

Assessments: Quizzes, Tests, Long term assignments, formative assessments

Lessons: Chapter 1: Lessons 1.1 to 1.10

Chapter 2: Lessons 2.1 to 2.10

Chapter 3: Lessons 3.1 to 3.10

Vocabulary: Least Common Multiple

Greatest Common Factor

Prime Factorization

Distributive property

Fraction

Decimal

Mixed Number

Integers

Rational Numbers

Absolute Value

Ordered Pairs

Coordinate Plane

Quadrants

Resources: GO Math Book Series - Grade 6

Ti-34 Multi-view Calculators

Projectors in classrooms

Internet Connection with access to schoology website

Teacher Created Videos

Laptops

Paper/Pens/Pencils

STANDARDS:

STANDARDS

STATE: PA Core Anchors and Eligible Content (2014)

M06.A-N.1.1.1 (Advanced)	Interpret and compute quotients of fractions (including mixed numbers), and solve word problems involving division of fractions by fractions. Example 1: Given a story context for (2/3) + (3/4), explain that (2/3) + (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) + (c/d) = (a/b) * (d/c) = ad/bc.) Example 2: How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi? Example 3: How many 2 1/4-foot pieces can be cut from a 15 1/2-foot board?
M06.A-N.2.1.1 (Advanced)	Solve problems involving operations (+, - , x, and with whole numbers, decimals (through thousandths), straight computation, or word problems. Alternate Eligible Content Code M06AN2.1.1a: Solve a problem using up to 3-digit whole numbers and any of the four operations
M06.A-N.2.2.1 (Advanced)	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Alternate Eligible Content Code M06AN2.2.1a: Identify multiples for numbers 5, 10, 25, or 100
M06.A-N.2.2.2 (Advanced)	Apply the distributive property to express a sum of two whole numbers, 1 through 100, with a common factor as a multiple of a sum of two whole numbers with no common factor. Example: Express 36 + 8 as 4(9 + 2).
M06.A-N.3.1.1 (Advanced)	Represent quantities in real-world contexts using positive and negative numbers, explaining the meaning of 0 in each situation (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge). Alternate Eligible Content Code M06AN3.1.1a: Identify a specific integer in a real-world context
M06.A-N.3.1.2 (Advanced)	Determine the opposite of a number and recognize that the opposite of the opposite of a number is the number itself (e.g., - (-3) = 3; 0 is its own opposite). Alternate Eligible Content Code M06AN3.1.2a: Identify the opposite of a number on the number line
M06.A-N.3.1.3 (Advanced)	Locate and plot integers and other rational numbers on a horizontal or vertical number line; locate and plot pairs of integers and other rational numbers on a coordinate plane. Alternate Eligible Content Code M06AN3.1.3a: Locate positive and negative numbers on the number line
M06.A-N.3.2.1 (Advanced)	Write, interpret, and explain statements of order for rational numbers in real-world contexts. Example: Write - 3°C > - 7°C to express the fact that - 3°C is warmer than - 7°C.
M06.A-N.3.2.2 (Advanced)	Interpret the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation.

	Example: For an account balance of - 30 dollars, write |-30| = 30 to describe the size of the debt in dollars, and recognize that an account balance less than - 30 dollars represents a debt greater than 30 dollars.
M06.A-N.3.2.3 (Advanced)	Solve real-world and mathematical problems by plotting points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. Alternate Eligible Content Code M06AN3.2.3a: Identify points in all four quadrants of the coordinate plane

Topic: Lesson 1 (1.1) Divide Multi-digit Numbers (E)

Minutes for Topic: 42

Core Lesson Description:	Divide Multi-digit Numbers
Core Lesson Student Learning Objectives:	SWBAT fluently divide multi-digit numbers.
Core Lesson Essential Questions:	How do you divide multi-digit numbers? (E)

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.E.2 (Advanced)	Identify and choose appropriate processes to compute fluently with multi-digit numbers.
CC.2.1.6.E.3 (Advanced)	Develop and/or apply number theory concepts to find common factors and multiples.

STATE: PA Core Anchors and Eligible Content (2014)

M06.A-N.2.1.1 (Advanced)	Solve problems involving operations (+, - , x, and with whole numbers, decimals (through thousandths), straight computation, or word problems. Alternate Eligible Content Code M06AN2.1.1a: Solve a problem using up to 3-digit whole numbers and any of the four operations
M06.A-N.2.2.1 (Advanced)	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Alternate Eligible Content Code M06AN2.2.1a: Identify multiples for numbers 5, 10, 25, or 100
M06.A-N.2.2.2 (Advanced)	Apply the distributive property to express a sum of two whole numbers, 1 through 100, with a common factor as a multiple of a sum of two whole numbers with no common factor. Example: Express 36 + 8 as 4(9 + 2).

Topic: Lesson 2 (1.2) Prime Factorization (E)

Minutes for Topic: 42

Core Lesson Description:	Perform the prime factorization of numbers via factor trees or ladder diagrams.
Core Lesson Student Learning Objectives:	SWBAT write the prime factorization of numbers.
Core Lesson Essential Questions:	How do you prime factor a number? (E)

Topic: Lesson 3 (1.3) Least Common Multiple (E)

Minutes for Topic: 42

Core Lesson Description: Find the least common multiple of a set of numbers.

Core Lesson Student Learning Objectives: SWBAT find the least common multiple of two whole numbers.

Core Lesson Essential Questions: How do you find the LCM of a set of numbers? (E)

Topic: Lesson 4 (1.4) Greatest Common Factor (E)

Minutes for Topic: 42

Core Lesson Description: Determine the greatest common factor of a set of whole numbers.

Core Lesson Student Learning Objectives: SWBAT find the greatest common factor of two whole numbers.

Core Lesson Essential Questions: How do you find the greatest common factor of a set of numbers? (E)

Topic: Lesson 5 (1.5) Apply the GCF (I)

Minutes for Topic: 42

Core Lesson Description: Apply greatest common factor to a word problem.

Core Lesson Student Learning Objectives: SWBAT solve problems involving greatest common factor and the distributive property.

Core Lesson Essential Questions: How do you apply the GCF to a word problem (I)?

Topic: Lesson 6 Mid Chapter 1 Review (I)

Core Lesson Essential Questions: What do I need to know for the mid chapter 1 quiz? (I)

Topic: Lesson 7 Assessment, Mid-chapter 1 Quiz

Minutes for Topic: 42

Core Lesson Student Learning Objectives:

Topic: Lesson 8 (1.6) Add & Subtract Decimals E)

Minutes for Topic: 42

Core Lesson Description: Add and subtract decimals using paper and pencil with the ability to check answers with a calculator after finding the answer by hand.

Core Lesson

Student Learning Objectives: SWBAT fluently add and subtract multi-digit decimals.

Core Lesson Essential Questions: How do you add and subtract decimals? (E)

Topic: Lesson 9 (1.7) Multiply Decimals (E)

Minutes for Topic: 42

Core Lesson Description: Multiply decimals using paper and pencil with the ability to check answers with a calculator after finding the answer by hand.

Core Lesson Student Learning Objectives: SWBAT Fluently multiply multi-digit decimals.

Core Lesson Essential Questions: How do you multiply decimals? (E)

Topic: Lesson 10 (1.8) Divide Decimals by Whole Numbers (E)

Minutes for Topic: 42

Core Lesson Description: Divide decimals by whole numbers using paper and pencil with the ability to check answers with a calculator after finding the answer by hand.

Core Lesson Student Learning Objectives: SWBAT fluently divide whole numbers and decimals by whole numbers.

Core Lesson Essential Questions: How do you divide decimals by whole numbers? (E)

Topic: Lesson 11 (1.9) Divide with Decimals (E)

Minutes for Topic: 42

Core Lesson Description: Divide decimals by decimals using paper and pencil with the ability to check answers with a calculator after finding the answer by hand.

Core Lesson Student Learning Objectives: SWBAT fluently divide whole numbers and decimals by decimals.

Core Lesson Essential Questions: How do you divide a decimal by a decimal? (E)

Topic: Lesson 12 Review for chapter 1 assessment

Minutes for Topic: 42

Core Lesson Essential Questions: What are the important skills students need to know for chapter 1 test? (I)

Topic: Lessons 13-Chapter 1 Test

Minutes for Topic: 84

Core Lesson Essential Questions: Students will take chapter 1 test. (E)

Topic: Lesson 14 (2.1) Fractions and Decimals (E)

Minutes for Topic: 42

Core Lesson Student Learning Objectives: SWBAT convert between fractions and decimals.

Core Lesson Essential Questions: How do you convert between fractions and decimals (E)?

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.D.1 (Advanced)	Understand ratio concepts and use ratio reasoning to solve problems.
CC.2.1.6.E.1 (Advanced)	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

STATE: PA Core Anchors and Eligible Content (2014)

M06.A-N.1.1.1 (Advanced)	Interpret and compute quotients of fractions (including mixed numbers), and solve word problems involving division of fractions by fractions. Example 1: Given a story context for (2/3) + (3/4), explain that (2/3) + (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) + (c/d) = (a/b) * (d/c) = ad/bc.) Example 2: How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi? Example 3: How many 2 1/4-foot pieces can be cut from a 15 1/2-foot board?
M06.A-R.1.1.1 (Advanced)	Use ratio language and notation (such as 3 to 4, 3:4, 3/4) to describe a ratio relationship between two quantities. Example 1: "The ratio of girls to boys in a math class is 2:3 because for every 2 girls there are 3 boys." Example 2: "For every five votes candidate A received, candidate B received four votes."
M06.A-R.1.1.2 (Advanced)	Find the unit rate a/b associated with a ratio a:b (with b ? 0) and use rate language in the context of a ratio relationship. Example 1: "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." Example 2: "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." Alternate Eligible Content Code M06AR1.1.2a: Identify the ratio that matches a given statement and/or representation
M06.A-R.1.1.3 (Advanced)	Construct tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and/or plot the pairs of values on the coordinate plane. Use tables to compare ratios.
M06.A-R.1.1.4 (Advanced)	Solve unit rate problems including those involving unit pricing and constant speed. Example: If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? Alternate Eligible Content Code M06AR1.1.4a: Solve a 1-step real-world problem given the unit rate
M06.A-R.1.1.5 (Advanced)	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percentage. Alternate Eligible Content Code M06AR1.1.5a: Calculate a percent of a quantity as a rate per 100

Topic: Lesson 15 (2.2) Compare & Order Fractions and Decimals (E)

Minutes for Topic: 42

Core Lesson Description: Put fractions and decimals in order, compare fractions and decimals.

Core Lesson Student Learning Objectives: SWBAT compare and order fractions and decimals.

Core Lesson Essential Questions: How do you compare and order fractions and decimals? (E)

Topic: Lesson 16 (2.3) Multiply Fractions (E)

Minutes for Topic: 42

Core Lesson Description:	Multiply fractions
Core Lesson Student Learning Objectives:	SWBAT multiply fractions
Core Lesson Essential Questions:	How do you multiply fractions? (E)

Topic: Lesson 17 (2.4) Simplify Factors (E)

Minutes for Topic: 42

Core Lesson Description:	Simplify Fractions by dividing by a common factor.
Core Lesson Student Learning Objectives:	SWBAT simplify fractional factors by using the greatest common factor.
Core Lesson Essential Questions:	How do you simplify fractions using common factors? (E)

Topic: Lesson 18 Review for mid-chapter 2 assessment

Minutes for Topic: 42

Core Lesson Student Learning Objectives:	
Core Lesson Essential Questions:	What do students need to know for lessons 2.1 -2.4 mid-chapter assessment? (I)

Topic: Lesson 19 Mid-chapter 2 assessment

Core Lesson Essential Questions:	Take mid-chapter 2 assessment (E)

Topic: Lesson 20 (2.5) Model fraction division (E)

Minutes for Topic: 42

Core Lesson Description:	Model Fraction Division using manipulatives.
Core Lesson Student Learning Objectives:	SWBAT divide fractions.
Core Lesson Essential Questions:	How do you model fraction division? (I)

Topic: Lesson 21 (2.6) Estimating Quotients (I)

Core Lesson Description: Estimate quotients using compatible numbers.

Core Lesson Essential Questions: How do you estimate quotients when dividing fractions? (I)

Topic: Lesson 22 (2.7) Dividing Fractions (E)

Core Lesson Description: Dividing Fractions

Core Lesson Essential Questions: How do you divide fractions? (E)

Topic: Lesson 23 (2.8) Model mixed number division (I)

Core Lesson Description: Model mixed number division

Core Lesson Essential Questions: How do you model mixed number division? (I)

Topic: Lesson 24 (2.9) Divide Mixed Numbers (E)

Minutes for Topic: 42

Core Lesson Description: Divide mixed numbers

Core Lesson Student Learning Objectives: SWBAT solve problems with fractions and mixed numbers.

Core Lesson Essential Questions: 2.9- How do you divide mixed numbers (E)

Topic: Lesson 25 (2.10) Problem Solving: Fraction Operations (E)

Core Lesson Description: Solve word problems involving fractions.

Core Lesson Essential Questions: How do you solve word problems that involve fractions? (E)

Topic: Lesson 26 Review for end of chapter 2 assessment

Minutes for Topic: 42

Core Lesson Essential Questions: What do I need to know for the chapter 2 end of chapter assessment? (I)

Topic: Lesson 27 Assessment for end of chapter 2

Minutes for Topic: 84

Core Lesson Essential Questions: Students will take end of chapter 2 assessment. (E)

Topic: Lesson 28 (3.1) Understand Positive and Negative Numbers (E)

Minutes for Topic: 42

Core Lesson Description: Use positive and negative numbers to represent real world situations.

Core Lesson Student Learning Objectives: SWBAT understand positive and negative numbers and use them to represent real-world quantities.

Core Lesson Essential Questions: How do you use positive and negative numbers? (E)

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.E.4 (Advanced)	Apply and extend previous understandings of numbers to the system of rational numbers.

STATE: PA Core Anchors and Eligible Content (2014)

M06.A-N.3.1.1 (Advanced)	Represent quantities in real-world contexts using positive and negative numbers, explaining the meaning of 0 in each situation (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge). Alternate Eligible Content Code M06AN3.1.1a: Identify a specific integer in a real-world context
M06.A-N.3.1.2 (Advanced)	Determine the opposite of a number and recognize that the opposite of the opposite of a number is the number itself (e.g., - (-3) = 3; 0 is its own opposite). Alternate Eligible Content Code M06AN3.1.2a: Identify the opposite of a number on the number line
M06.A-N.3.1.3 (Advanced)	Locate and plot integers and other rational numbers on a horizontal or vertical number line; locate and plot pairs of integers and other rational numbers on a coordinate plane. Alternate Eligible Content Code M06AN3.1.3a: Locate positive and negative numbers on the number line
M06.A-N.3.2.1 (Advanced)	Write, interpret, and explain statements of order for rational numbers in real-world contexts. Example: Write - 3°C > - 7°C to express the fact that - 3°C is warmer than - 7°C.
M06.A-N.3.2.2 (Advanced)	Interpret the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation. Example: For an account balance of - 30 dollars, write |- 30| = 30 to describe the size of the debt in dollars, and recognize that an account balance less than - 30 dollars represents a debt greater than 30 dollars.
M06.A-N.3.2.3 (Advanced)	Solve real-world and mathematical problems by plotting points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate. Alternate Eligible Content Code M06AN3.2.3a: Identify points in all four quadrants of the coordinate plane

Topic: Lesson 29 (3.2) Compare and Order Integers (E)

Minutes for Topic: 42

Core Lesson Description: Compare and order integers.

Core Lesson Student Learning Objectives: SWBAT compare and order integers.

Core Lesson Essential Questions: How do you compare and order integers? (E)

Topic: Lesson 30 (3.3) Rational Numbers and the Number Line (E)

Minutes for Topic: 42

Core Lesson Description:	Plot rational numbers on a number line.
Core Lesson Student Learning Objectives:	SWBAT plot rational numbers on a number line, and use a number line to identify opposites.
Core Lesson Essential Questions:	How do you put rational numbers on a number line? (E)

Topic: Lesson 31 (3.4) Compare and Order Rational Numbers (E)

Minutes for Topic: 42

Core Lesson Description:	Compare and order rational numbers.
Core Lesson Student Learning Objectives:	SWBAT compare and order rational numbers.
Core Lesson Essential Questions:	How do you compare and order rational numbers? (E)

Topic: Lesson 32 mid chapter 3 quiz review

Minutes for Topic: 42

Core Lesson Essential Questions:	What should I know for the chapter 3 mid point quiz? (I)

Topic: Lesson 33 mid chapter 3 quiz

Core Lesson Essential Questions:	Students will take mid-chapter 3 quiz

Topic: Lesson 34 (3.5) Absolute Value (E)

Minutes for Topic: 42

Core Lesson Description:	Understand absolute value
Core Lesson Student Learning Objectives:	SWBAT find and interpret the absolute value of rational numbers, and interpret comparisons involving absolute values.
Core Lesson Essential Questions:	3.5- What is absolute value? (E)

Topic: Lesson 35 (3.6) Comparing Absolute Values (I)

Core Lesson Description:	Compare absolute values
Core Lesson Essential Questions:	How do you compare absolute values? (I)

Topic: Lesson 36 (3.7) Rational Numbers and the Coordinate Plane (E)

Minutes for Topic: 42

Core Lesson Description:	Place rational numbers in the coordinate plane.
Core Lesson Student Learning Objectives:	SWBAT plot ordered pairs of rational numbers on a coordinate plane.
Core Lesson Essential Questions:	How do you plot rational numbers on the coordinate plane? (E)

Topic: Lesson 37 (3.8) Ordered Pair Relationships (E)

Minutes for Topic: 42

Core Lesson Description:	Use ordered pairs to solve problems.
Core Lesson Student Learning Objectives:	SWBAT identify the relationship between points on a coordinate plane.
Core Lesson Essential Questions:	How can you identify the relationship between points on a coordinate plane? (E)

Topic: Lesson 38 (3.9) Distance on the Coordinate Plane (E)

Minutes for Topic: 42

Core Lesson Description:	Determine distance on the coordinate plane.
Core Lesson Student Learning Objectives:	SWBAT find horizontal and vertical distance on the coordinate plane.
Core Lesson Essential Questions:	How do you find horizontal and vertical distance on the coordinate plane? (E)

Topic: Lesson 39 (3.10) Problem Solving: The Coordinate Plane (I)

Minutes for Topic: 42

Core Lesson Description:	Solve coordinate plane problems.
Core Lesson Student Learning Objectives:	SWBAT solve problems on the coordinate plane by using the strategy *draw a diagram.*
Core Lesson Essential Questions:	How do you solve problems on the coordinate plane by using the strategy *draw a diagram?(I)*

Topic: Lesson 40 Review-for chapter 3 test

Minutes for Topic: 42

Core Lesson Big Ideas:	What do I need to know for the chapter 3 test? (I)

Topic: Lesson 41 Assessment-Chapter 3 Test

Minutes for Topic: 84

Core Lesson Essential Questions: Take chapter 3 end of chapter assessment

Unit: Ratios and Rates-Chapters 4, 5 and 6

Timeline: November to January

Month: November to January

Skills: *Students should be able to do the following by the end of this unit:*

1. Represent ratio relationships in various forms.
2. Determine unit rates in context.
3. Solve problems using ratio and rate reasoning.
4. Convert between percents, fractions and decimals.
5. Find the whole given a part and the part given the whole.
6. Convert measurement units using equivalent ratios.
7. Solve problems involving distance, rate and time.

Essential Questions:

1. How do you model ratios and rates?
2. How do you use unit rates?
3. How can you plot equivalent ratios in graphs?
4. How do you model percent?
5. How do you write percent as a fraction or decimal?
6. How do you write fractions and decimals as percent?
7. How do you find the percent of a quantity?
8. How do you problem solve with percent ?
9. How do you find the whole from a percent?
10. How do you convert between units of length, capacity and mass?
11. How do you solve distance, rate and time formulas?

Content:

1. Mathematical relationships among ratios can be represented, compared, and communicated.
2. Mathematical relationships can be represented as percents, decimals and fractions in mathematical situations.
3. Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.
4. Patterns exist in equivalent ratios that can be extended, described, and generalized.
5. Using ratios you can find the missing whole given a part and the part given the whole.

6. There is a method for converting between mass, length and capacity to another similar unit.

7. There is a relationship between distance, rate and time.

8. Percent is a ratio that compares a quantity to 100.

Assessments: Quizzes, Chapter Tests, Formative assessments, Long Term assignments

Lessons: Chapter 4: Lessons 4.1 to 4.8

Chapter 5: Lessons 5.1 to 5.6

Chapter 6: Lessons 6.1 to 6.5

Vocabulary: Fractions

Decimals

Product

Quotient

Ratio

Unit Rate

Percent

Length

Mass

Capacity

Distance

Rate

Time

Resources: GO Math Book Series - Grade 6

Ti-34 Multi-view Calculators

Projectors in classrooms

Internet Connection with access to schoology website

Teacher Created Videos

Laptops

Paper/Pens/Pencils

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.D.1 (Advanced)	Understand ratio concepts and use ratio reasoning to solve problems.

STATE: PA Core Anchors and Eligible Content (2014)

M06.A-R.1.1.1 (Advanced)	Use ratio language and notation (such as 3 to 4, 3:4, 3/4) to describe a ratio relationship between two quantities.

	Example 1: "The ratio of girls to boys in a math class is 2:3 because for every 2 girls there are 3 boys." Example 2: "For every five votes candidate A received, candidate B received four votes."
M06.A-R.1.1.2 (Advanced)	Find the unit rate a/b associated with a ratio a:b (with b ? 0) and use rate language in the context of a ratio relationship. Example 1: "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." Example 2: "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." Alternate Eligible Content Code M06AR1.1.2a: Identify the ratio that matches a given statement and/or representation
M06.A-R.1.1.3 (Advanced)	Construct tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and/or plot the pairs of values on the coordinate plane. Use tables to compare ratios.
M06.A-R.1.1.4 (Advanced)	Solve unit rate problems including those involving unit pricing and constant speed. Example: If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? Alternate Eligible Content Code M06AR1.1.4a: Solve a 1-step real-world problem given the unit rate
M06.A-R.1.1.5 (Advanced)	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percentage. Alternate Eligible Content Code M06AR1.1.5a: Calculate a percent of a quantity as a rate per 100

Topic: Lesson 42 (4.1) Model Ratios (E)

Minutes for Topic: 42

Core Lesson Description:	Model Ratios
Core Lesson Student Learning Objectives:	SWBAT to model ratios
Core Lesson Essential Questions:	How do you model percent? (E)

Topic: Lesson 43 (4.2) Ratios and Rates (E)

Minutes for Topic: 42

Core Lesson Description:	Use ratios and unit rates to solve problems.
Core Lesson Student Learning Objectives:	SWBAT write ratios and rates.
Core Lesson Essential Questions:	How do you write ratios and rates? (E)

Topic: Lesson 44 (4.3) Equivalent Ratios and Multiplication Tables (E)

Minutes for Topic: 42

Core Lesson Description: Determine equivalent ratios using multiplication tables.

Core Lesson Student Learning Objectives: SWBAT use a multiplication table to find equivalent ratios.

Core Lesson Essential Questions: 4.3-How can you write equivalent ratios from multiplication tables? (E)

Topic: Lesson 45 (4.4) Use Tables to Compare Ratios (I)

Minutes for Topic: 42

Core Lesson Description: Compare ratios using tables.

Core Lesson Essential Questions: How can you compare ratios using tables? (I)

Topic: Lesson 46 (4.5) Use Equivalent Ratios (E)

Minutes for Topic: 42

Core Lesson Description: Use equivalent ratios to problem solve.

Core Lesson Student Learning Objectives: SWBAT use tables to solve problems involving equivalent ratios.

Core Lesson Essential Questions: 4.5 How can you use equivalent ratios? (E)

Topic: Lesson 47 Mid Chapter 4 Review (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What do students need to know for the mid chapter 4 assessment? (I)

Topic: Lesson 48 Assessment for mid-chapter 4

Minutes for Topic: 42

Core Lesson Essential Questions: Mid chapter 4 quiz (E)

Topic: Lesson 49 (4.6) Find Unit Rates (E)

Minutes for Topic: 42

Core Lesson Description: Find unit rates

Core Lesson Student Learning Objectives: SWBAT use unit rates to make comparisons.

Core Lesson Essential Questions: How do you find unit rates? (E)

Topic: Lesson 50 (4.7) Use Unit Rates (E)

Minutes for Topic: 42

Core Lesson Description: Use unit rates

Core Lesson Student Learning Objectives: SWBAT solve problems using unit rates.

Core Lesson Essential Questions: How do you use unit rates? (E)

Topic: Lesson 51 (4.8) Equivalent Ratios and Graphs (I)

Minutes for Topic: 42

Core Lesson Description: Use equivalent ratios and graphs to problem solve.

Core Lesson Student Learning Objectives: SWBAT use a graph to represent equivalent ratios.

Core Lesson Essential Questions: How can you use graphs to solve problems involving equivalent ratios (I)

Topic: Lesson 52 Review for end of chapter 4 assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What do you need to know for the chapter 4 test? (I)

Topic: Lesson 53 Assessment-End of Chapter 4

Minutes for Topic: 84

Core Lesson Essential Questions: End of Chapter 4 assessment (E)

Topic: Lesson 54 (5.1) Model Percents (E)

Minutes for Topic: 42

Core Lesson Description: Model percents

Core Lesson Student Learning Objectives: SWBAT use a model to show a percent as a rate per 100.

Core Lesson Essential Questions: 5.1-How do you model percents? (E)

Topic: Lesson 55 (5.2) Write Percents as Fractions & Decimals (E)

Minutes for Topic: 42

Core Lesson Description: Write percents as fractions and decimals

Core Lesson Essential Questions: How do you write a percent as a fraction and a decimal? (E)

Topic: Lesson 56 (5.3) Write Fractions and Decimals as Percents (E)

Minutes for Topic: 42

Core Lesson Description: Write fractions and decimals as a percent.

Core Lesson Student Learning Objectives: SWBAT write fractions and decimals as percents.

Core Lesson Essential Questions: How do you write fractions and decimals as percents? (E)

Topic: Lesson 57 Review for mid-chapter 5 assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What do I need to know for the mid-chapter 5 assessment? (I)

Topic: Lesson 58 Mid-Chapter 5 Assessment

Minutes for Topic: 42

Core Lesson Essential Questions: Take mid-chapter 5 assessment (E)

Topic: Lesson 59 (5.4) Percent of a Quantity (E)

Minutes for Topic: 42

Core Lesson Description: Find the percent of a quantity

Core Lesson Student Learning Objectives: SWBAT find a percent of quantity.

Core Lesson Essential Questions: How do you find the percent of a quantity? (E)

Topic: Lesson 60 (5.5) Problem Solving: Percents (E)

Minutes for Topic: 42

Core Lesson Description: Solve word problems involving percent.

Core Lesson Student Learning Objectives: SWBAT solve percent problems.

Core Lesson Essential Questions: How do you problem solve with percent? (E)

Topic: Lesson 61 (5.6) Find the Whole From a Percent (E)

Minutes for Topic: 42

Core Lesson Description: Find the whole if you know the percent and a part

Core Lesson

Student Learning Objectives: SWBAT find the whole given a part and the percent.

Core Lesson Essential Questions: How do you find the whole from a percent? (E)

Topic: Lesson 62 Review-for chapter 5 test (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What should I know for the chapter 5 test? (I)

Topic: Lesson 63 Assessment-Chapter 5 Test

Minutes for Topic: 84

Core Lesson Essential Questions: Take end of chapter 5 assessment (E)

Topic: Lesson 64 (6.1) Convert Units of Length (E)

Minutes for Topic: 42

Core Lesson Description: Convert units of length

Core Lesson Essential Questions: How do you convert units of length in the customary and metric system? (E)

Topic: Lesson 65 (6.2) Convert Units of Capacity (E)

Minutes for Topic: 42

Core Lesson Description: Convert units of capacity

Core Lesson Essential Questions: How do you convert between units of capacity in the metric and customary system? (E)

Topic: Lesson 66 (6.3) Convert between units of Mass (E)

Minutes for Topic: 42

Core Lesson Description: Convert between units of mass

Core Lesson Essential Questions: How do you convert between units of mass? (E)

Topic: Lesson 67 (6.4) Transform Units (E)

Minutes for Topic: 42

Core Lesson Description: Transform units from one unit into another.

Core Lesson Essential Questions: How do you transform units? (E)

Topic: Lesson 68 (6.5) Distance, Rate, and Time Formulas (E)

Minutes for Topic: 42

Core Lesson Description: Solve distance, rate and time problems.

Core Lesson Essential Questions: How do you solve problems involving distance rate and time? (E)

Topic: Lesson 69 Review for end of chapter 6 assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What do I need to know for the end of chapter 6 assessment? (I)

Topic: Lesson 70 End of Chapter 6 Assessment

Minutes for Topic: 84

Core Lesson Essential Questions: Take end of chapter 6 assessment

Unit: Expressions and Equations-Chapters 7,8,9

Timeline: January to February

Month: January and February

Skills: *Students should be able to do the following by the end of the unit:*

1. Write, identify and evaluate numerical expressions involving exponents.
2. Write, read and evaluate algebraic expressions.
3. Apply the properties of operations to generate equivalent expressions.
4. Solve one-step equations involving nonnegative, rational numbers.
5. Write inequalities to represent a condition in a problem.
6. Represent solutions of inequalities using number lines.
7. Use variables to represent the relationship between dependent and independent variables.
8. Represent the relationship of dependent and independent variables using graphs and tables.

Essential Questions:

1. How can you apply and extend previous understandings of arithmetic to algebraic expressions and one-variable equations?
2. How can you use inequalities to represent a condition in a real world mathematical problem?
3. How can you use variables to represent the relationship between independent and dependent variables?
4. How can you show the relationship of dependent and independent variables using graphs and equations?

Content:

1. Mathematical relationships among numbers can be represented, compared, and communicated using expressions, equations and variables.

2. Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.

3. Patterns exhibit relationships that can be extended, described, and generalized with dependent and independent variables.

Assessments: Quizzes, Tests, Various forms of formative assessment, Long term assignments

Lessons: Chapter 7: Lessons 7.1 to 7.9

Chapter 8: Lessons 8.1 to 8.10

Chapter 9: Lessons 9.1 to 9.5

Vocabulary: Algebraic expressions

Coefficient

Dependent variable

Equations

Exponent

Independent variable

Inequality

Order of Operations

Term

Resources: GO Math Book Series - Grade 6

Ti-34 Multi-view Calculators

Projectors in classrooms

Internet Connection with access to schoology website

Teacher Created Videos

Laptops

Paper/Pens/Pencils

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.6.B.1 (Advanced)	Apply and extend previous understandings of arithmetic to algebraic expressions.
CC.2.2.6.B.2 (Advanced)	Understand the process of solving a one-variable equation or inequality and apply it to real-world and mathematical problems.
CC.2.2.6.B.3 (Advanced)	Represent and analyze quantitative relationships between dependent and independent variables.

STATE: PA Core Anchors and Eligible Content (2014)

M06.B-E.1.1.1 (Advanced)	Write and evaluate numerical expressions involving whole-number exponents.

M06.B-E.1.1.2 (Advanced)	Write algebraic expressions from verbal descriptions. Example: Express the description "five less than twice a number" as 2y - 5.
M06.B-E.1.1.3 (Advanced)	Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity). Example: Describe the expression 2(8 + 7) as a product of two factors.
M06.B-E.1.1.4 (Advanced)	Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems. Example: Evaluate the expression b2 – 5 when b = 4.
M06.B-E.1.1.5 (Advanced)	Apply the properties of operations to generate equivalent expressions. Example 1: Apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x. Example 2: Apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6(4x + 3y). Example 3: Apply properties of operations to y + y + y to produce the equivalent expression 3y.
M06.B-E.2.1.1 (Advanced)	Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
M06.B-E.2.1.2 (Advanced)	Write algebraic expressions to represent real-world or mathematical problems. Alternate Eligible Content Code M06BE2.1.2a: Select an algebraic expression involving addition or subtraction of whole numbers to solve a 1-step real-world problem
M06.B-E.2.1.3 (Advanced)	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 non-negative rational numbers. Alternate Eligible Content Code M06BE2.1.3a: Use a 1-step algebraic expression to solve a real-world problem involving addition or subtraction of whole numbers
M06.B-E.2.1.4 (Advanced)	Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem and/or represent solutions of such inequalities on number lines.
M06.B-E.3.1.1 (Advanced)	Write an equation to express the relationship between the dependent and independent variables. Example: In a problem involving motion at a constant speed of 65 units, write the equation d = 65t to represent the relationship between distance and time. Alternate Eligible Content Code M06BE3.1.1a: Identify the relationship between two variables in an equation
M06.B-E.3.1.2 (Advanced)	Analyze the relationship between the dependent and independent variables using graphs and tables and/or relate these to an equation.

Topic: Lesson 71 (7.1) Exponents (E)

Minutes for Topic: 42

Core Lesson Description: Understand exponents.

Core Lesson Student Learning Objectives: SWBAT use exponents to represent repeated multiplication.

Core Lesson 7.1-How do you use exponents to express repeated factors? (E)

Essential Questions:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.6.B.1 (Advanced)	Apply and extend previous understandings of arithmetic to algebraic expressions.

STATE: PA Core Anchors and Eligible Content (2014)

M06.B-E.1.1.1 (Advanced)	Write and evaluate numerical expressions involving whole-number exponents.
M06.B-E.1.1.2 (Advanced)	Write algebraic expressions from verbal descriptions. Example: Express the description "five less than twice a number" as 2y - 5.
M06.B-E.1.1.3 (Advanced)	Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity). Example: Describe the expression 2(8 + 7) as a product of two factors.
M06.B-E.1.1.4 (Advanced)	Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems. Example: Evaluate the expression b2 – 5 when b = 4.
M06.B-E.1.1.5 (Advanced)	Apply the properties of operations to generate equivalent expressions. Example 1: Apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x. Example 2: Apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6(4x + 3y). Example 3: Apply properties of operations to y + y + y to produce the equivalent expression 3y.

Topic: Lesson 72 (7.2) Evaluate Expressions Involving Exponents (E)

Minutes for Topic: 42

Core Lesson Description:	Evaluate Expressions Involving Exponents
Core Lesson Essential Questions:	7.2-How do you evaluate expressions using order of operations? (E)

Topic: Lesson 73 (7.3) Writing Algebraic Expressions (E)

Minutes for Topic: 42

Core Lesson Description:	Writing Algebraic Expressions
Core Lesson Student Learning Objectives:	SWBAT write algebraic expressions.
Core Lesson Essential Questions:	How do you write algebraic expressions? (E)

Topic: Lesson 74 (7.4) Identify Parts of Expressions (E)

Minutes for Topic: 42

Core Lesson Description:	Identify Parts of Expressions
Core Lesson Student Learning Objectives:	SWBAT identify and describe the parts of expressions.
Core Lesson Essential Questions:	How do you describe the parts of expressions? (E)

Topic: Lesson 75 (7.5) Evaluate Algebraic Expressions & Formulas (E)

Minutes for Topic: 42

Core Lesson Description:	Evaluate Algebraic Expressions & Formulas
Core Lesson Student Learning Objectives:	SWBAT evaluate algebraic expressions and formulas.
Core Lesson Essential Questions:	How do you evaluate expressions and solve equations? (E)

Topic: Lesson 76 Review for Assessment on lessons 7.1 to 7.5 (I)

Minutes for Topic: 42

Core Lesson Essential Questions:	What do I need to know for the mid chapter 7 quiz? (I)

Topic: Lesson 77 Assessment on lessons 7.1 to 7.5

Minutes for Topic: 42

Core Lesson Essential Questions:	Take chapter 7 assessment (E)

Topic: Lesson 78 (7.6) Use Algebraic Expressions (E)

Minutes for Topic: 42

Core Lesson Description:	Use Algebraic Expressions
Core Lesson Student Learning Objectives:	SWBAT use algebraic expressions to solve problems.
Core Lesson Essential Questions:	How can you use algebraic expressions to solve problems? (E)

Topic: Lesson 79 (7.7) Combine Like Terms (E)

Minutes for Topic: 42

Core Lesson Description:	Combine Like Terms
Core Lesson Student Learning Objectives:	SWBAT combine like terms.
Core Lesson Essential Questions:	How do you combine like terms? (E)

Topic: Lesson 80 (7.8) Generate Equivalent Expressions (E)

Minutes for Topic: 42

Core Lesson Description:	Generate Equivalent Expressions
Core Lesson Student Learning Objectives:	SWBAT use the properties of operations to generate equivalent algebraic expressions.

Core Lesson Essential Questions: How can you generate equivalent expressions to one given to in the beginning of a problem? (E)

Topic: Lesson 81 (7.9) Identify Equivalent Expressions (E)

Minutes for Topic: 42

Core Lesson Description: Identify Equivalent Expressions

Core Lesson Student Learning Objectives: SWBAT identify equivalent algebraic expressions.

Core Lesson Essential Questions: How do you identify equivalent expressions? (E)

Topic: Lesson 82 Review for chapter 7 assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What do students need to know for the chapter 7 assessment? (I)

Topic: Lesson 83 End of chapter 7 Assessment

Minutes for Topic: 84

Core Lesson Essential Questions: Chapter 7 end of chapter assessment (E)

Topic: Lesson 84 (8.1) Solutions of Equations (E)

Minutes for Topic: 42

Core Lesson Description: Decide if a given number solves an equation.

Core Lesson Student Learning Objectives: SWBAT determine whether a number is a solution of a equation.

Core Lesson Essential Questions: How can you determine whether a number is a solution of a equation? (E)

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.6.B.2 (Advanced)	Understand the process of solving a one-variable equation or inequality and apply it to real-world and mathematical problems.
CC.2.2.6.B.3 (Advanced)	Represent and analyze quantitative relationships between dependent and independent variables.

STATE: PA Core Anchors and Eligible Content (2014)

M06.B-E.2.1.1 (Advanced)	Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
M06.B-E.2.1.2 (Advanced)	Write algebraic expressions to represent real-world or mathematical problems. Alternate Eligible Content Code M06BE2.1.2a: Select an algebraic expression involving addition or subtraction of whole numbers to solve a 1-step real-world problem
M06.B-E.2.1.3 (Advanced)	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 non-negative

	rational numbers. Alternate Eligible Content Code M06BE2.1.3a: Use a 1-step algebraic expression to solve a real-world problem involving addition or subtraction of whole numbers
M06.B-E.2.1.4 (Advanced)	Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem and/or represent solutions of such inequalities on number lines.
M06.B-E.3.1.1 (Advanced)	Write an equation to express the relationship between the dependent and independent variables. Example: In a problem involving motion at a constant speed of 65 units, write the equation d = 65t to represent the relationship between distance and time. Alternate Eligible Content Code M06BE3.1.1a: Identify the relationship between two variables in an equation
M06.B-E.3.1.2 (Advanced)	Analyze the relationship between the dependent and independent variables using graphs and tables and/or relate these to an equation.

Topic: Lesson 85 (8.2) Write Equations (E)

Minutes for Topic: 42

Core Lesson Description:	Write equations to match word problems.
Core Lesson Student Learning Objectives:	SWBAT write algebraic equations.
Core Lesson Essential Questions:	How do you write algebraic equations? (E)

Topic: Lesson 86 (8.3) Model and Solve Addition Equations (C)

Minutes for Topic: 42

Core Lesson Description:	Model and Solve Addition Equations
Core Lesson Essential Questions:	How do you model and solve addition equations? (C)

Topic: Lesson 87 (8.4) Solve Addition & Subtraction Equations (E)

Minutes for Topic: 42

Core Lesson Description:	Solve Addition & Subtraction Equations
Core Lesson Student Learning Objectives:	SWBAT use algebra to solve addition and subtractions equations.
Core Lesson Essential Questions:	8.4- How do you solve addition and subtraction one-step equations? (E)

Topic: Lesson 88 (8.5) Model and Solve Multiplication Equations (C)

Minutes for Topic: 42

Core Lesson Description:	Model and Solve Multiplication Equations
Core Lesson	

Essential Questions: How do you model and solve multiplication equations? (C)

Topic: Lesson 89 (8.6) Solve Multiplication & Division Equations (E)

Minutes for Topic: 42

Core Lesson Description: Solve Multiplication & Division Equations

Core Lesson Student Learning Objectives: SWBAT use algebra to solve multiplication & division equations.

Core Lesson Essential Questions: How can you use inverse operations to solve multiplication & division equations? (E)

Topic: Lesson 90 (8.7) Problem Solving: Equations with Fractions (E)

Minutes for Topic: 42

Core Lesson Description: Solve equations with fractions

Core Lesson Student Learning Objectives: SWBAT solve equations involving fractions.

Core Lesson Essential Questions: How can you solve equations involving fractions? (E)

Topic: Lesson 91 Mid Chapter 8 Review (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What is important to know for the mid chapter assessment? (I)

Topic: Lesson 92 Mid Chapter 8 Assessment

Minutes for Topic: 42

Core Lesson Essential Questions: Mid-chapter assessment for chapter 8 (E)

Topic: Lesson 93 (8.8) Solutions of Inequalities (E)

Minutes for Topic: 42

Core Lesson Description: Decide if a given number solves an inequality.

Core Lesson Student Learning Objectives: SWBAT determine whether a number is a solution of an inequality.

Core Lesson Essential Questions: How can you determine whether a number is a solution of an inequality? (E)

Topic: Lesson 94 (8.9) Write Inequalities (E)

Minutes for Topic: 42

Core Lesson Description: Write inequalities to match a situation.

Core Lesson Student Learning Objectives: SWBAT write algebraic inequalities.

Core Lesson Essential Questions: How can you write algebraic inequalities to represent situations? (E)

Topic: Lesson 95 (8.10) Graph Inequalities (E)

Minutes for Topic: 42

Core Lesson Description: Plot an inequality on a number line.

Core Lesson Student Learning Objectives: SWBAT represent solutions of algebraic inequalities on number line diagrams.

Core Lesson Essential Questions: How can you represent solutions of algebraic inequalities on number line diagrams? (E)

Topic: Lesson 96 Review for chapter 8 end of chapter assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What do I need to know for the chapter 8 end of chapter assessment? (I)

Topic: Lesson 97 Assessment for Chapter 8

Minutes for Topic: 84

Core Lesson Essential Questions: Chapter 8 assessment (E)

Topic: Lesson 98 (9.1) Independent & Dependent Variables (E)

Minutes for Topic: 42

Core Lesson Description: Represent the relationship between an independent variable and a dependent variable.

Core Lesson Student Learning Objectives: SWBAT write an equation to represent the relationship between an independent variable and a dependent variable.

Core Lesson Essential Questions: How can you write an equation to represent the relationship between an independent variable and a dependent variable? (E)

Topic: Lesson 99 (9.2) Equations & Tables (E)

Minutes for Topic: 42

Core Lesson Description: Translate between equations and tables, and solve problems involving relationships between quantities.

Core Lesson Student Learning Objectives: SWBAT translate between equations and tables, and solve problems involving relationships between quantities.

Core Lesson

Essential Questions: How do you translate between equations and tables? (E)

Topic: Lesson 100 (9.3) Analyze Relationships (I)

Minutes for Topic: 42

Core Lesson Description: Analyze relationships between independent and dependent variables.

Core Lesson Essential Questions: How do you analyze relationships between independent and dependent variables? (I)

Topic: Lesson 101 Review for mid-chapter 9 assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What do students need to know for the mid-chapter 9 assessment? (I)

Topic: Lesson 102 Mid-Chapter 9 Assessment

Minutes for Topic: 42

Core Lesson Essential Questions: Take mid-chapter 9 assessment

Topic: Lesson 103 (9.4) Graph Relationships (E)

Minutes for Topic: 42

Core Lesson Description: Graph the relationships between dependent and independent variables.

Core Lesson Essential Questions: How do you graph the relationships between dependent and independent variables? (E)

Topic: Lesson 104 ((9.5) Equations and Graphs (E)

Minutes for Topic: 42

Core Lesson Description: Graph equations and generate equations when given a graph.

Core Lesson Essential Questions: How do you graph equations and how do you generate equations when given a graph? (E)

Topic: Lesson 105 Chapter 9 End of Chapter Assessment Review (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What do I need to know for the end of chapter 9 assessment? (I)

Topic: Lesson 106 End of Chapter 9 assessment

Minutes for Topic: 84

Core Lesson Essential Questions: Take end of chapter 9 assessment (E)

Unit: Area, Surface Area and Volume - Chapters 10 and 11

Timeline: February to March

Month: February-March

Skills: *Students should be able to do the following at the end of this unit:*

1. Determine the area of triangles, quadrilaterals, and polygons given a formula.

2. Calculate the area of a polygon on a plane given the coordinates of the vertices.

3. Find volumes of right rectangular prisms with fractional edge lengths.

4. Use nets to find surface area of three-dimensional figures including cubes, prisms and pyramids.

Essential Questions: 1. How can students solve age appropriate real world mathematical problems involving area, surface area and volume?

Content: 1. Formulas can be used to solve real world math problems involving area, surface area and volume.

2. Nets are useful ways to represent a 3-D shape in a 2-D way.

3. Surface area is the sum of the area of all faces and bases of a 3-D shape.

4. Prisms and pyramids are different and students need to understand how a prism and a pyramid get their respective names.

5. Area can be found using coordinates of the vertices when a shape is drawn on the coordinate plane.

Assessments: Quizzes, Tests, Various forms of formative assessment, Long term assignments

Lessons: Chapter 10: Lessons 10.1 to 10.9

Chapter 11: Lessons 11.1 to 11.7

Vocabulary: Parallelograms

Rectangles

Squares

Triangles

Trapezoids

Regular Polygons

Composite Figures

Nets

Prisms

Pyramids

Area

Surface Area

Volume

Resources: GO Math Book Series - Grade 6

Ti-34 Multi-view Calculators

Projectors in classrooms

Internet Connection with access to schoology website

Teacher Created Videos

Laptops

Paper/Pens/Pencils

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.3.6.A.1 (Advanced)	Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.

Topic: Lesson 107 (10.1) Area of Parallelograms (E)

Minutes for Topic: 42

Core Lesson Description: Find the area of parallelograms.

Core Lesson Student Learning Objectives: SWBAT find the area of parallelograms.

Core Lesson Essential Questions: How do you find the area of parallelograms? (E)

STANDARDS

STATE: PA Core Standards (2014)

CC.2.3.6.A.1 (Advanced)	Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.

STATE: PA Core Anchors and Eligible Content (2014)

M06.C-G.1.1.1 (Advanced)	Determine the area of triangles and special quadrilaterals (i.e., square, rectangle, parallelogram, rhombus, and trapezoid). Formulas will be provided. Alternate Eligible Content Code M06CG1.1.1a: Find the area of a quadrilateral given the dimensions
M06.C-G.1.1.2 (Advanced)	Determine the area of irregular or compound polygons. Example: Find the area of a room in the shape of an irregular polygon by composing and/or decomposing.
M06.C-G.1.1.3 (Advanced)	Determine the volume of right rectangular prisms with fractional edge lengths. Formulas will be provided. Alternate Eligible Content Code M06CG1.1.3a: Solve a real-world problem involving volume using unit cubes or multiplication
M06.C-G.1.1.4 (Advanced)	Given coordinates for the vertices of a polygon in the plane, use the coordinates to find side lengths and area of the polygon (limited to triangles and special quadrilaterals). Formulas will be provided.
M06.C-G.1.1.5 (Advanced)	Represent three-dimensional figures using nets made of rectangles and triangles.

	Alternate Eligible Content Code M06CG1.1.5a: Classify three-dimensional figures
M06.C-G.1.1.6 (Advanced)	Determine the surface area of triangular and rectangular prisms (including cubes). Formulas will be provided.

Topic: Lesson 108 (10.2) Explore the Area of Triangles (C)

Minutes for Topic: 42

Core Lesson Description:	Explore the area of triangles using manipulatives.
Core Lesson Essential Questions:	How can you use models to find the area of a triangle? (C)

Topic: Lesson 109 (10.3) Area of Triangles (E)

Minutes for Topic: 42

Core Lesson Description:	Find the area of triangles
Core Lesson Student Learning Objectives:	SWBAT find the area of triangles.
Core Lesson Essential Questions:	How can you use a formula to find the area of a triangle? (E)

Topic: Lesson 110 (10.4) Explore the area of Trapezoids (C)

Minutes for Topic: 42

Core Lesson Description:	Explore the area of Trapezoids
Core Lesson Essential Questions:	How do you explore the area of a trapezoid by using models? (C)

Topic: Lesson 111 (10.5) Area of Trapezoids (E)

Minutes for Topic: 42

Core Lesson Description:	Area of Trapezoids
Core Lesson Student Learning Objectives:	SWBAT find the area of trapezoids.
Core Lesson Essential Questions:	How can you find the area of a trapezoid using a formula? (E)

Topic: Lesson 112 Review for Mid-Chapter 10 Assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions:	What should I know for the mid-chapter 10 assessment? (I)

Topic: Lesson 113 Mid-Chapter 10 Assessment

Minutes for Topic: 42

Core Lesson Essential Questions: Take mid chapter 10 quiz

Topic: Lesson 114 (10.6) Area of Regular Polygons (E)

Minutes for Topic: 42

Core Lesson Description: Area of Regular Polygons

Core Lesson Student Learning Objectives: SWBAT find the area of regular polygons.

Core Lesson Essential Questions: How do you find the area of regular polygons? (E)

Topic: Lesson 115 (10.7) Composite Figures (E)

Minutes for Topic: 42

Core Lesson Description: Find the area of composite figures

Core Lesson Student Learning Objectives: SWBAT find the area of composite figures.

Core Lesson Essential Questions: How do you find the area of composite figures? (E)

Topic: Lesson 116 (10.8) Problem Solving: Changing Dimensions (E)

Minutes for Topic: 42

Core Lesson Description: Determine the effect of changing dimensions on the area of a polygon.

Core Lesson Student Learning Objectives: SWBAT determine the effect of changing dimensions on the area of a polygon.

Core Lesson Essential Questions: How does a change in dimension change the area of a shape? (E)

Topic: Lesson 117 (10.9) Figures on the Coordinate Plane (E)

Minutes for Topic: 42

Core Lesson Description: Find and plot figures on the coordinate plane.

Core Lesson Student Learning Objectives: SWBAT plot polygons on a coordinate plane, and use coordinates to find side lengths.

Core Lesson Essential Questions: How do you plot polygons on a coordinate plane, and use coordinates to find side lengths and area of the polygon in the coordinate plane? (E)

Topic: Lesson 118 Review for end of chapter 10 assessment (I)

Minutes for Topic: 42

Core Lesson

Essential Questions: What should I know for the end of chapter 10 assessment? (I)

Topic: Lessons 119 End of Chapter 10 Assessment

Minutes for Topic: 84

Core Lesson Essential Questions: Chapter 10 end of chapter assessment (E)

Topic: Lesson 120 (11.1) Three-dimensional Figures & Nets (E)

Minutes for Topic: 42

Core Lesson Description: Identify 3-D figures with nets.

Core Lesson Student Learning Objectives: SWBAT use nets to represent three-dimensional figures.

Core Lesson Essential Questions: How can students use nets to represent three-dimensional figures? (E)

How are 3-D figures named? (E)

Topic: Lesson 121 (11.2) Explore the Surface Area of Prisms using Nets (C)

Minutes for Topic: 42

Core Lesson Description: Explore the Surface Area of Prisms using Nets

Core Lesson Student Learning Objectives: SWBAT find the surface area of prisms using nets and formulas.

Core Lesson Essential Questions: What is the relationship between a net and surface area? (C)

Topic: Lesson 122 (11.3) Find the Surface Area of Prisms (E)

Minutes for Topic: 42

Core Lesson Description: Find the Surface Area of Prisms

Core Lesson Essential Questions: How can you find the surface area of a prism? (E)

Topic: Lesson 123 (11.4) Surface Area of Pyramids (E)

Minutes for Topic: 42

Core Lesson Description: Surface Area of Pyramids

Core Lesson Student Learning Objectives: SWBAT find the surface area of pyramids.

Core Lesson Essential Questions: How do you find the surface area of pyramids? (E)

Topic: Lesson 124 Review for Mid-chapter 11 assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions:	What should I know for the mid-chapter 11 assessment? (C)
Core Lesson Notes:	Typically one assessment is given for chapter 11 due to the shorter length of this chapter. Typically only lessons 11.1, 11.3, 11.4 and 11.6 are taught. This assessment is usually given at the end of chapter 11.

Topic: Lesson 125 Mid Chapter 11 Assessment

Minutes for Topic: 42

Core Lesson Essential Questions:	Mid chapter 11 assessment (C)
Core Lesson Notes:	Typically one assessment is given for chapter 11 due to the shorter length of this chapter. Typically only lessons 11.1, 11.3, 11.4 and 11.6 are taught. This assessment is usually given at the end of chapter 11.

Topic: Lesson 126 (11.5/11.6) Volume of Rectangular Prisms (E)

Minutes for Topic: 42

Core Lesson Description:	Find the volume of rectangular prisms with fractional edge lengths.
Core Lesson Student Learning Objectives:	SWBAT use formulas to find the volume of rectangular prisms with fractional edge lengths.
Core Lesson Essential Questions:	How do you find the volume of prisms? (E)
Core Lesson Notes:	Lessons 11.5 and 11.6 can very easily be done on the same day. Use fractions in some of the examples and students should be able to understand both lessons in one period.

Topic: Lesson 127 (11.7) Problem Solving: Geometric Measurements (C)

Minutes for Topic: 42

Core Lesson Description:	Problem Solving: Geometric Measurements
Core Lesson Student Learning Objectives:	SWBAT solve problems involving area, surface area, and volume by applying the strategy *use a formula.*
Core Lesson Essential Questions:	How can students solve problems involving area, surface area, and volume by applying the strategy *use a formula? (C)*

Topic: Lesson 128 Review for end of chapter 11 assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions:	What should I know for the end of chapter 11 assessment? (I)

Topic: Lessons 129 Assessment for End of Chapter 11

Minutes for Topic: 84

Core Lesson Essential Questions:	Take chapter 11 assessment (E)

Unit: Data Displays, Measures of Center, Variability and Data Distribution-Chapters 12 and 13
Timeline: March to April

Month: March-April

Skills:

1. Display data in dot plots, frequency tables, histograms and box-and-whisker plots.
2. Determine quantitative measures of center and variability.
3. Choose the appropriate measure of center and variability for a set of data.
4. Determine the mean absolute deviation for a data set.
5. Recognize statistical questions and be able to describe data collections.
6. Be able to explain how outliers effect measures of center and variability.

Essential Questions:

1. How can data can be described using appropriate measures of center and variability?
2. How do you read data displayed using frequency tables, dot plots, histograms, and box plots?
3. How do you create displays of data using frequency tables, dot plots, histograms, and box plots?
4. Explain how outliers can change measures of center.
5. What makes a question a statistical questions?
6. What are four ways you can describe a set of data?.
7. How is the mean absolute deviation of a data set calculated?

Content:

1. Data can be described using appropriate measures of center and variability.
2. Data can be displayed using frequency tables, dot plots, histograms, and box plots.
3. Outliers can change measures of center.
4. Statistical questions are a specific type of question that asks about a set of data where you would expect variability.
5. Data collections can be described using the number of observations, the likely tool used to make the observations, attribute being measured and the unit of measure.
6. The mean absolute deviation is the mean of the distance of data values from the mean of the data set.

Assessments: Quizzes, Chapter Tests, Formative assessments, Long Term assignments

Lessons: Chapter 12: Lessons 12.1 to 12.8

Chapter 13: Lessons 13.1 to 13.8

Vocabulary: Attribute

Box and whisker plots

Cluster

Dot plots

Frequency Table

Gap

Histogram

Inter-quartile range

Interval

Mean

Mean absolute deviation

Median

Mode

Outlier

Peak

Quartile

Range

Statistical Question

Symmetry

Resources:

GO Math Book Series - Grade 6

Ti-34 Multi-view Calculators

Projectors in classrooms

Internet Connection with access to schoology website

Teacher Created Videos

Laptops

Paper/Pens/Pencils

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.4.6.B.1 (Advanced)	Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.

Topic: Lesson 130 (12.1-12.2) Statistical Questions & Describe Data Collections

Minutes for Topic: 42

Core Lesson Description: Write statistical questions & describe data collections

Core Lesson Student Learning Objectives: SWBAT recognize statistical questions and describe a data set by stating what quantity was measured and how it was measured.

Core Lesson

Essential Questions: How do you recognize statistical questions and describe a data set? (E)

Core Lesson Notes: Both Lesson 12.1 and 12.2 can be done in the same period.

STANDARDS

STATE: PA Core Standards (2014)

CC.2.4.6.B.1 (Advanced)	Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.

STATE: PA Core Anchors and Eligible Content (2014)

M06.D-S.1.1.1 (Advanced)	Display numerical data in plots on a number line, including line plots, histograms, and box-and whisker plots.
M06.D-S.1.1.2 (Advanced)	Determine quantitative measures of center (e.g., median, mean, mode) and variability (e.g., range, inter-quartile range, mean absolute deviation). Alternate Eligible Content Code M06DS1.1.2a: Identify measures of central tendency (mean, median, mode)
M06.D-S.1.1.3 (Advanced)	Describe any overall pattern and any deviations from the overall pattern with reference to the context in which the data were gathered. Alternate Eligible Content Code M06DS1.1.3a: Compare points in a line plot, histogram, or on a number line
M06.D-S.1.1.4 (Advanced)	Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Topic: Lesson 131 (12.3) Dot Plots and Frequency Tables (E)

Minutes for Topic: 42

Core Lesson Description: Create Dot Plots and Frequency Tables

Core Lesson Student Learning Objectives: SWBAT display data in dot plots and frequency tables.

Core Lesson Essential Questions: How do you display data in dot plots and frequency tables? (E)

How do you read data displayed in dot plots and frequency tables? (E)

Topic: Lesson 131 (12.4) Histograms (E)

Minutes for Topic: 42

Core Lesson Description: Create/read histograms

Core Lesson Student Learning Objectives: SWBAT display data in histograms.

Core Lesson Essential Questions: How is data displayed in histograms? (E)

How do you create a histogram to display data? (E)

Topic: Lesson 132 Review for Assessment on Mid-point Chapter 12 (I)

Minutes for Topic: 42

Core Lesson

Essential Questions: What should I know for the mid chapter 12 assessment? (I)

Topic: Lesson 133 Mid-chapter 12 assessment

Minutes for Topic: 42

Core Lesson Essential Questions: Take mid-chapter 12 assessment

Topic: Lesson 134 (12.6) Measures of Center (E)

Minutes for Topic: 42

Core Lesson Description: Find measures of center

Core Lesson Student Learning Objectives: SWBAT summarize a data set by using mean, median and mode.

Core Lesson Essential Questions: How can you summarize a data set by using mean, median and mode? (E)

Topic: Lesson 135 (12.7) Effects of Outliers (E)

Minutes for Topic: 42

Core Lesson Description: Describe the effects of outliers

Core Lesson Student Learning Objectives: SWBAT determine the effects of outliers on measures of center and variability.

Core Lesson Essential Questions: How can you determine the effects of outliers on measures of center and variability? (E)

Topic: Lesson 136 (12.8) Problem Solving: Data Displays (I)

Minutes for Topic: 42

Core Lesson Description: Solve problems using data displays

Core Lesson Student Learning Objectives: SWBAT solve problems involving data.

Core Lesson Essential Questions: How can you solve problems involving data? (I)

Topic: Lesson 137 Review for end of chapter 12 assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What should I know for the chapter 12 test? (I)

Topic: Lesson 138 End of Chapter 12 Assessment

Minutes for Topic: 84

Core Lesson

Essential Questions: Take chapter 12 test

Topic: Lesson 139 (13.1) Patterns in Data (E)

Minutes for Topic: 42

Core Lesson Description: Describe patterns in data

Core Lesson Student Learning Objectives: SWBAT describe overall patterns in data, including clusters, peaks, gaps and symmetry.

Core Lesson Essential Questions: How can you describe overall patterns in data, including clusters, peaks, gaps and symmetry? (E)

Topic: Lesson 140 (13.2) Box Plots (E)

Minutes for Topic: 42

Core Lesson Description: Create/read box plots

Core Lesson Student Learning Objectives: SWBAT display data in box plots.

Core Lesson Essential Questions: How do you create and display data in box plots? (E)

How can you interpret data displayed in a box plot? (E)

Topic: Lesson 141 (13.3) Mean Absolute Deviation (E)

Minutes for Topic: 42

Core Lesson Description: Find mean absolute deviation

Core Lesson Essential Questions: How do you find the mean absolute deviation of a set of data? (E)

Topic: Lesson 142 (13.4) Measures of Variability (E)

Minutes for Topic: 42

Core Lesson Description: Determine measures of variablility

Core Lesson Student Learning Objectives: SWBAT summarize a data set by using range, interquartile range, and mean absolute deviation.

Core Lesson Essential Questions: How do you summarize a data set by using range, interquartile range, and mean absolute deviation? (E)

Topic: Lesson 143 Review for Mid-Chapter 13 Assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What should I know for the mid-chapter 13 assessment? (I)

Topic: Lesson 144 Mid-Chapter 13 Assessment

Minutes for Topic: 42

Core Lesson Essential Questions: Take chapter 13 mid-point quiz

Topic: Lesson 145 (13.5-13.6) Choosing & Applying Measures of Center & Variability (E and I-see below)

Minutes for Topic: 42

Core Lesson Description: Choosing & Applying Measures of Center & Variability

Core Lesson Student Learning Objectives: SWBAT choose appropriate measures of center and variability to describe data and justify the choice. SWBAT recognize what measures of center and variability indicate about a data set.

Core Lesson Essential Questions: How do you choose measures of center and variability to describe a data set? (E) 13.5

How can you describe distributions? (I) 13.6

Core Lesson Notes: Lessons 13.5 and 13.6 can be covered in the same period.

Topic: Lesson 146 (13.7) Describe Distributions (I)

Minutes for Topic: 42

Core Lesson Description: Describe data distributions.

Core Lesson Student Learning Objectives: SWBAT describe the distribution of a data set collected to answer a statistical question.

Core Lesson Essential Questions: How can you describe the distribution of a data set collected to answer a statistical question? (I)

Topic: Lesson 147 (13.8) Problem Solving: Misleading Statistics (C)

Minutes for Topic: 42

Core Lesson Description: Solve problems when misleading statistics are present.

Core Lesson Student Learning Objectives: SWBAT draw conclusions about the distribution of a data set.

Core Lesson Essential Questions: How do you draw conclusions about the distribution of a data set? (C)

Topic: Lesson 148 Review for chapter 13 end of chapter assessment (I)

Minutes for Topic: 42

Core Lesson Essential Questions: What should students know for chapter 13 end of chapter assessment? (I)

Topic: Lessons 149 End of chapter 13 Assessment

Minutes for Topic: 84

Core Lesson Essential Questions: Take chapter 13 end of chapter assessment.