ACCELERATED MATHEMATICS GRADE 6

1205020 or 1205030 (Cambridge) or 1205090 (IB MYP)

Instructional Resource: Pearson: *enVision Florida Mathematics Advanced Grade 6*, ©2020

Course Pacing

Unit of Instruction	# of Days	Dates of Instruction
Topic 1: Use Positive Rational Numbers	11	8/19 – 9/3
Topic 2: Integers and Rational Numbers	10	9/4 – 9/17
Topic 3: Numeric and Algebraic Expressions	11	9/18 – 10/2
Cycle 1 Assessment (Topics 1-3)	**1**	**10/3** (9/30 – 10/11)
Topic 4: Rational Number Operations	14	10/4 – 10/24
Topic 5: Represent and Solve Equations and Inequalities	14	10/25 – 11/13
Topic 6: Understand and Use Ratio and Rate Thanksgiving Break is 11/23 – 12/1	14	11/14 – 12/10
Midterm Exam (& Review)	**1**	12/11 – 12/20
Topic 7: Analyze and Use Proportional Relationships	13	1/8 – 1/27
Topic 8: Understand and Use Percent	10	1/28 – 2/10
Topic 9: Analyze and Solve Percent Problems	10	2/11 – 2/25
Topic 10: Generate Equivalent Expressions	12	2/26 – 3/12
Spring Break is 3/14 – 3/23		
Topic 11: Solve Area, Surface Area, and Volume Problems	13	3/24 – 4/9
Topic 12: Display, Describe, and Summarize Data	12	4/13 – 4/28
FSA Math Grade 6	**2**	5/4 – 5/29

Pinellas County Schools

ACCELERATED MATHEMATICS GRADE 6 (Pearson)

2019-2020

August 2019

				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September 2019

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October 2019

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November 2019

					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December 2019

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Building Community in the Math Classroom

Topic 1: Use Positive Rational Numbers

MAFS.6.NS.1.1 MAFS.6.NS.2.3
MAFS.6.NS.2.2

Topic 2: Integers and Rational Numbers

MAFS.6.NS.3.5 MAFS.6.NS.3.7
MAFS.6.NS.3.6 MAFS.6.NS.3.8

Topic 3: Numeric and Algebraic Expressions

MAFS.6.NS.2.4 MAFS.6.EE.1.3
MAFS.6.EE.1.1 MAFS.6.EE.1.4
MAFS.6.EE.1.2 MAFS.6.EE.2.6

Cycle 1 Assessment (on Units 1-3)
Sept. 30 - Oct. 11 (Take as early as possible)

Topic 4: Rational Number Operations

MAFS.7.NS.1.1 MAFS.7.NS.1.3
MAFS.7.NS.1.2 MAFS.7.EE.2.3

Topic 5: Represent and Solve Equations and Inequalities

MAFS.6.EE.1.4 MAFS.6.EE.2.7
MAFS.6.EE.2.5 MAFS.6.EE.2.8
MAFS.6.EE.2.6 MAFS.6.EE.3.9

Topic 6: Understand and Use Ratio and Rate

MAFS.6.RP.1.1 MAFS.6.RP.1.3
MAFS.6.RP.1.2

Midterm Exam (& Review) (on Units 4-6)
Dec. 11 - Dec. 20

Re-Building Community in the Math Classroom

Topic 7: Analyze and Use Proportional Relationships

MAFS.7.RP.1.1 MAFS.7.RP.1.3
MAFS.7.RP.1.2

Topic 8: Understand and Use Percent

MAFS.6.RP.1.1 MAFS.6.RP.1.3.c

Topic 9: Analyze and Solve Percent Problems

MAFS.7.RP.1.2.c MAFS.7.RP.1.3

Topic 10: Generate Equivalent Expressions

MAFS.7.EE.1.1 MAFS.7.EE.2.3
MAFS.7.EE.1.2 MAFS.7.EE.2.4

Topic 11: Solve Area, Surface Area, and Volume Problems

MAFS.6.G.1.1 MAFS.6.EE.1.2.a,c
MAFS.6.G.1.2 MAFS.6.EE.2.6
MAFS.6.G.1.3 MAFS.6.NS.3.6.c
MAFS.6.G.1.4 MAFS.6.NS.3.8

Topic 12: Display, Describe, and Summarize Data

MAFS.6.SP.1.1 MAFS.6.SP.2.4
MAFS.6.SP.1.2 MAFS.6.SP.2.5
MAFS.6.SP.1.3

Grade 6 Math FSA
May 4 - May 29

January 2020

			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

February 2020

						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

March 2020

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April 2020

			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May 2020

					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June 2020

	1	2	3	4	5	6

2019 – 2020 **ACCELERATED MATHEMATICS GRADE 6** **Quarter 1**

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
		Aug. 14 Culture Building	Aug. 15 Culture Building	Aug. 16 Culture Building
Aug. 19 Topic 1 Opener: "Use Positive Rational Numbers"	Aug. 20 1-1 Fluently Add, Subtract, and Multiply Decimals	Aug. 21 1-2 Fluently Divide Whole Numbers and Decimals	Aug. 22 11-3 Multiply Fractions	Aug. 23 3-Act Mathematical Modeling: *Stocking Up*
Aug. 26 1-4 Understand Division with Fractions	Aug. 27 1-5 Divide Fractions by Fractions	Aug. 28 1-6 Divide Mixed Numbers	Aug. 29 1-7 Solve Problems with Rational Numbers	Aug. 30 Topic 1 Review
Sept. 2 No School	Sept. 3 Topic 1 Assessment	Sept. 4 Topic 2 Opener: "Integers and Rational Numbers"	Sept. 5 2-1 Understand Integers	Sept. 6 2-2 Represent Rational Numbers on the Number Line
Sept. 9 2-3 Absolute Values of Rational Numbers	Sept. 10 2-4 Represent Rational Numbers on the Coordinate Plane	Sept. 11 3-Act Mathematical Modeling: *The Ultimate Throw*	Sept. 12 2-5 Find Distances on the Coordinate Plane	Sept. 13 2-6 Represent Polygons on the Coordinate Plane
Sept. 16 Topic 2 Review	Sept 17 Topic 2 Assessment	Sept. 18 Topic 3 Opener: "Numeric and Algebraic Expressions"	Sept. 19 3-1 Understand and Represent Exponents	Sept. 20 3-2 Find the Greatest Common Factors and Least Common Multiple
Sept. 23 3-3 Write and Evaluate Numerical Expressions	Sept. 24 3-4 Write Algebraic Expressions	Sept. 25 3-5 Evaluate Algebraic Expressions	Sept. 26 3-Act Mathematical Modeling: *The Field Trip*	Sept. 27 3-6 Generate Equivalent Expressions
Sept. 30 3-7 Simplify Algebraic Expressions	Oct. 1 Topic 3 Review	Oct. 2 Topic 3 Assessment	Oct. 3 **CYCLE 1 ASSESSMENT**	Oct. 4 Topic 4 Opener: "Rational Number Operations"
Oct. 7 4-1 Relate Integers and Their Opposites	Oct. 8 4-2 Understand Rational Numbers	Oct. 9 4-3 Add Integers	Oct. 10 4-4 Subtract Integers	Oct. 11 4-5 Add and Subtract Rational Numbers ***End of Grading Period***

2019 – 2020 **GRADE 6 MATHEMATICS ADVANCED** **Quarter 2**

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Oct. 14 Non-Student Day	Oct. 15 4-6 Multiply Integers	Oct. 16 4-7 Multiply Rational Numbers	Oct. 17 4-8 Divide Integers	Oct. 18 4-9 Divide Rational Numbers
Oct. 21 4-10 Solve Problems with Rational Numbers	Oct. 22 3-Act Mathematical Modeling: *Win Some, Lose Some*	Oct. 23 Topic 4 Review	Oct. 24 Topic 4 Assessment	Oct. 25 Topic 5 Opener: "Represent and Solve Equations and Inequalities"
Oct. 28 5-1 Understand Equations and Solutions	Oct. 29 5-2 Apply Properties of Equality	Oct. 30 5-3 Write and Solve Addition and Subtraction Equations	Oct. 31 5-4 Write and Solve Multiplication and Division Equations	Nov. 1 5-5 Write and Solve Equations with Rational Numbers
Nov. 4 5-6 Understand and Write Inequalities	Nov. 5 5-7 Solve Inequalities	Nov. 6 3-Act Mathematical Modeling: *Checking a Bag*	Nov. 7 5-8 Understand Independent and Dependent Variables	Nov. 8 5-9 Use Patterns to Write and Solve Equations
Nov. 11 5-10 Relate Tables, Graphs, and Equations	Nov. 12 Topic 5 Review	Nov. 13 Topic 5 Assessment	Nov. 14 Topic 6 Opener: "Understand and Use Ratio and Rate"	Nov. 15 6-1 Understand Ratios
Nov. 18 6-2 Generate Equivalent Ratios	Nov. 19 6-3 Compare Ratios	Nov. 20 6-4 Represent and Graph Ratios	Nov. 21 6-5 Understand Rates and Unit Rates	Nov. 22 6-6 Compare Unit Rates
Nov. 25 Thanksgiving Break	Nov. 26 Thanksgiving Break	Nov. 27 Thanksgiving Break	Nov. 28 Thanksgiving Break	Nov. 29 Thanksgiving Break
Dec. 2 6-7 Solve Unit Rate Problems	Dec. 3 3-Act Mathematical Modeling: *Get in Line*	Dec. 4 6-8 Ratio Reasoning: Convert Customary Units	Dec. 5 6-9 Ratio Reasoning: Convert Metric Units	Dec. 6 6-10 Relate Customary and Metric Units
Dec. 9 Topic 6 Review	Dec. 10 Topic 6 Assessment	Dec. 11 Midterm Exam Review	Dec. 12 Midterm Exam Review	Dec. 13 **MIDTERM EXAMS**
Dec. 16 **MIDTERM EXAMS**	Dec. 17 **MIDTERM EXAMS**	Dec. 18 **MIDTERM EXAMS**	Dec. 19 **MIDTERM EXAM MAKE-UPS**	Dec. 20 **MIDTERM EXAM MAKE-UPS** ***End of Grading Period***

2019 – 2020 **GRADE 6 MATHEMATICS ADVANCED** **Quarter 3**

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Jan. 6 Non-Student Day	Jan. 7 Culture Building	Jan. 8 Topic 7 Opener: "Analyze and Use Proportional Relationships	Jan. 9 7-1 Connect Ratios, Rates, and Unit Rates	Jan. 10 7-2 Determine Unit Rates with Ratios of Fractions
Jan. 13 7-3 Understand Proportional Relationships: Equivalent Ratios	Jan. 14 7-4 Describe Proportional Relationships: Constant of Proportionality	Jan. 15 Review 7-2, 7-3, and 7-4	Jan. 16 3-Act Mathematical Modeling: *Mixin' It Up*	Jan. 17 7-5 Graph Proportional Relationships
Jan. 20 No School	Jan. 21 7-5 Graph Proportional Relationships	Jan. 22 7-6 Apply Proportional Reasoning to Solve Problems	Jan. 23 7-6 Apply Proportional Reasoning to Solve Problems	Jan. 24 Topic 7 Review
Jan. 27 Topic 7 Assessment	Jan. 28 Topic 8 Opener: "Understand and Use Percent"	Jan. 29 8-1 Understand Percent	Jan. 30 8-2 Relate Fractions, Decimals, and Percents	Jan. 31 8-3 Represent Percents Greater Than 100 or Less Than 1
Feb. 3 8-4 Estimate to Find Percent	Feb. 4 8-5 Find the Percent of a Number	Feb. 5 8-6 Find the Whole Given a Part and the Percent	Feb. 6 3-Act Mathematical Modeling: *Ace the Test*	Feb. 7 Topic 8 Review
Feb. 10 Topic 8 Assessment	Feb. 11 Topic 9 Opener: "Analyze and Solve Percent Problems"	Feb. 12 9-1 Analyze Percents of Numbers	Feb. 13 9-2 Connect Percent and Proportion	Feb. 14 9-3 Represent and Use the Percent Equation
Feb. 17 Non-Student Day	Feb. 18 9-4 Solve Percent Change and Percent Error Problems	Feb. 19 3-Act Mathematical Modeling: "The Smart Shopper"	Feb. 20 9-5 Solve Markup and Markdown Problems	Feb. 21 9-6 Solve Simple Interest Problems
Feb. 24 Topic 9 Review	Feb. 25 Topic 9 Assessment	Feb. 26 Topic 10 Opener: "Generate Equivalent Expressions"	Feb. 27 10-1 Write and Evaluate Algebraic Expressions	Feb. 28 10-2 Generate Equivalent Expressions
Mar. 2 10-3 Simplify Expressions	Mar. 3 10-4 Expand Expressions	Mar. 4 10-5 Factor Expressions	Mar. 5 3-Act Mathematical Modeling: *I've Got You Covered*	Mar. 6 10-6 Add Expressions
Mar. 9 10-7 Subtract Expressions	Mar. 10 10-8 Analyze Equivalent Expressions	Mar. 11 Topic 10 Review	Mar. 12 Topic 10 Assessment	Mar. 13 FREE DAY ***End of Grading Period***

2019 – 2020 **GRADE 6 MATHEMATICS ADVANCED** **Quarter 4**

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Mar. 16 SPRING BREAK	Mar. 17 SPRING BREAK	Mar. 18 SPRING BREAK	Mar. 19 SPRING BREAK	Mar. 20 SPRING BREAK
Mar. 23 Non-Student Day	Mar. 24 Topic 11 Opener: "Solve Area, Surface Area, and Volume Problems"	Mar. 25 11-1 Find Areas of Parallelograms and Rhombuses	Mar. 26 11-2 Solve Triangle Area Problems	Mar. 27 11-3 Find Areas of Trapezoids and Kites
Mar. 30 11-4 Find Areas of Polygons	Mar. 31 Review 11-1, 11-2, 11-3, and 11-4	Apr. 1 11-5 Represent Solid Figures Using Nets	Apr. 2 3-Act Mathematical Modeling: *That's a Wrap*	Apr. 3 11-6 Find Surface Areas of Prisms
Apr. 6 11-7 Find Surface Area of Pyramids	Apr. 7 11-8 Find Volume with Fractional Edge Lengths	Apr. 8 Topic 11 Review	Apr. 9 Topic 11 Assessment	Apr. 10 No School
Apr. 13 Topic 12 Opener: "Display, Describe, and Summarize Data"	Apr. 14 12-1 Recognize Statistical Questions	Apr. 15 12-2 Summarize Data Using Mean, Median, and Mode	Apr. 16 12-3 Display Data in Box Plots	Apr. 17 12-4 Display Data in Frequency Tables and Histograms
Apr. 20 Review 12-1, 12-2, 12-3, and 12-4	Apr. 21 12-5 Summarize Data Using Measures of Variability	Apr. 22 12-6 Choose Appropriate Statistical Measures	Apr. 23 12-7 Summarize Data Distributions	Apr. 24 3-Act Mathematical Modeling: *Vocal Range*
Apr. 27 Topic 12 Review	Apr. 28 Topic 12 Assessment	Apr. 29 FREE DAY	Apr. 30 FREE DAY	May 1 FREE DAY
May 4 **FSA Window**	May 5 **FSA Window**	May 6 **FSA Window**	May 7 **FSA Window**	May 8 **FSA Window**
May 11 **FSA Window**	May 12 **FSA Window**	May 13 **FSA Window**	May 14 **FSA Window**	May 15 **FSA Window**
May 18 **FSA Window**	May 19 **FSA Window**	May 20 **FSA Window**	May 21 **FSA Window**	May 22 **FSA Window** **FINAL EXAMS**
May 25 No School	May 26 **FSA Window** **FINAL EXAMS**	May 27 **FSA Window** **FINAL EXAMS**	May 28 **FSA Window** **FINAL EXAMS**	May 29 **Student's Last Day** ***End of Grading Period***

Pinellas County Schools **ACCELERATED MATH GRADE 6** 2019-2020

Semester 1	**Topic 1: Use Positive Rational Numbers**	11 Days: 8/19-9/3

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.6.NS.1.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3)÷(3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3)÷(3/4)=8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷(c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi. and area 1/2 square mi.?*	• At least the divisor or dividend needs to be a non-unit fraction. • Dividing a unit fraction by a whole number or vice versa (e.g., $\frac{1}{a} \div q$ *or* $q \div \frac{1}{a}$) is below grade level Calculator: **NO** •
MAFS.6.NS.2.2 Fluently divide multi-digit numbers using the standard algorithm.	• Items may only have 5-digit dividends divided by 2-digit divisors or 4-digit dividends divided by 2- or 3- digit divisor. • Numbers in items are limited to non-decimal rational numbers. Calculator: **NO** •
MAFS.6.NS.2.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	• Items may include values to the thousandths place. • Items may be set up in standard algorithm form. Calculator: **NO** •

Essential Vocabulary	
Vocabulary	Definition/Description
Reciprocal	Two numbers are reciprocals if their product is 1. If a nonzero number is named as a fraction, $\frac{a}{b}$, then its reciprocal is $\frac{b}{a}$.

enVision Florida Mathematics: Grade 6 Advanced
1-1 Fluently Add, Subtract, and Multiply Decimals (6.NS.2.3)
1-2 Fluently Divide Whole Numbers and Decimals (6.NS.2.2, 6.NS.2.3)
1-3 Multiply Fractions (6.NS.1.1)
3-Act Mathematical Modeling: *Stocking Up* (6.NS.2.3)
1-4 Understand Division with Fractions (6.NS.1.1)
1-5 Divide Fractions by Fractions (6.NS.1.1)
1-6 Divide Mixed Numbers (6.NS.1.1)
1-7 Solve Problems with Rational Numbers (6.NS.1.1)

Decoded Standard
MAFS.6.NS.1.1 This standard emphasizes the use of fraction models including manipulative and visual diagrams to interpret, represent, and solve word problems with division of fractions. Students write equations to show how word problems are solved. Sixth graders interpret the meaning of fractions, the meaning of multiplication and division,

and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. What they are actually doing is working with a complex fractions. In the example $\frac{2}{3} \div \frac{3}{4}, \frac{2}{3}$ *is the numerator and* $\frac{3}{4}$ *is the denominator as* $\frac{\frac{2}{3}}{\frac{3}{4}}$. (*Common Core Mathematics Companion*, Pg. 34)

Intensive Math Interventions

- 6.NS.1.1 – Back Standard – 3.OA.1.1
- 6.NS.1.1 – Back Standard – 3.OA.1.2
- 6.NS.1.1 – Back Standard – 3.OA.1.3
- 6.NS.1.1 – Back Standard – 3.OA.2.6
- 6.NS.1.1 – Back Standard – 5.NF.2.6
- 6.NS.1.1 – Back Standard – 5.NF.2.7

Decoded Standard

MAFS.6.NS.2.2

The focus for this standard is using the traditional, standard algorithm for long division. However, major emphasis is placed on the meaning of division and the understanding of place value of multi-digit numbers when dividing fluently. Fluently dividing multi-digit numbers means dividing quickly and accurately. To have fluency, students need sufficient, on-going practice with long division. (*Common Core Mathematics Companion*, Pg. 37)

Intensive Math Interventions

- 6.NS.2.2 – Back Standard – 5.NBT.2.6
- 6.NS.2.2 – Back Standard – 5.NBT.2.7

Decoded Standard

MAFS.6.NS.2.3

This standard requires students to extend the models and strategies for the four operations previously developed for whole numbers in Grades 1-5 to decimals. Emphasis for addition, subtraction, multiplication, and division of multi-digit decimals is on using standard algorithms. Students estimate answers and self-correct errors in computation if needed. Fluently adding, subtracting, multiplying, and dividing multi-digit decimals means students can find a sum, difference, product, or quotient quickly and accurately. To obtain fluency, students need sufficient, on-going practice for each. (*Common Core Mathematics Companion*, Pg. 38)

Intensive Math Interventions

- 6.NS.2.3 – Back Standard – 5.NBT.2.5
- 6.NS.2.3 – Back Standard – 6.NS.2.2

Semester 1	**Topic 2: Integers and Rational Numbers**	10 Days: 9/4-9/17

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.6.NS.3.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g.; temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	• Items should not require the students to perform an operation. Calculator: **NO** •
MAFS.6.NS.3.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on a number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3)=3, and that 0 is its own opposite. b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	• Plotting of points in the coordinate plane should include some negative values (not just first quadrant). • Numbers in MAFS.6.NS.3.8 must be positive or negative rational numbers. • Do not use polygons/vertices for MAFS.6.NS.3.8 • Do not exceed a 10 x 10 coordinate grid, though scales can vary. Calculator: **NO** •
MAFS.6.NS.3.7 Understanding ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret -3>-7 as a statement that -3 is located to the right or -7 on a number line oriented from left to right.* b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write $-3^0C>-7^0C$ to express the fact that -3^0C is warmer than -7^0C.* c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of -30 dollars, write |-30|=30 to describe the size of the debt in dollars.* d. Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than -30 dollars represents a debt*	• N/A Calculator: **NO** •

greater than 30 dollars.	
MAFS.6.NS.3.8 Solve real-world and mathematical problems by graphing 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.	ASSESSED IN: MAFS.6.NS.3.6 • Plotting of points in the coordinate plane should include some negative values (not just first quadrant). • Numbers in MAFS.6.NS.3.8 must be positive or negative rational numbers. • Do not use polygons/vertices for MAFS.6.NS.3.8 • Do not exceed a 10 x 10 coordinate grid, though scales can vary. Calculator: NO •

Essential Vocabulary	
Vocabulary	Definition/Description
Integers	Integers are the set of positive whole numbers, their opposites, and 0.
Opposites	Opposites are two numbers that are the same distance from 0 on a number line, but in opposite directions.
Rational Number	A rational number is a number that can be written in the form $\frac{a}{b}$ or $-\frac{a}{b}$, where *a* is a whole number and *b* is a positive whole number. The rational numbers include integers.
Absolute Value	The absolute value of a number *a* is the distance between *a* and zero on a number line. The absolute value is written as $\|a\|$.
Coordinate Plane	A coordinate plane is formed by a horizontal number line called the *x*-axis and a vertical number line called the *y*-axis.
Ordered Pair	An ordered pair identifies the location of a point in the coordinate plane. The *x*-coordinate shows a point's position left or right of the *y*-axis. The *y*-coordinate shows a point's position up or down from the *x*-axis.
Origin	The origin is the point of intersection of the *x*- and *y*-axes on a coordinate plane.
Quadrant	The *x*- and *y*-axes divide the coordinate plane into four regions called quadrants.
X- and Y-Axes	The *x*-axis is the horizontal number line and the y-axis is the vertical number line that together forms the coordinate plane.

enVision Florida Mathematics: Grade 6 Advanced
2-1 Understand Integers (6.NS.3.5, 6.NS.3.6.a, 6.NS.3.6.c)
2-2 Represent Rational Numbers on the Number Line (6.NS.3.6.c, 6.NS.3.7.a, 6.NS.3.7.b)
2-3 Absolute Values of Rational Numbers (6.NS.3.7.c, 6.NS.3.7.d)
2-4 Represent Rational Numbers on the Coordinate Plane (6.NS.3.6.b, 6.NS.3.6.c)
3-Act Mathematical Modeling: *The Ultimate Throw* (6.NS.3.7.d, 6.NS.3.5)
2-5 Find Distances on the Coordinate Plane (6.NS.3.8)
2-6 Represent Polygons on the Coordinate Plane (6.NS.3.8)

Decoded Standard
MAFS.6.NS.3.5 In this standard, students investigate positive and negative numbers (integers) in real-world scenarios as being opposite values or opposite directions such as 10° below zero (-10) and 10° above zero (+10). They use vertical and horizontal number lines to show all rational numbers and must explain that the meaning of zero is determined

by the real-world context. (*Common Core Mathematics Companion*, Pg. 44)

Intensive Math Interventions

NO PRIOR CONNECTIONS

Decoded Standard

MAFS.6.NS.3.6

The heart of this standard focuses on previous understanding with the use of both horizontal and vertical number lines. Students extend graphing points and reflecting across zero on a number line to graphing and reflecting points across axes on a coordinate grid. They identify and plot coordinates in all four quadrants of the coordinate plane. (*Common Core Mathematics Companion*, Pg. 45)

Intensive Math Interventions

- 6.NS.3.6 – Back Standard – 3.MD.2.4
- 6.NS.3.6 – Back Standard – 3.NF.1.1
- 6.NS.3.6 – Back Standard – 3.NF.1.2
- 6.NS.3.6 – Back Standard – 3.NF.1.3
- 6.NS.3.6 – Back Standard – 5.G.1.1
- 6.NS.3.6 – Back Standard – 5.G.1.2

Decoded Standard

MAFS.6.NS.3.7

This standard focuses on understanding the ordering and the absolute value of rational numbers. Students explore the meaning of absolute value as the distance from zero on a number line. They learn that the value of -5 is less than -3 and that with negative numbers, as the absolute value increases, the value of the number decreases. Students interpret that absolute value in a real-world scenario refers to magnitude. For example, in the case of a debt of -30 dollars, the absolute value, 30 is the magnitude or size of the debt. Emphasis in this standard is also placed on comparing rational numbers using inequality symbols. (*Common Core Mathematics Companion*, Pg. 47)

Intensive Math Interventions

- 6.NS.3.7 – Back Standard – 6.NS.3.6
- 6.NS.3.7 – Back Standard – 6.NS.3.6c part 2

Decoded Standard

MAFS.6.NS.3.8

The focal point for this standard is solving problems by graphing points in all four quadrants of the coordinate plane. Students learn that the distance from a point on a coordinate plane to an axis is an absolute value. The coordinate plane is used to represent real-world scenarios. (*Common Core Mathematics Companion*, Pg. 49)

Intensive Math Interventions

- 6.NS.3.8 – Back Standard – 5.G.1.2

Semester 1	**Topic 3: Numeric and Algebraic Expressions**	11 Days: 9/18-10/2

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.6.NS.2.4 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 10. Use the distributive property to 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. *For example, express 36 + 8 as (4(9+2).*	• Whole numbers less than or equal to 100. • Least common multiple of two whole numbers less than or equal to 12. Calculator: **NO** •
MAFS.6.EE.1.1 Write and evaluate numerical expressions involving whole-number exponents.	• Whole number bases. • Whole number exponents • Calculator: **NO** •
MAFS.6.EE.1.2 Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 –y.* b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2(8+7) as a product of two factors; view (8+7) as both a single entity and a sum of two terms.* c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas V=s3 and A=6s^2 to find the volume and surface area of a cube with sides of length s=1/2.*	• N/A. • Calculator: **NO** •
MAFS.6.EE.1.3 Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3(2+x) to produce the equivalent expression 6+3x; apply the distributive property to the expression 24x+18y to produce the equivalent expression 6(4x+3y); apply properties of operations to y+y+y to produce the equivalent expression 3y.*	• Positive rational numbers, values may include exponents. • Variables must be included in the expression. • For items using distribution, coefficients may be fractions before distribution but must be integer values after simplification. Only positive rational numbers may be distributed. • Calculator: **NO** •
MAFS.6.EE.1.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y+y+y and 3y are equivalent because they name the same number regardless of which number y stands for.*	• Numbers in items must be positive rational numbers. • Variables must be included in the expression. • Calculator: **NO** •
MAFS.6.EE.2.6 Use variables to represent numbers and write	• Numbers in items should not require students

expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	to perform operations with negative numbers or result in answers with negative rational numbers. • Expressions must contain at least one variable. • Calculator: **NO** •

Essential Vocabulary	
Vocabulary	Definition/Description
Base	The base is the repeated factor of a number written in exponential form.
Exponent	An exponent is a number that shows how many times a base is used as a factor.
Power	A power is a number expressed using an exponent.
Composite Number	A composite number is a whole number greater than 1 with more than two factors.
Factor Tree	A factor tree shows the prime factorization of a composite number.
Greatest Common Factor (GCF)	The greatest common factor (GCF) of two or more whole numbers I the greatest number that is a factor of all the numbers.
Least Common Multiple (LCM)	The least common multiple (LCM) of two or more numbers is the least multiple, not including zero or 1, shared by all of the numbers.
Prime Factorization	The prime factorization of a composite number is the expression of the number as a product of its prime factors.
Prime Number	A prime number is a whole number greater than 1 with exactly two factors, 1 and the number itself.
Algebraic Expression	An algebraic expression is a mathematical phrase that consists of variables, numbers, and operation symbols.
Coefficient	A coefficient is the number part of a term that contains a variable.
Term	A term is a number, a variable, or the product of a number and one or more variables.
Variable	A variable is a letter that represents an unknown value.
Substitution	To evaluate an algebraic expression, use substitution to replace the variable with a number.
Equivalent Expressions	Equivalent expressions are expressions that always have the same value.
Like Terms	Terms that have identical variable parts are like terms.
Simplify	To simplify an algebraic expression, combine the like terms of the expression.

enVision Florida Mathematics: Grade 6 Advanced
3-1 Understand and Represent Exponents (6.EE.1.1)
3-2 Find the Greatest Common Factor and Least Common Multiple (6.NS.2.4)
3-3 Write and Evaluate Numerical Expressions (6.EE.1.1, 6.EE.1.3)
3-4 Write Algebraic Expressions (6.EE.1.2.a, 6.EE.1.2.b, 6.EE.2.6)
3-5 Evaluate Algebraic Expressions (6.EE.1.2.c, 6.EE.2.6)
3-Act Mathematical Modeling: *The Field Trip* (6.EE.1.2, 6.EE.2.6)
3-6 Generate Equivalent Expressions (6.EE.1.3, 6.EE.1.4)
3-7 Simplify Algebraic Expressions (6.EE.1.3, 6.EE.1.3)

Decoded Standard
MAFS.6.NS.2.4 The emphasis for this standard is finding factors and multiples of a given number(s). Students need to know that numbers being multiplied are the factors, and the product is the multiple. Explore two different methods for factoring. Introduce the distributive property as an application of factors. When you add two numbers that have a common factor such as 36 and 8, you can remove the greatest common factor, 4, and distribute it to the remaining factors, such as: $36 + 8 = (4 \times 9) + (4 \times 2) = 4(9 \times 2)$. (*Common Core Mathematics Companion*, Pg. 39)
Intensive Math Interventions
• 6.NS.2.4 – Back Standard – 4.OA.2.4 • 6.NS.2.4 – Back Standard – 5.OA.1.2

Decoded Standard
MAFS.6.EE.1.1 This standard concentrates on whole-number exponents with a focus on understanding the meaning of exponents and exponential notation such as $3^2 = 3 \times 3$. Students find the value of an expression using exponential notation such as $4^3 = 64$. Students write and evaluate numerical expressions such as: $5 + 2^4 \cdot 6$. (*Common Core Mathematics Companion*, Pg. 86)
Intensive Math Interventions
• 6.EE.1.1 – Back Standard – 4.OA.2.4 • 6.EE.1.1 – Back Standard – 5.NBT.1.2

Decoded Standard
MAFS.6.EE.1.2 Parts a-c of this standard emphasize translating expressions from verbal expressions to numerical ones and from numerical expressions to verbal expressions. Students evaluate expressions given values for the variables such as in the example in part c of this standard using the order of operations when appropriate. Students identify parts of an algebraic expression including sum, term, product, factor, quotient, coefficients, and constants. (*Common Core Mathematics Companion*, Pg. 87)
Intensive Math Interventions
• 6.EE.1.2 – Back Standard – 5.OA.1.2 • 6.EE.1.2 – Back Standard – 5.OA.2.3 • 6.EE.1.2 – Back Standard – 6.EE.1.1

Decoded Standard
MAFS.6.EE.1.3 This standard spotlights applying properties (distributive property, the multiplicative identify of 1, and the commutative property for multiplication of operations) with expressions involving variables to generate equivalent expressions. (*Common Core Mathematics Companion*, Pg. 89)
Intensive Math Interventions
• 6.EE.1.3 – Back Standard – 1.OA.2.3 • 6.EE.1.3 – Back Standard – 1.OA.2.4 • 6.EE.1.3 – Back Standard – 3.MD.3.7 • 6.EE.1.3 – Back Standard – 3.OA.2.5 • 6.EE.1.3 – Back Standard – 5.NF.2.5 • 6.EE.1.3 and 1.4 – Back Standard – 6.NS.2.4

Decoded Standard
MAFS.6.EE.1.4 This standard focuses on combining like terms in expressions. Students substitute values into expressions to prove equivalence. For example, $Are\ 3(x+4) and\ 3x+12\ equivalent\ expressions$? Substitute a numerical value for *x* such as 2. Then, $3(2+4)=18\ and\ (3\times 2)+12=18$ so the expression are equivalent. (*Common Core Mathematics Companion*, Pg. 90)
Intensive Math Interventions
• 6.EE.1.3 and 1.4 – Back Standard – 6.NS.2.4 • 6.EE.1.4 – Back Standard – 1.OA.2.4 • 6.EE.1.4 – Back Standard – 3.MD.3.7

Decoded Standard
MAFS.6.EE.2.6 This standard concentrates on writing expressions using variable that represent real-world or mathematical problems. Students learn that a variable represents an unknown number or any number in a specified set. (*Common Core Mathematics Companion*, Pg. 93)
Intensive Math Interventions
• 6.EE.2.6 – Back Standard – 6.EE.1.2

Semester 1	**Topic 4: Rational Number Operations**	14 Days: 10/4-10/24

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.7.NS.1.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal and vertical number line diagram. a. Describe situations in which opposite quantities combine to make 0. b. Understand *p+q* as the number located a distance $\|q\|$ from *p*, in the positive or negative direction depending on whether *q* is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. c. Understand subtraction of rational numbers as adding the additive inverse, *p-q=p+(-q)*. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. d. Apply properties of operations as strategies to add and subtract rational numbers.	• N/A Calculator: **NEUTRAL** •
MAFS.7.NS.1.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1)=1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with no-zero divisor) is a rational number. If *p* and *q* are integers, the *–(p/q)=(-p)/q=p/(-q)*. Interpret quotients of rational numbers by describing real-world contexts. c. Apply properties of operations as strategies to multiply and divide rational numbers. d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	• *7.NS.1.2a,b,c* require the incorporation of a negative value. Calculator: **NO** •
MAFS.7.NS1.3 Solve real-world and mathematical problems involving the four operations with rational numbers. *(computations with rational numbers extend the rules for manipulating fractions to complex fractions.)*	• Complex fractions may be used, but should contain fractions with single-digit numerators and denominators. Calculator: **NEUTRAL** •

MAFS.7.EE.2.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hours gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or #2.50, for a new salary of $27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*	• Items should not use variables. • Items should require two or more steps. Calculator: **YES** •

Essential Vocabulary	
Vocabulary	Definition/Description
Repeating Decimal	
Terminating Decimal	A terminating decimal has a decimal expansion that terminates in 0.
Additive Inverses	Two numbers that have a sum of 0.
Complex Fraction	A complex fraction is a fraction $\frac{A}{B}$ where *A* and/or *B* are fractions and *B* is not zero.
Multiplicative Inverse	

enVision Florida Mathematics: Grade 6 Advanced
4-1 Relate Integers and Their Opposites (7.NS.1.1.a)
4-2 Understand Rational Numbers (7.NS.1.2.d)
4-3 Add Integers (7.NS.1.1.b, 7.NS.1.1.d)
4-4 Subtract Integers (7.NS.1.1.c, 7.NS.1.1.d)
4-5 Add and Subtract Rational Numbers (7.NS.1.1.b, 7.NS.1.1.c, 7.NS.1.1.d)
4-6 Multiply Integers (7.NS.1.2.a, 7.NS.1.2.c)
4-7 Multiply Rational Numbers (7.NS.1.2.a, 7.NS.1.2.c)
4-8 Divide Integers (7.NS.1.2.b, 7.NS.1.2.c)
4-9 Divide Rational Numbers (7.NS.1.2.b, 7.NS.1.2.c)
4-10 Solve Problems with Rational Numbers (7.NS.1.3, 7.EE.2.3)
3-Act Mathematical Modeling: *Win Some, Lose Some* (7.NS.1.1, 7.NS.1.3)

Decoded Standard

MAFS.7.NS.1.1

A. Students use real-world situation that model using opposite quantities to make zero. This prepares students for adding rational numbers with opposite signs such as $4 + (-4) = 0$. Examples can include temperature, elevation above and below sea level, owing money, and so on. (*Common Core Mathematics Companion*, Pg. 58)

B. This standard formalizes the concept of a positive and negative making zero from the previous standard into written equations. For example, $4 + (-4) = 0$. The 4 and (-4) are opposites because they are equidistant from 0 on the number line in opposite directions. They are also additive inverses because their sum is 0. Be sure to include examples of fractions and decimals such as $-\frac{1}{2}$ and -4.72 so that students are working with all types

of rational numbers. Addition of integers is modeled on a number line as in the following example: *"Jose has $6 and owes Steven $5. How much money will Jose have left when he pays Steven what he owes?"* *see image on page 59* (*Common Core Mathematics Companion*, Pg. 59)

C. Subtraction of rational numbers can be thought of in terms of addition using the additive inverse (sometimes referred to as "the opposite"). For example, 6-7 can be understood as 6+(-7). The distance between two rational numbers on a number line is the same as the absolute value of the difference between the two numbers. For example, using a real-world context, if the temperature is -6 at 7a.m. and +8 at noon, how many degrees has the temperature increased between 7 a.m. and noon? The difference between $-6 - 8 = -14$. $|-14| = 14$. Shown on a number line, the distance between -6 and 8 is 14. *see image on page 60* (*Common Core Mathematics Companion,* Pg. 60)

D. Students have previously used the commutative, associative, and additive identity properties with whole numbers. These properties apply to rational numbers. For example:

Commutative Property of Addition: $4.5 + (-6) = (-6) + 4.5$

Associative Property of Addition: $6.9 + (-5) + 3.1 = 6.9 + 3.1 + (-5)$

Additive Identity Property of Addition (also called the Zero Property): $(-4.8) + 0 = (-4.8)$

(*Common Core Mathematics Companion*, pg. 61)

Intensive Math Interventions

- 7.NS.1.1 – Back Standard – 6.NS.3.5
- 7.NS.1.1 – Back Standard – 6.NS.3.6
- 7.NS.1.1 – Back Standard – 6.NS.3.6.c part 2
- 7.NS.1.1 – Back Standard – 6.NS.3.7
- 7.NS.1.1 – Back Standard – 5.NF.1.1 Fractions
- 7.NS.1.1 – Back Standard – 5.NF.1.1 Mixed Numbers

Decoded Standard

MAFS.7.NS.1.2

Standards 7.NS.1.2a-d break down the understandings needed to multiply and divide rational numbers.

A. Real-world contexts help students make sense of multiplication of rational numbers. For example, it makes sense that $4 \times (-6.50) = -26$ when the context for this equations is Janene owes $6.50 to each of 4 people. How much does Janene owe altogether?
It is common to read and understand (-6) as "the opposite of six" as well as "negative six." Use "the opposite of" wording to make sense of equations such as $(-2) \times (-5)$ so that we read "the opposite of 2 times negative 5" or $\big((-1) \times 2\big) \times (-5) = -(2 \times -5) = -(-10) = 10$.
Students should discover the rules for multiplying signed numbers, and the rules make more sense when given context. For example, the chart below shows equations with context. *See image on page 62* (*Common Core Mathematics Companion*, Pg. 62)

B. Division of rational numbers can be thought of as the inverse of multiplication relying on previous understanding of the relationship between multiplication and division. For example, $(-25) \div 5 = -5$ because $5 \times -5 = -25$. This preserves the relationship between multiplication and division found with whole numbers, including the fact that division by 0 is undefined. One explanation is: $x \times 0 = 5$, so $5 \div 0 = x$. There is no possible number for *x*. The equation $-\frac{p}{q} = \frac{-p}{q} = \frac{p}{-q}$ is for the teacher, no the students. Use both $p \div (-q)$ and $\frac{p}{-q}$ notations for division. (*Common Core Mathematics Companion*, Pg. 63)

C. Present problems in real-world contexts that allow students to see the meaning of the properties of the operations. Properties include:

Commutative Property of Multiplication: $3.6 \times 2 = 2 \times 3.6$

Associative Property of Multiplication: $3 \times (6 \times (-7)) \times (-2) = (3 \times 6) \times ((-7) \times (-2))$

Distributive Property: $-4\big(4 + (-3)\big) = \big((-4) \times 4\big) + \big((-4) \times (-3)\big)$

Multiplicative Identify: $1 \times (-9) = (-9)$

Zero Property of Multiplication: $(-4.6) \times 0 = 0$

(*Common Core Mathematics Companion*, Pg. 64)

To convert rational numbers in fraction form to decimal form, use the meaning of fractions as division. For example, $\frac{4}{5} = 4 \div 5$. Using long division, $4 \div 5 = 0.80$. From repeated examples, students learn that the decimal form either ends in 0s (as in the example) or repeated digits/sets of digits. Students learn to use the bar above a digit/set of digits to designate digits that repeat. For example, $\frac{2}{3} = 2 \div 3 = 0.\overline{6}$ and $\frac{39}{99} = 0.\overline{39}$. This prepares students to learn about irrational numbers in Grade 8. (*Common Core Mathematics Companion*, Pg. 65)

Intensive Math Interventions

- 7.NS.1.2 – Back Standard – 5.NF.2.3
- 7.NS.1.2 – Back Standard – 5.NF.2.4
- 7.NS.1.2 – Back Standard – 6.NS.1.1
- 7.NS.1.2 – Back Standard – 7.NS.1.1

Decoded Standard

MAFS.NS.1.3

Extend the work with order of operations to all rational numbers. A example of a mathematical problem Is $-3 \times 2\left(\frac{5}{6} + -\frac{1}{2}\right) = -2$. Complex fractions are fractions with a fraction in the numerator and/or a fraction in the denominator such as $\frac{\frac{3}{4}}{\frac{1}{2}}$. Interpret the division bar to turn a complex fraction into division: $\frac{\frac{3}{4}}{\frac{1}{2}} = \frac{3}{4} \div \frac{1}{2}$.

(*Common Core Mathematics Companion*, Pg. 66)

Intensive Math Interventions

- 7.NS.1.3 – Back Standard – 4.MD.1.2
- 7.NS.1.3 – Back Standard – 4.OA.1.3
- 7.NS.1.3 – Back Standard – 6.NS.2.3
- 7.NS.1.3 – Back Standard – 7.NS.1.1 and 7.NS.1.2
- 7.NS.1.3 – Back Standard – 7.NS.1.2

Decoded Standard

MAFS.7.EE.2.3

Students solve multi-step real-world and mathematical problems. The problems should contain a combination of whole numbers, positive and negative integers, fractions, and decimals. Students will apply what they learned in previous standards about convert fractions, decimals, and percents and use properties of operations to find equivalent forms of expressions as needed. Students will be expected to check their work for reasonableness using estimation strategies, which may include but are not limited to the following:

- rounding the values in the problem up or down and then adjusting the estimate to make up for the closeness of the rounded values to the originals,
- using friendly or compatible numbers for the values in the problem that allow for common factors for multiplication or easy addition such as grouping hundreds or thousands, and
- using benchmark numbers that are easy to work with such as 2 for $1\frac{7}{8}$ to make an estimate.

(*Common Core Mathematics Companion*, Pg. 108)

Intensive Math Interventions

- 7.EE.2.3 – Back Standard – 7.NS.1.3

Semester 1	**Topic 5: Represent and Solve Equations and Inequalities**	14 Days: 10/25-11/13

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.6.EE.1.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y+y+y and 3y are equivalent because they name the same number regardless of which number y stands for.*	• Numbers in items must be positive rational numbers. • Variables must be included in the expression. • Calculator: **NO** •
MAFS.6.EE.2.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	• Numbers in items must be nonnegative rational numbers. • One-variable linear equations and inequalities. • An equation or inequality should be given if a context is included. • Inequalities are restricted to < or >. • Lists of numbers should not use set notation. Calculator: **NO** •
MAFS.6.EE.2.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	• Numbers in items should not require students to perform operations with negative numbers or result in answers with negative rational numbers. • Expressions must contain at least one variable. • Calculator: **NO** •
MAFS.6.EE.2.7 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.	• Numbers in items should not require students to perform operations with negative numbers or result in answers with negative rational numbers. • Items must be one-step linear equations with one variable. Calculator: **NO** •
MAFS.6.EE.2.8 Write an inequality of the form *x>c* or *x<c* to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form *x>c* or *x<c* have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	• Numbers in items should not require students to perform operations with negative numbers or result in answers with negative rational numbers. • Context in real-world items should be continuous or close to continuous. • Inequalities are limited to < or >. Calculator: **NO** •
MAFS.6.EE.3.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d=65t to represent the relationship between distance and time.*	• Items must involve relationships and/or equations of the form *y=px* or *y=x+p*. • Numbers in items should not require students to perform operations with negative numbers or result in answers with negative rational numbers. • Variables need to be defined. • Calculator: **NO** •

Essential Vocabulary	
Vocabulary	Definition/Description
Equation	
Solution of an Equation	A solution of an equation is the value of the variable that makes the equation true.
Addition Property of Equality	The two sides of an equation stay equal when the same amount is added to both sides of the equation.
Subtraction Property of Equality	The two sides of an equation stay equal when the same amount is subtracted from both sides of the equation.
Multiplication Property of Equality	The two sides of an equation stay equal when both sides of the equation are multiplied by the same amount.
Division Property of Equality	The two sides of an equation stay equal when both sides of the equation are divided by the same non-zero amount.
Inverse Relationship	Operations that undo each other have an inverse relationship.
Inequality	An inequality is a mathematical sentence that uses $<, \leq, >, \geq, or \neq$ to compare two quantities.
Dependent Variable	A dependent variable is a variable whose value changes in response to another (independent) variable.
Independent Variable	An independent variable is a variable whose value determines the value of another (dependent) variable.

enVision Florida Mathematics: Grade 6 Advanced
5-1 Understand Equations and Solutions (6.EE.2.5)
5-2 Apply Properties of Equality (6.EE.1.4, 6.EE.2.7)
5-3 Write and Solve Addition and Subtraction Equations (6.EE.2.7, 6.EE.2.6)
5-4 Write and Solve Multiplication and Division Equations (6.EE.2.7, 6.EE.2.6)
5-5 Write and Solve Equations with Rational Numbers (6.EE.2.7, 6.EE.2.6)
5-6 Understand and Write Inequalities (6.EE.2.8, 6.EE.2.5)
5-7 Solve Inequalities (6.EE.2.5, 6.EE.2.8)
3-Act Mathematical Modeling: *Checking a Bag* (6.EE.2.5, 6.EE.2.6, 6.EE.2.8)
5-8 Understand Independent and Dependent Variables (6.EE.3.9)
5-9 Use Patterns to Write and Solve Equations (6.EE.3.9)
5-10 Relate Tables, Graphs, and Equations (6.EE.3.9)

Decoded Standard
MAFS.6.EE.1.4 This standard focuses on combining like terms in expressions. Students substitute values into expressions to prove equivalence. For example, $Are\ 3(x+4) and\ 3x+12\ equivalent\ expressions$? Substitute a numerical value for *x* such as 2. Then, $3(2+4) = 18\ and\ (3 \times 2) + 12 = 18$ so the expression are equivalent. (*Common Core Mathematics Companion*, Pg. 90)
Intensive Math Interventions (Repeat from Topic 3)
• 6.EE.1.3 and 1.4 – Back Standard – 6.NS.2.4 • 6.EE.1.4 – Back Standard – 1.OA.2.4 • 6.EE.1.4 – Back Standard – 3.MD.3.7

Decoded Standard
MAFS.6.EE.2.5 The center for attention for this standard is solving an equation or inequality as a process of answering the following question: *Which values from a specified set make the equation or inequality true?* Students simplify numerical expressions by substituting values for given variables and use substitution to determine whether a given number in a specified set makes an equation true or which set of numbers makes an inequality true. Limit solving inequalities to selecting values from a given set that would make the inequality true. For example, find the value(s) of *y* that will make $7.2 + y \geq 9$. Select your value(s) from the set $=\{1, 1.3, 1.8, 2, 3\}$. (*Common Core Mathematics Companion*, Pg. 92)
Intensive Math Interventions
• 6.EE.2.5 – Back Standard – 6.EE.1.2

Decoded Standard
MAFS.6.EE.2.6 This standard concentrates on writing expressions using variable that represent real-world or mathematical problems. Students learn that a variable represents an unknown number or any number in a specified set. (*Common Core Mathematics Companion*, Pg. 93)
Intensive Math Interventions (Repeat from Topic 3)
• 6.EE.2.6 – Back Standard – 6.EE.1.2

Decoded Standard
MAFS.6.EE.2.7 Attention for this standard is placed with solving equations for real-world and mathematical problems that involve positive rational numbers and zero. To solve the equation, students can draw pictures such as this example: *"Juan spent $48.99 on three T-shirts. If each shirt is the same amount, write an algebraic equation that represents this situation and solve to determine how much one T-Shirt costs. The picture created is a bar model chart."* Each bar is labeled *S* for T-shirt, so each shirt costs the same amount of money. The bar model represents the equation $3S = \$48.99$. To solve the problem, students divide the total cost of $48.99 by 3.

$48.99		
S	*S*	*S*

(*Common Core Mathematics Companion*, Pg. 94)

Intensive Math Interventions
• 6.EE.2.7 – Back Standard – 5.NF.1.1
• 6.EE.2.7 – Back Standard – 5.NF.2.3
• 6.EE.3.7 – Back Standard – 5.NF.2.6
• 6.EE.3.7 – Back Standard – 6.NS.1.1

Decoded Standard
MAFS.6.EE.2.8 The essence of this standard is graphing inequalities on a number line and writing inequalities to solve real-world mathematical problems. Students check by substitution to determine if the graph of an inequality is correct. (*Common Core Mathematics Companion*, Pg. 95)
Intensive Math Interventions
• 6.EE.3.8 – Back Standard – 6.NS.3.6
• 6.EE.3.8 – Back Standard – 6.NS.3.7

Decoded Standard
MAFS.6.EE.3.9 This standard accents using variables to represent two quantities in real-world scenarios. Students recognize that a change in the independent variable creates a change in the dependent variable, such as the following: As *x* changes, *y* also changes. Emphasis is placed on writing an equation to express the quantity in terms of the dependent and independent variables. Students also identify relationships between tables, graphs, and equations and relate these back to the equation. (*Common Core Mathematics Companion*, Pg. 97)
Intensive Math Interventions
• 6.EE.3.9 – Back Standard – 5.OA.2.3

Pinellas County Schools **ACCELERATED MATH GRADE 6** 2019-2020

Semester 1	**Topic 6: Understand and Use Ratio and Rate**	14 Days: 11/14-12/10

Thanksgiving Break: 11/23 – 12/1

Standards/Learning Goals:	Content Limits, Assessment Types, Calculator
MAFS.6.RP.1.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*	• Whole numbers should be used for the quantities. • Ratios can be expressed as fractions, with ":", or with words. • Items may involve mixed units within each system (e.g. convert hours/min to seconds). • Context itself does not determine the order. • Limit use of percent to MAFS.6.RP.1.3c. Calculator: **NO** •
MAFS.6.RP.1.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $\frac{3}{4}$ cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*	• Items using the comparison of a ratio will use whole numbers. • Rates can be expressed as fractions, with ":" or with words. • Items may involve mixed units within each system (e.g. convert hours/min to seconds). • Context itself does not determine the order. • Name the amount of either quantity in terms of the other as long as one of the values is on unit. Calculator: **NO** •
MAFS.6.RP.1.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. b. Solve unit rate problems including those involving unit pricing and constant speed. *For 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?* ~~c. 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 percent.~~ d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. e. Understand the concept of Pi as the ratio of the circumference of a circle to its diameter.	• Rates can be expressed as fractions, with ":" or with words. • Items may involve mixed units within each system (e.g. convert hours/min to seconds). • Percent found as a rate per 100. • Quadrant I only for MAFS.6.RP.1.3a Calculator: **NO** •

Essential Vocabulary	
Vocabulary	Definition/Description
Ratio	A ratio is a relationship in which for every *x* units of one quantity there are *y* units of another quantity.
Term	A term is a number, a variable, or the product of a number and one or

	more variables.
Circumference	The circumference of a circle is the distance around the circle. The formula for the circumference of a circle is $C = \pi \cdot d$, where *C* represents the circumference and *d* represents the diameter of the circle.
Diameter	A diameter is a segment that passes through the center of a circle and has both endpoints on the circle. The diameter can also mean the length of this segment.
Equivalent Ratios	Equivalent rations are ratios that express the same relationship.
Pi	Pi (π) is the ratio of a circle's circumference, *C*, to its diameter, *d*.
Rate	A rate is a ratio involving two quantities measured in different units.
Unit Rate	The rate for one unit of a given quantity is called the unit rate.
Unit Price	The unit price is a unit rate that gives the price of one item.
Constant Speed	The speed stays the same over time
Conversion Factor	A conversion factor is a rate that equals 1.
Dimensional Analysis	A method to convert measures by including measurement units when multiplying by a conversion factor.

enVision Florida Mathematics: Grade 6 Advanced
6-1 Understand Ratios (6.RP.1.1, 6.RP.1.3)
6-2 Generate Equivalent Ratios (6.RP.1.3.a, 6.RP.1.3.e)
6-3 Compare Ratios (6.RP.1.3.a)
6-4 Represent and Graph Ratios (6.RP.1.3.a, 6.RP.1.3.e)
6-5 Understand Rates and Unit Rates (6.RP.1.2, 6.RP.1.3.a, 6.RP.1.3.b)
6-6 Compare Unit Rates (6.Rp.1.3.b, 6.RP.1.3.a)
6-7 Solve Unit Rate Problems (6.RP.1.3.b)
3-Act Mathematical Modeling: *Get in Line* (6.RP.1.3.b, 6.RP.1.2)
6-8 Ratio Reasoning: Convert Customary Units (6.RP.1.3.d)
6-9 Ratio Reasoning: Convert Metric Units (6.RP.1.3.d)
6-10 Relate Customary and Metric Units (6.Rp.1.3.d)

Decoded Standard

MAFS.6.RP.1.1

In this standard, students learn to compare two quantities or measures such as 6:1 or 10:2. These comparisons are called ratios. Students discover that ratios can be written and described in different ways. For instance, 6:1 uses a colon to separate values. Ratios can also be stated with words such as 6 to 1, or as fractions such as $\frac{6}{1}$. This standard focuses on understanding the concept of a ratio, however, students should use ratio language to describe real-world experiences and use their understanding for decision making. (*Common Core Mathematics Companion*, Pg. 8)

Intensive Math Interventions

- 6.RP.1.1 – Back Standard – 4.OA.1.2
- 6.RP.1.1 – Back Standard Multiply – 4. OA.1.2
- 6.RP.1.1 – Back Standard – 4.MD.1.1
- 6.RP.1.1 – Back Standard – 5.NF.2.5

Decoded Standard
MAFS.6.RP.1.2 This standard focuses student learning on the concept of a unit rate as special kind of ratio. Students compare different units of measure such as the amount of money earned to the hours worked while babysitting and calculate unit rates by setting up ratios and simplifying them. Students understand a situation in ratio form and write the unit that describes the situation using appropriate rate language with words such as *per*, and symbols such as / to compare different units or measures. (*Common Core Mathematics Companion*, Pg. 9)
Intensive Math Interventions
• 6.RP.1.2 – Back Standard – 4.OA.1.2 • 6.RP.1.2 – Back Standard Dividing – 4.OA.A.2 • 6.RP.1.2 – Back Standard – 5.NF.2.7 • 6.RP.1.2 – Back Standard – 6.RP.1.1

Decoded Standard
MAFS.6.RP.1.3 In these standards, students use reasoning about multiplication and division to solve a variety of ratio and rate problems about quantities. They make tables of equivalent ratios relating quantities with whole-number measurements, finding missing values in the tables, and plot pairs of values on the coordinate plane. They use tables to compare ratios and solve unit rate and constant speed problems. Problems involving finding the whole given a part and the percent, such as 20% of a quantity means $\frac{20}{100}$, are also a focus. For these standards, students can use equivalent ratio tables, tape diagrams, double number lines or equations. Students connect ratios and fractions. (*Common Core Mathematics Companion*, Pg. 10)
Intensive Math Interventions
• 6.RP.1.3 – Back Standard – 5.G.1.2

Semester 2	**Topic 7: Analyze and Use Proportional Relationships**	13 Days: 1/8-1/27

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.7.RP.1.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, area and other quantities measured in like or different units.	• The item stem must include at least one fraction. • Ratios may be expressed as fractions, with ":" or with words. • Units may be the same or different across the two quantities. Calculator: **YES** •
MAFS.7.RP.1.2 Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. *For example, if total cost* t *is proportional to the number* n *of items purchased at a constant price* p*, the relationship between the total cost and the number of items can be expressed as* $t = pn$. d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ were *r* is the unit rate.	• Ratios should be expressed as fractions, with ":" or with words. • Units may be the same or different across the two quantities. Calculator: **NEUTRAL** •
MAFS.7.RP.1.3 Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*	• Units may be the same or different across the two quantities. Calculator: **NEUTRAL** •

Essential Vocabulary	
Vocabulary	Definition/Description
Proportional Relationship	Two quantities *x* and *y* have a proportional relationship if *y* is always a constant multiple of *x*. A relationship is proportional if it can be described by equivalent ratios.
Proportion	A proportion is an equation stating that two ratios are equal.
Constant of Proportionality	In a proportional relationship, one quantity *y* is a constant multiple of the other quantity *x*. The constant multiple is called the constant of proportionality. The constant of proportionality is equal to the ratio $\frac{y}{x}$.

enVision Florida Mathematics: Grade 6 Advanced
7-1 Connect Ratios, Rates, and Unit Rates (7.PR.1.1, 7.RP.1.3)
7-2 Determine Unit Rates with Ratios of Fractions (7.RP.1.1, 7.RP.1.3)

7-3 Understand Proportional Relationships: Equivalent Ratios (7.RP.1.2.a)
7-4 Describe Proportional Relationships: Constant of Proportionality (7.RP.1.2.b, 7.RP.1.2.c)
3-Act Mathematical Modeling: *Mixin' It Up* (7.RP.1.1, 7.RP.1.2.a)
7-5 Graph Proportional Relationships (7.RP.1.2.a, 7.RP.1.2.b, 7.RP.1.2.d)
7-6 Apply Proportional Reasoning to Solve Problems (7.RP.1.2, 7.RP.1.3)

Decoded Standard

MAFS.7.RP.1.1

This standard focuses on computing unit rates using ratios of fractions known as complex fractions. In a complex fraction, the numerator, denominator, or both are fractions. In the standard, $\frac{\frac{1}{2}}{\frac{1}{4}}$ is an example of a complex fraction. Complex fractions can be interpreted as division statements. For example, $\frac{\frac{1}{2}}{\frac{1}{4}}$ can be thought of as $\frac{1}{2} \div \frac{1}{4}$.

Applications include situation where the quantities are measured in different units such as miles per hour, pounds per square foot, feet per second, and so on. (*Common Core Mathematics Companion*, Pg. 18)

Intensive Math Interventions

- 7.RP.1.1 and 1.2 – Back Standard – 6.RP.1.2
- 7.RP.1.1, 1.2 and 6.RP.1.3 – Back Standard – 6.RP.1.2

Decoded Standard

MAFS.7.RP.1.2

Sections a-d of this standard break down the standard to give guidance on ways to recognize and represent proportional relationships.

A. This standard emphasizes two methods for deciding whether a proportional relationship exists. One method is to use equivalent ratios in a table. If the rations are equivalent, then you have a proportional relationship such as:

# of people in a room	1	2	3	4	5
# of hands in the room	2	4	6	8	?

The other method is to graph the relationship on a coordinate plane and observe whether the graph is a straight line that goes through the origin. Note that computation using cross-multiplication is not a part of this standard. (*Common Core Mathematics Companion,* Pg. 19)

B. This standard focuses on proportional relationships that can be represented as tables, graphs, equations, diagrams, and verbal descriptions. Students have already seen tables, graphs, and verbal descriptions. The unit rate on a graph is the point where *x*=1. In an equation, it is the slope represented by the coefficient, *m*, in the formula $y = mx + b$. The terms *unit rate*, *constant of proportionality*, and *slope* are equivalent. Note that students are only required to read and interpret equations in this standard. (*Common Core Mathematics Companion*, Pg. 21)

C. In the previous standard students read equations to find the unit rates. In this standard students are given verbal descriptions of proportional relationships and are expected to create the equations in the form *y=mx*. For example, in Town C if you are caught speeding, you receive a traffic ticket. The penalty is $25 for every mile over the speed limit. What is the equation if *p* represents the penalty and *m* represents the number of miles over the speed limit? The equation is *p*=25*m*. (*Common Core Mathematics Companion*, Pg. 22)

D. An example of a proportional situation is: The scale on a map suggests that 1 centimeter represents an actual distance of 4 kilometers. The map distance between two towns is 8 centimeters. What is the actual distance? The graph of this relationship is represented as:

please see image on Pg. 23 of the Common Core Mathematics Companion

Note the points (0,0) and (1,4). The point is the unit rate or slope of the line for the equation *d*=4*c*, where *d* is the total distance and *c* is the number of centimeters. (*Common Core Mathematics Companion*, Pg. 23)

Intensive Math Interventions

- 7.RP.1.1 and 1.2 – Back Standard – 6.RP.1.2

7.RP.1.1, 1.2 and 6.RP.1.3 – Back Standard – 6.RP.1.2
7.RP.1.2 – Back Standard – 6.EE.2.7
7.RP.1.2 – Back Standard – 6.EE.3.9
7.RP.1.2 – Back Standard – 7.RP.1.1
7.RP.1.2b – Back Standard – 6.RP.1.3a

Decoded Standard

MAFS.7.RP.1.3

In this standard students solve problems involving proportional relationships. Students set up and solve proportions using cross-multiplication. For example: *"Directions to make a tablecloth call for $\frac{3}{4}$ yard of ribbon for every 2 yards of fabric. If you increase the amount of fabric used to 3 years, how much ribbon will be needed?"* The proportion is $\frac{\frac{3}{4}}{2} = \frac{x}{3}$. To cross-multiply:

$$3 \cdot \frac{3}{4} = 2x$$

Problems for this standard should be multi-step and include contexts with simple interest, tax, tips, commissions, percent error, percent increase/decrease, discounts, fees, markups, markdowns, discount, sales, and/or original prices.

To calculate a percent increase from 2 to 10, find the difference between the two numbers, in this case, 10-2=8. Take the difference, 8, and divide by the original number: $\frac{8}{2} = 4$. Multiply the quotient by 100: $4 \times 100 = 400\%$. (*Common Core Mathematics Companion,* Pg. 24)

Intensive Math Interventions

7.RP.1.3 – Back Standard – 7.EE.2.4
7.RP.1.3 – Back Standard – 7.RP.1.2

Semester 2	**Topic 8: Understand and Use Percent**	10 Days: 1/28-2/10

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.6.RP.1.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*	• Whole numbers should be used for the quantities. • Ratios can be expressed as fractions, with ":", or with words. • Items may involve mixed units within each system (e.g. convert hours/min to seconds). • Context itself does not determine the order. • Limit use of percent to MAFS.6.RP.1.3c. Calculator: **NO** •
MAFS.6.RP.1.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. c. 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 percent.	• Rates can be expressed as fractions, with ":" or with words. • Items may involve mixed units within each system (e.g. convert hours/min to seconds). • Percent found as a rate per 100. • Quadrant I only for MAFS.6.RP.1.3a Calculator: **NO** •

Essential Vocabulary	
Vocabulary	Definition/Description
Percent	A percent is a ratio that compares a number to 100.

enVision Florida Mathematics: Grade 6 Advanced
8-1 Understand Percent (6.RP.1.3.c)
8-2 Relate Fractions, Decimals, and Percents (6.RP.1.3.c)
8-3 Represent Percents Greater Than 100 or Less Than 1 (6.RP.1.3.c)
8-4 Estimate to Find Percent (6.RP.1.3.c)
8-5 Find the Percent of a Number (6.RP.1.3.c)
8-6 Find the Whole Given a Part and the Percent (6.RP.1.3.c)
3-Act Mathematical Modeling: *Ace the Test* (6.RP.1.1, 6.RP.1.3.c)

Decoded Standard

MAFS.6.RP.1.1

In this standard, students learn to compare two quantities or measures such as 6:1 or 10:2. These comparisons are called ratios. Students discover that ratios can be written and described in different ways. For instance, 6:1 uses a colon to separate values. Ratios can also be stated with words such as 6 to 1, or as fractions such as $\frac{6}{1}$. This standard focuses on understanding the concept of a ratio, however, students should use ratio language to describe real-world experiences and use their understanding for decision making. (*Common Core Mathematics Companion*, Pg. 8)

Intensive Math Interventions (Repeat from Topic 6)

- 6.RP.1.1 – Back Standard – 4.OA.1.2
- 6.RP.1.1 – Back Standard Multiply – 4. OA.1.2
- 6.RP.1.1 – Back Standard – 4.MD.1.1
- 6.RP.1.1 – Back Standard – 5.NF.2.5

Decoded Standard
MAFS.6.RP.1.3 In these standards, students use reasoning about multiplication and division to solve a variety of ratio and rate problems about quantities. They make tables of equivalent ratios relating quantities with whole-number measurements, finding missing values in the tables, and plot pairs of values on the coordinate plane. They use tables to compare ratios and solve unit rate and constant speed problems. Problems involving finding the whole given a part and the percent, such as 20% of a quantity means $\frac{20}{100}$, are also a focus. For these standards, students can use equivalent ratio tables, tape diagrams, double number lines or equations. Students connect ratios and fractions. (*Common Core Mathematics Companion*, Pg. 10)
Intensive Math Interventions
• 7.RP.1.1, 1.2 and 6.RP.1.3 – Back Standard – 6.RP.1.2 (Repeat from Topic 7) • 6.RP.1.3c – Back Standard – 6.RP.1.1 • 6.RP.1.3 – Back Standard – 5.G.1.2 (Repeat from Topic 6)

Semester 2	**Topic 9: Analyze and Solve Percent Problems**	10 Days: 2/11-2/25

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.7.RP.1.2 Recognize and represent proportional relationships between quantities. c. Represent proportional relationships by equations. *For example, if total cost* t *is proportional to the number* n *of items purchased at a constant price* p*, the relationship between the total cost and the number of items can be expressed as* $t = pn$.	• Ratios should be expressed as fractions, with ":" or with words. • Units may be the same or different across the two quantities. Calculator: **NEUTRAL** •
MAFS.7.RP.1.3 Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*	• Units may be the same or different across the two quantities. Calculator: **NEUTRAL** •

Essential Vocabulary	
Vocabulary	Definition/Description
Percent Equation	The percent equation describes the relationship between a part and a whole. You can use the percent equation ($part = percent \times whole$) to solve percent problems.
Percent of Change	Percent of change is the percent something increases or decreases from its original measure or amount. You can find the percent of change by using the equation: percent of $change = \frac{amount\ of\ change}{original\ quantity}$
Percent Error	Percent error describes the accuracy of a measured or estimated value compared to an actual or accepted value.
Markup	Markup is the amount of increase from the cost to the selling price.
Markdown	Markdown is the amount of decrease from the selling price to the sale price.
Percent Markup	The markup as a percent increase of the original cost is called the percent markup.
Percent Markdown	The markdown as a percent decrease of the original selling price is called the percent markdown.
Interest Rate	Interest is calculated based on a percent of the principal. That percent is called the interest rate ®.
Principal	The original amount of money deposited or borrowed in an account.
Simple Interest	Simple interest is interest paid only on an original deposit.

enVision Florida Mathematics: Grade 6 Advanced
9-1 Analyze Percents of Numbers (7.RP.1.3)
9-2 Connect Percent and Proportion (7.RP.1.2.c, 7.RP.1.3)
9-3 Represent and Use the Percent Equation (7.RP.1.2.c, 7.RP.1.3)
9-4 Solve Percent Change and Percent Error Problems (7.RP.1.3)
3-Act Mathematical Modeling: *The Smart Shopper* (7.RP.1.3)
9-5 Solve Markup and Markdown Problems (7.RP.1.3)
9-6 Solve Simple Interest Problems (7.RP.1.3)

Decoded Standard
MAFS.7.RP.1.2 Sections a-d of this standard break down the standard to give guidance on ways to recognize and represent proportional relationships. C. In the previous standard students read equations to find the unit rates. In this standard students are given verbal descriptions of proportional relationships and are expected to create the equations in the form *y=mx*. For example, in Town C if you are caught speeding, you receive a traffic ticket. The penalty is $25 for every mile over the speed limit. What is the equation if *p* represents the penalty and *m* represents the number of miles over the speed limit? The equation is *p*=25*m*. (*Common Core Mathematics Companion*, Pg. 22)
Intensive Math Interventions
• 7.RP.1.2c – Back Standard – 7.RP.1.1 • 7.RP.1.2c – Back Standard – 6.RP.1.3

Decoded Standard
MAFS.7.RP.1.3 In this standard students solve problems involving proportional relationships. Students set up and solve proportions using cross-multiplication. For example: *"Directions to make a tablecloth call for $\frac{3}{4}$ yard of ribbon for every 2 yards of fabric. If you increase the amount of fabric used to 3 years, how much ribbon will be needed?"* The proportion is $\frac{\frac{3}{4}}{2} = \frac{x}{3}$. To cross-multiply: $$3 \cdot \frac{3}{4} = 2x$$ Problems for this standard should be multi-step and include contexts with simple interest, tax, tips, commissions, percent error, percent increase/decrease, discounts, fees, markups, markdowns, discount, sales, and/or original prices. To calculate a percent increase from 2 to 10, find the difference between the two numbers, in this case, 10-2=8. Take the difference, 8, and divide by the original number: $\frac{8}{2} = 4$. Multiply the quotient by 100: $4 \times 100 = 400\%$. (*Common Core Mathematics Companion,* Pg. 24)
Intensive Math Interventions
• 7.RP.1.3 – Back Standard – 6.EE.2.7 • 7.RP.1.3 – Back Standard – 6.RP.1.3

Semester 2	**Topic 10: Generate Equivalent Expressions**	12 Days: 2/26-3/12

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.7.EE.1.1 Apply properties of operations as strategies to add, subtract, factor and expand linear expressions with rational coefficients.	• Expressions must be linear and contain a variable. Calculator: **NEUTRAL** •
MAFS.7.EE.1.2 Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example,* $a + 0.05a = 1.05a$ *means that "increase by 5%" is the same as "multiplying by 1.05".*	• Expressions must be linear. Calculator: **YES** •
MAFS.7.EE.2.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hours gets a 10% raise, she will make an additional* $\frac{1}{10}$ *of her salary an hour, or #2.50, for a new salary of $27.50. If you want to place a towel bar* $9\frac{3}{4}$ *inches long in the center of a door that is* $27\frac{1}{2}$ *inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*	• Items should not use variables. • Items should require two or more steps. Calculator: **YES** •
MAFS.7.EE.2.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form *px+q=r* and *p(x+q)=r*, where *p*,*q*, and *r* are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is the width?* b. Solve word problems leading to inequalities of the form *px+q>r* or *px+q<r*, where *p*, *q*, and *r* are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*	• Inequalities must have context. • Inequalities may use ≤ or ≥. • Inequalities may not be compounded inequalities. Calculator: **YES** •

enVision Florida Mathematics: Grade 6 Advanced
10-1 Write and Evaluate Algebraic Expressions (7.EE.2.3, 7.EE.2.4)
10-2 Generate Equivalent Expressions (7.EE.1.1)
10-3 Simplify Expressions (7.EE.1.1)
10-4 Expand Expressions (7.EE.1.1, 7.EE.1.2)
10-5 Factor Expressions (7.EE.1.1, 7.EE.1.2)
3-Act Mathematical Modeling: *I've Got You Covered* (7.EE.1.1, 7.EE.1.2)
10-6 Add Expressions (7.EE.1.1, 7.EE.1.2)
10-7 Subtract Expressions (7.EE.1.1, 7.EE.1.2)
10-8 Analyze Equivalent Expressions (7.EE.1.2)

Decoded Standard

MAFS.7.EE.1.1

Apply previously learned properties of operations (distributive, commutative, associative, identity, and inverse properties of addition and multiplication, as well as the zero property of multiplication) as strategies for adding, subtracting, factoring, and expanding linear expressions. Coefficients are limited to rational numbers that include integers, positive/negative fractions, and decimals. Use the properties to write equivalent expressions; for example, $3(4a + 2) = 12a + 6$ uses the distributive property.

Substituting a numerical value for the variable and then evaluating the expressions to find the same solution is a tool to determine whether two expressions are equivalent. For example, $3(4a + 2)$ is equal to $12a + 6$. Let $a = 5$ and substitute 5 for *a* in both expressions.

$$\begin{array}{ll} 3(4a+2) & 12a+6 \\ 3\big((4\cdot 5)+2\big) & (12\cdot 5)+6 \\ 3(20+2) & 60+6 \\ 3(22) & 66 \\ 66 & \end{array}$$

(*Common Core Mathematics Companion*, Pg. 104)

Intensive Math Interventions

- 7.EE.1.1 – Back Standard – 6.EE.1.3
- 7.EE.1.1 – Back Standard – 6.EE.1.4

Decoded Standard

MAFS.7.EE.1.2

Using equivalent expressions from the previous standard, focus on how writing an equivalent statement can better show the relationship among the terms in the expressions. For example, $6x + 15 = 3(3x + 5)$ means that three groups of $2x + 5$ is the same as one group of 6*x* and 15. (*Common Core Mathematics Companion*, Pg. 105)

Intensive Math Interventions

NO PRIOR CONNECTIONS

Decoded Standard

MAFS.7.EE.2.3

Students solve multi-step real-world and mathematical problems. The problems should contain a combination of whole numbers, positive and negative integers, fractions, and decimals. Students will apply what they learned in previous standards about convert fractions, decimals, and percents and use properties of operations to find equivalent forms of expressions as needed. Students will be expected to check their work for reasonableness using estimation strategies, which may include but are not limited to the following:

- rounding the values in the problem up or down and then adjusting the estimate to make up for the closeness of the rounded values to the originals,

- using friendly or compatible numbers for the values in the problem that allow for common factors for multiplication or easy addition such as grouping hundreds or thousands, and
- using benchmark numbers that are easy to work with such as 2 for $1\frac{7}{8}$ to make an estimate.

(*Common Core Mathematics Companion*, Pg. 108)

Intensive Math Interventions

- 7.EE.2.3 – Back Standard – 7.NS.1.3 Version 2

Decoded Standard

MAFS.7.EE.2.4

A. Students will become fluent in solving equations. Students use the arithmetic from the problem to generalize an algebraic solution.
Use word problems that lend themselves to equations in the forms of $px + q = r$ and $p(x + q) = r$. Two examples are as follows:
   1. Three consecutive even numbers add up to 48. What is the lowest number of the three? $x + x + 2 + x + 4 = 3x + 6 = 48 \quad (px + q = r)$
   2. Ms. Thomas had $25 to spend on party favors. She had $10.40 left after buying 10 balloons. How much did she spend on each balloon? $0.1(25 - 10.40) = r \quad (p(x + q) = r)$

Students should develop fluency solving word problems that can be modeled by linear equations in the form $px + q = r$. Integers, fractions, and decimals should be included as values in the word problems.
(*Common Core Mathematics Companion*, Pg. 109)

B. In this standard, students move from solving word problems with equations to word problems with inequalities. Inequalities follow a similar form to those of the equations, $px + q > r$ and $px + q < r$. Students graph the solution set of the inequality on a number line and describe what it means of the context of the word problem. Be aware that sometimes the solution set to the inequality contains values that do not make sense as solutions for the word problems. For example, in the word problem, *"Donna has at most $60 to spend on a shopping spree. She wants to buy a dress for $22 dollars and spend the rest on bracelets. Each Bracelet costs $8. How many bracelets can she purchase?"* we see a solution of

$$\$60 - \$22 = \$38$$
$$8x \leq 38$$
$$\frac{8x}{8} \leq \frac{38}{8}$$
$$x \leq 4.75$$

The number of bracelets is less than or equal to 4.75. However, Donna cannot buy .75 of a bracelet, so when we graph the inequality as below:

see image on page 110 of the *Common Core Mathematics Companion*

we see that the only viable solutions to the word problems are 4, 3, 2, 1, or no bracelets.
(*Common Core Mathematics Companion*, Pg. 110)

Intensive Math Interventions

- 7.EE.2.4 – Back Standard – 6.EE.2.5
- 7.EE.2.4 – Back Standard – 6.EE.2.6
- 7.EE.2.4 – Back Standard – 6.EE.2.7
- 7.EE.2.4 – Back Standard – 6.EE.2.8
- 7.EE.2.4 – Back Standard – 6.RP.1.3

Semester 2	**Topic 11: Solve Area, Surface Area, and Volume Problems**	13 Days: 3/24-4/9

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.6.G.1.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	• Numbers in items must be positive rational numbers. • Limit shapes to those that can be decomposed or composed into rectangles and/or right triangles. Calculator: **NO** •
MAFS.6.G.1.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas *V= lwm* and *V= Bh* to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	• Prisms in items must be right rectangular prisms. • Unit fractional edge lengths for the unit cubes used for packing must have a numerator of 1. Calculator: **NO** •
MAFS.6.G.1.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	• Items may use all four quadrants. • When finding side length, limit polygons to traditional orientation (side lengths perpendicular to axes). Calculator: **NO** •
MAFS.6.G.1.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	• Numbers in items must be positive rational numbers. • 3D figures are limited to rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids. Calculator: **NO** •
MAFS.6.EE.1.2 Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 –y.* c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas V=s3 and A=6s^2 to find the volume and surface area of a cube with sides of length s=1/2.*	• N/A. • Calculator: **NO** •

MAFS.6.EE.2.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	• Numbers in items should not require students to perform operations with negative numbers or result in answers with negative rational numbers. • Expressions must contain at least one variable. • Calculator: **NO** •
MAFS.6.NS.3.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	• Plotting of points in the coordinate plane should include some negative values (not just first quadrant). • Numbers in MAFS.6.NS.3.8 must be positive or negative rational numbers. • Do not use polygons/vertices for MAFS.6.NS.3.8 • Do not exceed a 10 x 10 coordinate grid, though scales can vary. Calculator: **NO** •
MAFS.6.NS.3.8 Solve real-world and mathematical problems by graphing 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.	ASSESSED IN: MAFS.6.NS.3.6 • Plotting of points in the coordinate plane should include some negative values (not just first quadrant). • Numbers in MAFS.6.NS.3.8 must be positive or negative rational numbers. • Do not use polygons/vertices for MAFS.6.NS.3.8 • Do not exceed a 10 x 10 coordinate grid, though scales can vary. Calculator: NO •

Essential Vocabulary	
Vocabulary	Definition/Description
Kite	A quadrilateral with two pairs of adjacent sides that are equal in length.
Base of a Parallelogram	A base of a parallelogram is any side of the parallelogram.
Base of a Prism	A base of a prism is one of a pair of parallel polygonal faces that are the same size and shape. A prism is named for the shape of its bases.
Base of a Pyramid	A base of a pyramid is a polygonal face that does not connect to the vertex.
Base of a Triangle	The base of a triangle is any side of the triangle.
Edge	An edge of a three-dimensional figure is a segment formed by the intersection of two faces.
Face	A face of a three-dimensional figure is a flat surface shaped like a polygon.
Net	A net is a two-dimensional pattern that you can fold to form a three-dimensional figure. A net of a figure shows all of the surfaces of that figure in one view.
Polyhedron	A polyhedron is a three-dimensional figure made of flat polygons-shaped surfaces called faces.
Vertex	A vertex of a three-dimensional figure is a point where three or more edges meet.

enVision Florida Mathematics: Grade 6 Advanced
11-1 Find Areas of Parallelograms and Rhombuses (6.G.1.1, 6.EE.1.2.c)
11-2 Solve Triangle Area Problems (6.G.1.1, 6.EE.1.2.c)
11-3 Find Areas of Trapezoids and Kites (6.G.1.1, 6.EE.1.2.c)

11-4 Find Area of Polygons (6.G.1.1, 6.EE.1.2.c, 6.G.1.3, 6.NS.3.6.c, 6.NS.3.8)
11-5 Represent Solid Figures Using Nets (6.G.1.4)
3-Act Mathematical Modeling: *That's a Wrap* (6.G.1.4, 6.EE.1.2.c)
11-6 Find Surface Area of Prisms (6.G.1.4, 6.EE.1.2.a, 6.EE.1.2.c, 6.EE.2.6)
11-7 Find Surface Area of Pyramids (6.G.1.4, 6.EE.1.2.a, 6.EE.1.2.c, 6.EE.2.6)
11-8 Find Volume with Fractional edge Lengths (6.G.1.2, 6.EE.1.2.a, 6.EE.1.2.c, 6.EE.2.6)

Decoded Standard

MAFS.6.G.1.1

Students take triangles and quadrilaterals and form rectangles, or take rectangles and/or other quadrilaterals and decompose them (take apart) into familiar shapes to find the area of the composite shape. A composite shape is a shape formed from other shapes. Students study composite shapes that are unfamiliar and decompose them into familiar shapes such as triangles and rectangles (which they know how to calculate the areas of) to find the area. This practice with familiar and irregular composite shapes and decomposition is applied to real-world situations. (*Common Core Mathematics Companion*, Pg. 156)

Intensive Math Interventions

- 6.G.1.1 – Back Standard – 4.MD.1.3
- 6.G.1.1 – Back Standard – 5.G.1.2

Decoded Standard

MAFS.6.G.1.2

With this standard students build on their background knowledge of volume of right rectangular prisms with whole number dimensions by using manipulative to determine the volume of a right rectangular prism with fractional side lengths.

Students relate this experience to the formulas for volume ($V=lwh$ and $V=Bh$) and find that their experience of counting the unit cubes yields the same result as using the formulas. Students then solve real-world and mathematical problems by applying volume formulas appropriately. (*Common Core Mathematics Companion*, Pg. 157)

Intensive Math Interventions

- 6.G.1.2 – Back Standard – 5.MD.3.5

Decoded Standard

MAFS.6.G.1.3

Students plot points in all four quadrants of the coordinate plane. Coordinates are the vertices of polygons. Students connect the points and name the polygons. By giving students coordinates of vertices of the polygon that have the same first and same second coordinate (examples: (3,4) and (3,9) or (7,6) and (15,6)), students are challenged to find a technique to determine the length of a side of the polygon (subtract same coordinates). Students then apply this knowledge to solve real-world and mathematical problems. (*Common Core Mathematics Companion*, Pg. 158)

Intensive Math Interventions

Prior Connections to 5.G.1.2 and 3.NF.1.2 (see previous Topics if needed still)

Decoded Standard

MAFS.6.G.1.4

Students begin learning about nets by cutting and folding nets of prisms. Nets are two-dimensional diagrams of three-dimensional shapes that can be folded into the three-dimensional shape. Building on students' previous knowledge of area, students can find the area of the rectangles and triangles that make up given nets. This leads to defining surface area as the sum of the area of the faces of the three-dimensional figure. Once students understand this concept, they solve real-world and mathematical problems involving surface area. (*Common Core Mathematics Companion*, Pg. 159)

Intensive Math Interventions
• 6.G.1.4 – Back Standard – 6.G.1.1 • MAFS.6.G.1.4 – Back Standard – 6.G.1.1

Decoded Standard
MAFS.6.EE.1.2 Parts a-c of this standard emphasize translating expressions from verbal expressions to numerical ones and from numerical expressions to verbal expressions. Students evaluate expressions given values for the variables such as in the example in part c of this standard using the order of operations when appropriate. Students identify parts of an algebraic expression including sum, term, product, factor, quotient, coefficients, and constants. (*Common Core Mathematics Companion*, Pg. 87)
Intensive Math Interventions
See Topic 2

Decoded Standard
MAFS.6.EE.2.6 This standard concentrates on writing expressions using variable that represent real-world or mathematical problems. Students learn that a variable represents an unknown number or any number in a specified set. (*Common Core Mathematics Companion*, Pg. 93)
Intensive Math Interventions
See Topic 2 and Topic 6

Decoded Standard
MAFS.6.NS.3.6 The heart of this standard focuses on previous understanding with the use of both horizontal and vertical number lines. Students extend graphing points and reflecting across zero on a number line to graphing and reflecting points across axes on a coordinate grid. They identify and plot coordinates in all four quadrants of the coordinate plane. (*Common Core Mathematics Companion*, Pg. 45)
Intensive Math Interventions
• 6.NS.3.6 – Back Standard – 5.G.1.2 (1) • 6.NS.3.6c – Back Standard – 5.G.1.1

Decoded Standard
MAFS.6.NS.3.8 The focal point for this standard is solving problems by graphing points in all four quadrants of the coordinate plane. Students learn that the distance from a point on a coordinate plane to an axis is an absolute value. The coordinate plane is used to represent real-world scenarios. (*Common Core Mathematics Companion*, Pg. 49)
Intensive Math Interventions
• 6.NS.3.8 – Back Standard – 5.G.A.2

Semester 2	**Topic 12: Display, Describe, and Summarize Data**	12 Days: 4/13-4/28

Standards/Learning Goals:	**Content Limits, Assessment Types, Calculator**
MAFS.6.SP.1.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*	• N/A Calculator: **NO** •
MAFS.6.SP.1.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	• Circle graphs and line graphs may not be used. • Items should include a distribution. Calculator: **NO** •
MAFS.6.SP.1.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	• Data sets in items must be numerical data sets. Calculator: **NO** •
MAFS.6.SP.2.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	• All plots must be displayed on a number line or coordinate grid. Calculator: **NO** •
MAFS.6.SP.2.5 Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	• Displays should include only dot/line plots, box plots, or histograms. Calculator: **NO** •

Essential Vocabulary	
Vocabulary	Definition/Description
Mean	The mean represents the center of a numerical data set. To find the mean, sum the data values and then divide by the number of values in the data set.
Median	The median represents the center of a numerical data set. For an odd number of data values, the median is the middle value when the data values are arranged in numerical order. For an even number of data values, the median is the average of the two middle values when the data values are arranged in numerical order.

Mode	The item, or items, in a data set that occurs most frequently.
Range	The range is a measure of variability of a numerical data set. The range of a data set is the difference between the greatest and least values in a data set.
Box Plot	A box plat is a statistical graph that shows the distribution of a data set by marking five boundary points were data occur along a number line. Unlike a dot plot or a histogram, a box plot does not show frequency.
Quartiles	The quartiles of a data set divide the data set into four parts with the same number of data values in each part.
Frequency Table	A frequency table shows the number of times a data value or values occur in the data set.
Histogram	A histogram is a statistical graph that shows the shape of a data set with vertical bars above intervals of values on a number line. The intervals are equal in size and do not overlap. The height of each bar shows the frequency of data within that interval.
Absolute Deviation	Absolute deviation measures the distance that the data value is from the mean. You find the absolute deviation by taking the absolute value of the deviation of the data value. Absolute deviations are always nonnegative.
Mean Absolute Deviation (MAD)	The mean absolute deviation is a measure of variability that describes how much the data values are spread out from the mean of the data set. The mean absolute deviation is the average distance that the data values are spread around the mean. $$MAD = \frac{sum\ of\ the\ absolute\ deviations\ of\ the\ data\ values}{total\ number\ of\ data\ values}$$
Interquartile Range (IQR)	The interquartile range (IQR) is the distance between the first and third quartiles of the data set. It represents the spread of the middle 50% of the data values.
Outlier	An outlier is a piece of data that does not seem to fit with the rest of a data set.
Data Distribution	To describe a data distribution, or how data values are arranged, you evaluate its measures of center and variability, and its overall shape. See distribution of a data set.

enVision Florida Mathematics: Grade 6 Advanced
12-1 Recognize Statistical Questions (6.SP.1.1, 6.SP.2.4)
12-2 Summarize Data Using Mean, Median, and Mode (6.SP.1.3, 6.SP.2.5.c)
12-3 Display Data in Box Plots (6.SP.2.4)
12-4 Display Data in Frequency Tables and Histograms (6.SP.2.4, 6.SP.2.5.a)
12-5 Summarize Data Using Measure of Variability (6.SP.2.5.c, 6.SP.2.4)
12-6 Choose Appropriate Statistical Measures (6.SP.2.5.d, 6.SP.2.5.c)
12-7 Summarize Data Distributions (6.SP.1.2, 6.SP.2.5.b, 6.Sp.2.4, 6.SP.2.5.c)
3-Act Mathematical Modeling: *Vocal Range* (6.SP.1.2, 6.SP.1.3, 6.SP.2.5)

Decoded Standard
MAFS.6.SP.1.1 The focus for this standard is identifying the difference between statistical and non-statistical questions and formulating/writing simple questions to provide differences in responses. A statistical question must be stated so that responses will allow for differences. In the example, *"What color are the shoes I am wearing?"* only one response can be given. However, with the example, *"What color of shoes are the students in our class wearing?"* a variety of responses can be collected. Students recognize responses to statistical questions have variation that may be used to draw conclusions about the data set. (*Common Core Mathematics Companion*, Pg. 202)
Intensive Math Interventions
• SP.1.1, 1.2 and 2.4 – Back Standard – 5.MS.2.2

Decoded Standard
MAFS.6.SP.1.2 This standard focuses on the understanding that data collected to answer a statistical question can be analyzed by their distribution. A distribution is the arrangement of their values of a data set and is described as using its center (median or mean) and spread. The single value for each of the measures of center (mean, median, or mode) and measures of spread (range) is used to summarize the data. By finding the measures of center for a set of data, students used the value to describe the data in words. Students use histograms and box plots to describe a set of data using its center (mean, median, and mode), spread (range), and overall shape. (*Common Core Mathematics Companion*, Pg. 203)
Intensive Math Interventions
• SP.1.1, 1.2 and 2.4 – Back Standard – 5.MS.2.2

Decoded Standard
MAFS.6.SP.1.3 This standard helps students understand that a data distribution may not have a definite center. Sixth graders discover that different ways to measure center produce different values. The median measures center as the middle value. The mean measures center as the value that each data point would take on if the total of the data values were redistributed equally. It is a balance point. Students recognize that a measure of variability can also summarize data because two very different sets of data can have the same median and mean but differ by their variability. (*Common Core Mathematics Companion*, Pg. 205)
Intensive Math Interventions
• 6.SP.1.3 – Back Standard – 6.SP.1.1 • 6.SP.1.3 – Back Standard – 6.SP.1.2

Decoded Standard
MAFS.6.SP.2.4 Students learn how to display data on dot plots, histograms, and box plots (also known as box and whisker plots). A dot plot is appropriate for small- to moderate-size data sets of up to 25 numbers and is useful for highlighting the distribution and spread of the data, including clusters, gaps, and outliers. Histograms display the distribution of continuous data using intervals on a number line. Box plots display the distribution of values in a data set by dividing the set into quartiles. After creating the plots students interpret them, giving meaning to the context with statements such as, *"There is little variation in these data because the range on this box plot is 3."* Sixth graders learn to select the most appropriate display to represent the given data. (*Common Core Mathematics Companion*, Pg. 208)
Intensive Math Interventions
• SP.1.1, 1.2 and 2.4 – Back Standard – 5.MS.2.2

Decoded Standard
MAFS.6.SP.2.5 This standard emphasizes summarizing data. Students communicate a deep understanding of (1) observations (sample size, sometimes labeled as the *n* of the data), (2) appropriate measure of center and spread for a particular data set, (3) appropriate section of a graph to represent data collected, and (4) overall patterns in a distribution, including outliers, through statistical investigation. (*Common Core Mathematics Companion*, Pg. 210)
Intensive Math Interventions
• 6.SP.2.5 – Back Standard – 6.SP.1.3

MS Math Scoring Criteria (Grade 6 Math Advanced)

Number and Quantity: Reason, describe, and analyze quantitatively, using units and number systems to solve problems.				
Scoring Criteria				
Performance Indicators	**Emerging**	**Progressing**	**Meets**	**Exceeds**
A. Students will understand ratio concepts and use ratio reasoning to solve problems. [6.RP.1.1, 6.RP.1.2, 6.RP.1.3]	i. Students can identify a ratio. ii. Students can define a unit rate. iii. Students can define a percent.	i. Students can represent a ratio visually. ii. Students can find a unit rate. iii. Students can write a percent as a rate per 100.	i. Students can use the concept of a ratio to: - describe ratio relationships, - create tables, - make measurement conversions - describe the concept of pi. ii. Students can solve a unit rate problem. iii. Students can determine the percent of a quantity.	i. Students can apply the concept of ratio relationships in real-world situations. ii. Students can solve multistep and real world unit rate problems. iii. Students can solve real-world problems finding the percent of a quantity and the whole, given a part.
B. Students will apply and extend previous understandings of multiplication and division to divide fractions by fractions. [6.NS.1.1]	i. Students can multiply fractions by fractions.	i. Students can represent division of fractions using models/diagrams.	i. Students can solve and interpret division of fractions by fractions.	i. Students can solve multi-step real-world word problems involving division of fractions and fractions.
C. Students will multiply and divide multi-digit numbers and find common factors and multiples. [6.NS.2.2, 6.NS.2.3, 6.NS.2.4]	i. Students can fluently divide whole numbers. ii. Students can fluently add, subtract, multiply, and divide whole numbers and decimals to the tenths place. iii. Students can define least	i. Students can divide multi-digit rational numbers (without fluency). ii. Students can add, subtract, multiply, and divide decimals (without fluency). iii. Students can identify factors and multiples of numbers.	i. Students can fluently divide multi-digit rational numbers. ii. Students can fluently add, subtract, multiply, and divide decimals. iii. Students can find the greatest common factor and least common multiple.	i. Students can justify the process of dividing multi-digit rational numbers. ii. Students can justify the process of adding, subtracting, multiplying, and dividing decimals. iii. Students can

	common multiple and greatest common factor.			construct equivalent expressions using GCF and LCM.
D. **Students will apply and extend previous understanding of numbers to the system of rational numbers.** [6.NS.3.5, 6.NS.3.6, 6.NS.3.7, and 6.NS.3.8]	i. Students can identify a rational number.	i. Given a rational number, students can describe and graphically represent a quantity.	i. Students can use positive and negative numbers to describe, compare, and graphically represent quantities in a real-world context, including absolute value.	i. Students can recognize patterns and characteristics of positive and negative numbers. ii. Students can explain statements and draw conclusions about real-world situations involving rational numbers.
E. Students will analyze proportional relationships and use them to solve real-world and mathematical problems. [7.RP.1.1, 7.RP.1.2, 7.RP.1.3]	i. Students can find a unit rate. ii. Students can describe changes or identify characteristics occurring in a model or representation.	i. Students can solve a unit rate problem. ii. Students can decide whether two quantities are proportional and identify the constant of proportionality that models a given representation or situation.	i. Students can compute unit rate of two fractions and use unit rate to solve multistep ratio and percent problems in context. ii. Students can model and explain a proportional relationship and/or the constant of proportionality using graphs, diagrams, and tables.	i. Students can compute unit rates with mixed numbers and solve complex, multistep ratio and percent problems in context. ii. Students can model a representation with a context that would represent a given proportional equation.
F. Students will apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. [7.NS1.1, 7. NS.1.2, 7.NS.1.3]	i. Students can identify the properties of operations.	i. Students can represent the 4 mathematical foundational operations with rational numbers using number lines and other manipulatives.	i. Students can apply properties of operations with rational numbers to solve real-world problems.	i. Students can create a real-world situation to model a given algebraic equation.

Algebra: Create, interpret, use, and analyze expressions, equations and inequalities.				
Scoring Criteria				
Performance Indicators	**Emerging**	**Progressing**	**Meets**	**Exceeds**
A. Students will apply and extend previous understandings of arithmetic to algebraic expressions. [6.EE.1.1, 6.EE.1.2, 6.EE.1.3, 6.EE.1.4]	i. Students can identify an expression involving an exponent. ii. Students can identify that an expression can be generated from a written statement.	i. Students can write and evaluate a single term in a numerical expression involving whole number bases and exponents. ii. Students can identify an expression that matches a written statement. iii. Students can evaluate expressions for specific values and includes expressions that arise from formulas.	i. Students can write and evaluate multi-term expressions with whole number exponents. ii. Students can write expressions given written statements, including statements with exponents. iii. Students can perform arithmetic operations and apply properties of operations to generate and identify equivalent expression.	i. Students can write and evaluate expressions that record operations involving real-world and mathematical contexts. ii. Students can evaluate multi-step real-world problems, involving rational numbers and whole number exponents. iii. Students can apply multiple properties to generate equivalent expressions and apply the properties of operations to generate multiple equivalent expressions.
B. Students will reason about and solve one-variable equations and inequalities. [6.EE.2.5, 6.EE.2.6, 6.EE.2.7, 6.EE.2.8]	i. Students can identify the difference between an expression and an equation and an inequality.	i. Students can use substitution to determine whether a given number makes an equation true ii. Students can write a single operation expression (with one variable) to represent a mathematical problem. iii. Students can solve	i. Students can solve an equation or inequality, using substitution, to determine whether a given number in a specific set makes and equation or inequality true. ii. Students can use variables to represent	i. Students can create real-world situations that corresponds to a given expression ii. Students can solve/justify and interpret/analyze one step real-world and mathematical problems.

		one step equations with nonnegative whole numbers. iv. Students can recognize that inequalities in the form x>c or x<c have infinitely many solutions.	numbers and write expressions when solving real-world or mathematical problems. iii. Students can solve real-world and mathematical problems by writing and solving one step equations with all nonnegative, rational numbers. iv. Students can write inequalities in the form x>c or x<c to represent solutions of such inequalities on a number line diagram.	iii. Student can write an inequality in the form x>c or x<c given a number line diagram and/or create a real-world situation and graph given an inequality in the form x>c or x<c.
C. **Students will represent and analyze quantitative relationships between dependent and independent variables.** [6.EE.3.9]	i. Students can define dependent variable and independent variable.	i. Students can identify dependent and independent variables, and match tables and graphs given a graph/table in a real-world or mathematical problem.	i. Students can write an equation to express the relationship between the dependent and independent variables given graphs and tables of real-world situations.	i. Students can write an equation, given as a real-world situation, to express the relationship between dependent and independent variables without graphs and tables provided. The students can analyze and describe the relationship between variables.
D. **Students will use properties of operations to generate equivalent expressions.** [7.EE.1.1, 7.EE.1.2]	i. Students can identify the properties of operations. ii. Students can identify the elements of an	i. Students can apply properties of operations as strategies to add and subtract rational coefficients; factors and expands linear expressions	i. Students can apply properties of operations as strategies to add, subtract, factor and expand linear expressions with **rational**	i. Students can apply/justify and/or analyze errors in the use of properties of operations as strategies to add, subtract, factor

	expression.	with **integer** coefficients. ii. Students can rewrite an expression in a different form.	coefficients. ii. Students can show that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.	and expand linear expressions with rational coefficients. ii. Students can explain the key terms and factors for each expression in a given problem context and/or create equivalent expressions given in the problem context.
E. **Students will solve real-life and mathematics problems using numerical and algebraic expressions and equations.** [7.EE.2.3]	i. Students can solve mathematical problems posed with whole numbers.	i. Students can solve mathematical problems posed with positive rational numbers.	i. Students can solve multistep and real-world problems posed with rational numbers, using tools strategically; apply properties of operations, conversions between forms and assesses the reasonableness of answers.	i. Students can create a model using rational numbers using tools strategically and can justify a solution and/or analyze errors in a real-world problem.

Geometry: Understand geometric concepts and constructions, prove theorems, and apply appropriate results to solve problems.				
Scoring Criteria				
Performance Indicators	**Emerging**	**Progressing**	**Meets**	**Exceeds**
i. Students will solve real-world and mathematical problems involving area, surface area and volume. [6.G.1.1, 6.G.1.2, 6.G.1.3, 6.G.1.4]	i. Students can find the area of right triangles, squares, and rectangles. ii. Students can find the volume of a right rectangular prism with whole number edges.	i. Students can find the area of polygons by decomposing into triangles and quadrilaterals. ii. Students can solve volume problems of a right rectangular prism with one fractional edge length and unit cubes with fraction edge lengths; unit cubes have	i. Students can find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes. ii. Students will solve volume problems by	i. Students can apply techniques for finding the area of polygons in the context of solving real-world and mathematical problems; solve geometric multistep real-world and mathematical problems

	iii. Students can plot points on a coordinate plane. Students can identify the shapes of the faces of a 3-dimensional figure.	compatible denominators. iii. Students can plot polygons on the coordinate plane given coordinates for vertices. iv. Students can represent 3-dimensional figures using nets made up of rectangles and triangles.	relating the number of unit cubes in a prism to the multiplication of the edge lengths in the context of solving real-world and mathematical problems. iii. Students can use coordinates to find the lengths of a side joining points with the same first coordinate of the same second coordinate. iv. Students can use nets to find the surface area of 3-dimesnional figures.	including decimals and fractional measurement. ii. Students can solve real-world and mathematical problems by applying the formulas for volume; find the volume of 2 non-overlapping rectangular prisms by adding the volumes; find the missing fractional edge length given the volume. iii. Students can use coordinates in the context of real-world and mathematical problems; find the missing vertex of a regular polygon when given the other vertices in the coordinate plane. iv. Students can apply the use of nets to solve real-world and mathematical problems using nets and e dimensional figures, including decimal and fractional measurements.

Statistics and Probability: Interpret and apply statistics and probability to analyze data, reach and justify conclusions, and make inferences.				
Scoring Criteria				
Performance	**Emerging**	**Progressing**	**Meets**	**Exceeds**

MS Math Scoring Criteria (Grade 6 Math Advanced)

Indicators				
A. Students will develop an understanding of statistical variability. [6.SP.1.1, 6.SP.1.2, 6.SP.1.3]	i. Students can define statistical question. ii. Students can define measures of center and measures of spread.	i. Students can recognize a statistical question. ii. Students can identify the measure of center, spread, and overall shape from a graph display. iii. Students can recognize and determine the mean, median, and/or mode; find the range.	i. Students can justify a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answer. ii. Students can determine a set of data collected to answer a statistical question has a distribution which can be described by using measures of center, spread, and overall shape. iii. Students can recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	i. Students can change a question from a non-statistical question to a statistical question that anticipates variability in the data related to the question; write a statistical question given a context. iii. Students can determine the new measures of center when additional data points are included from a context; analyze how additional data points affect the measure of center in a numerical data set.
B. Students will summarize and describe distributions. [6.SP.2.4, 6.SP.2.5]	i.	i. Students can identify an appropriate display of numerical data in plots on a number line and dot/line plots. ii. Students can summarize a numerical data set by quantifying the observations.	i. Students can display numerical data in plots on a number line, including dot/line plots, histograms, and box plots. ii. Students can summarize numerical data sets in relation to their context; identify the range and measures of center and any striking deviations	i. Students can construct a histogram, dot/line plot, or box plot from given data. ii. Students can relate a set of data to the appropriate measures of center with reference to the context; create a set of data from a given box plot.

			(e.g., outliers).	