Watson Chapel Jr. High School

7th Grade Curriculum Map

2019-2020

7th Grade Math Description

Description: This course will focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples. The curriculum for this course aligns with the Arkansas Mathematics Standards which may be viewed on the Arkansas Department of Education website, http://www.arkansased.gov/divisions/learning-services/curriculum-support/stem-sciences-technologies-engineering-and-mathematics/mathematics/mathematics-standards-and-courses

Watson Chapel Jr. High School

7th Grade Math at a Glance

2019- 2020

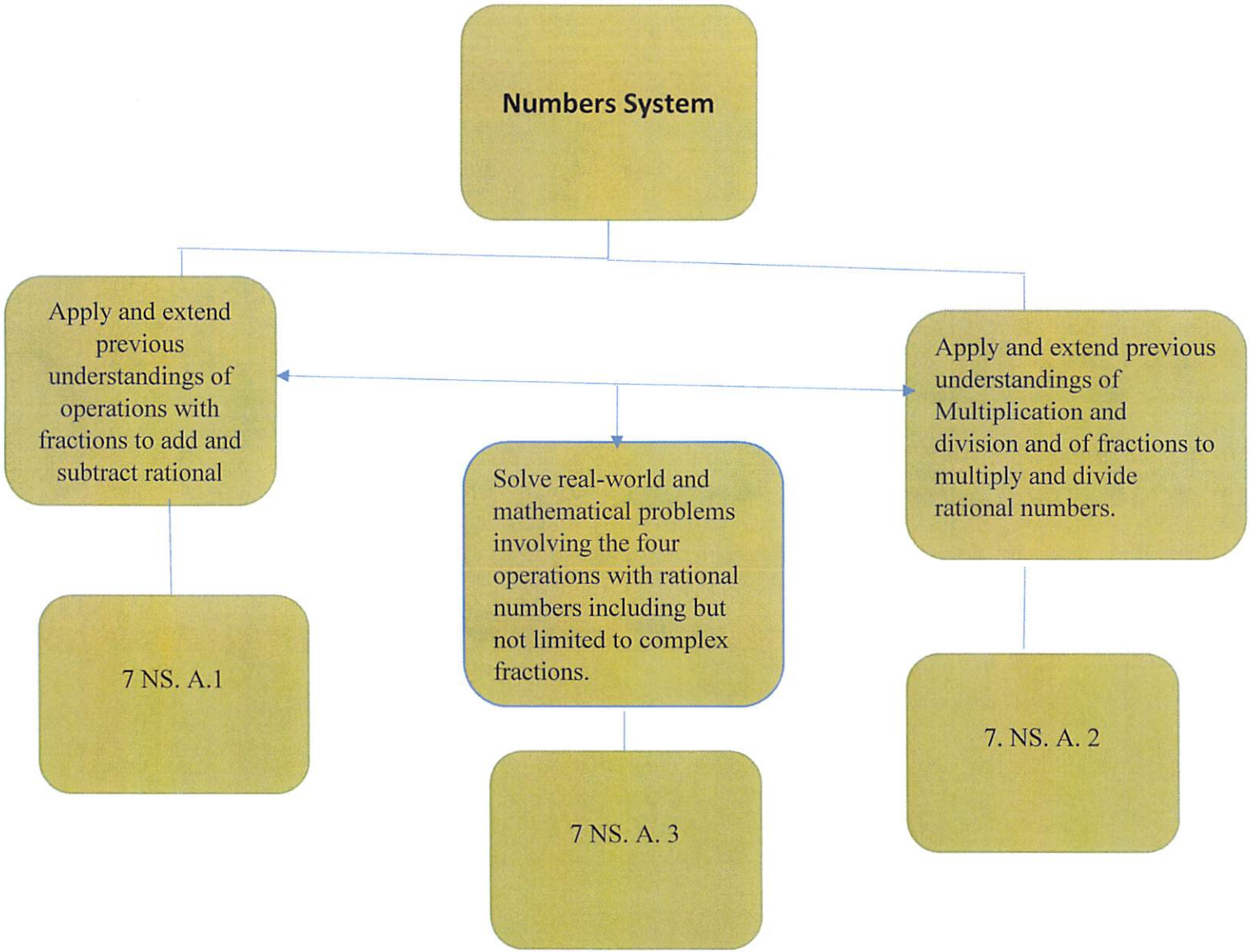
Months	Topics	Standards	Days of Instruction
August/September	Integers and Rational Numbers	7.NS.A.1 7.NS.A.2 7.NS.A.3 7.EE.B.3	19 days
September/October	Analyze and Use Proportional Relationships	7.RP.A.1 7.RP.A.2 7.RP.A.3	16 days
Unit 1 Common Assessment- October 11, 2019			
October/November	Analyze and Solve Percent Problems	7.RP.A.2 7.RP.A.3	14 days
November/December	Generate Equivalent Expressions	7.EE.A.1 7.EE.A.2 7.EE.B.3 7.EE.B.4	18 days
Unit 2 Common Assessment-December 12, 2019 (Include all 4 topics)			
End of 1st Semester- December 20, 2019			

Months	Topics	Standards	Days of Instruction
January/February	Solve Problems Using Equations and Inequalities	7.EE.B.3 7.EE.B.4	17 days
Unit 3 Common Assessment- February 5, 2020			
February	Use Sampling to Draw Inferences About Populations	7.SP.A.1 7.SP.A.2 7.SP.A.3 7.SP.B.3 7.SP.B.4	11 days
February/March	Probability	7.SP.C.5 7.SP.C.6 7.SP.C.7 7.SP.C.8 7.EE.B.3	17 days
Unit 4 Common Assessment- March 13, 2020			
March/April	Solve Problems Involving Geometry	7.G.A.1 7.G.A.2 7.G.A.3 7.G.A.4 7.G.A.5 7.G.A.6 7.EE.B.3 7.EE.B.4	17 days
Unit 5 Common Assessment (Include all 4 topics)			
April 22nd – May 22nd – ACT Aspire Interventions, ACT Aspire Summative Assessment, Star Math EOY and End of the Year Course Assessments, Course Interventions and 2nd Semester Assessment.			
End of 2nd Semester- June 1, 2020			

7th Grade Math

Pacing Guide (YAG)

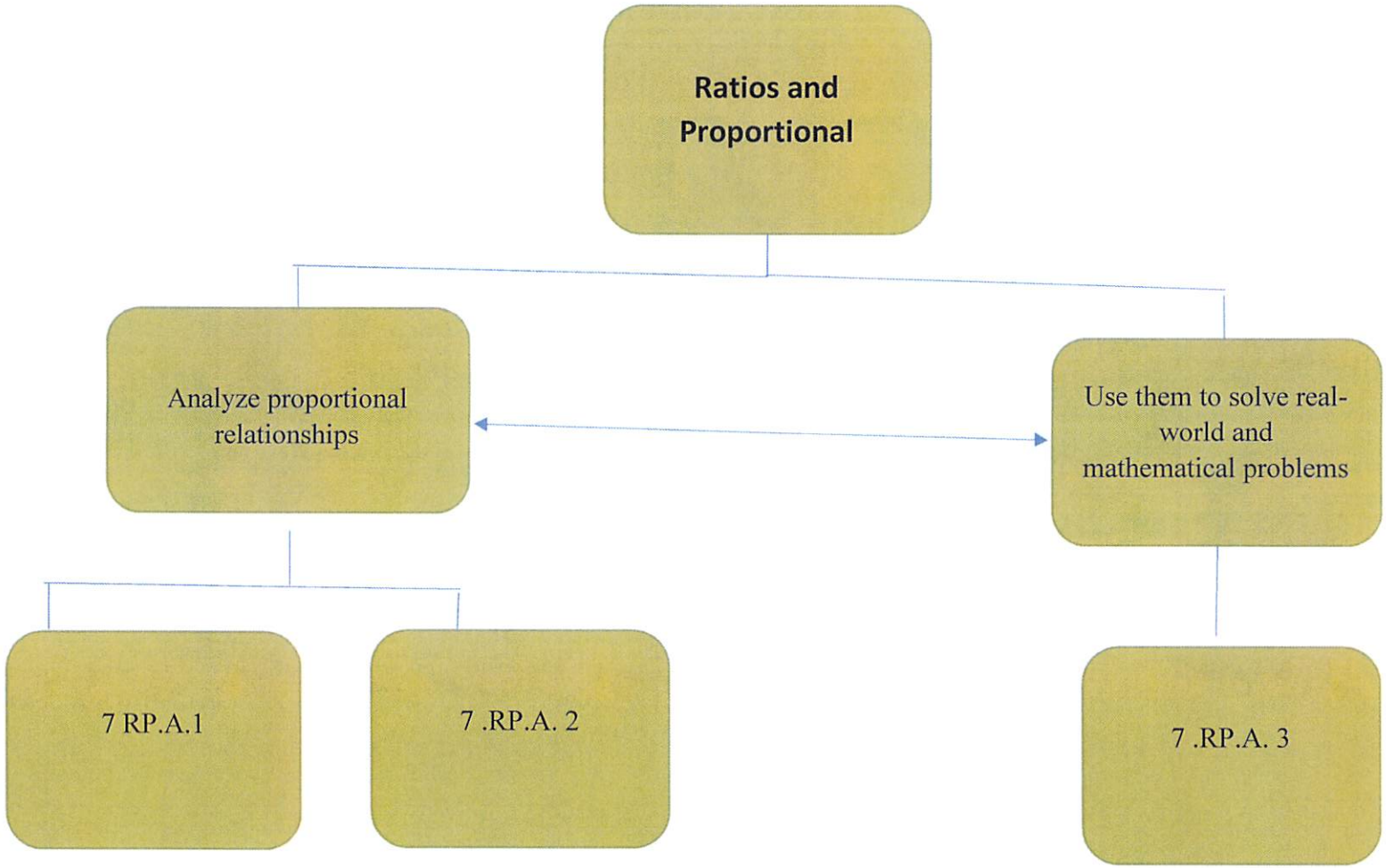
Unit 1- Integers and Rational Numbers



7th Grade Math

Pacing Guide (YAG)

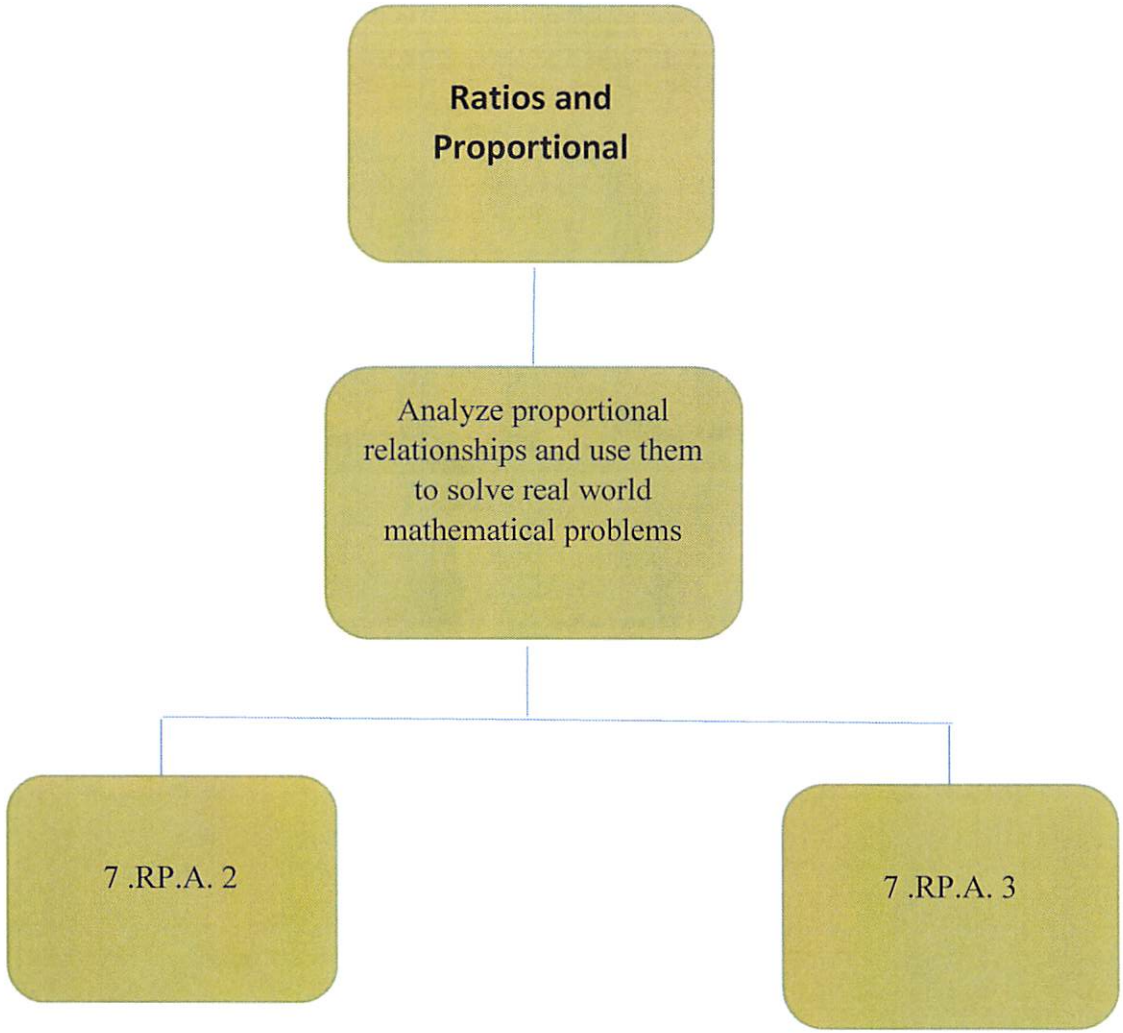
Unit 2- Analyze and Use Proportional Relationships



7th Grade Math

Pacing Guide (YAG)

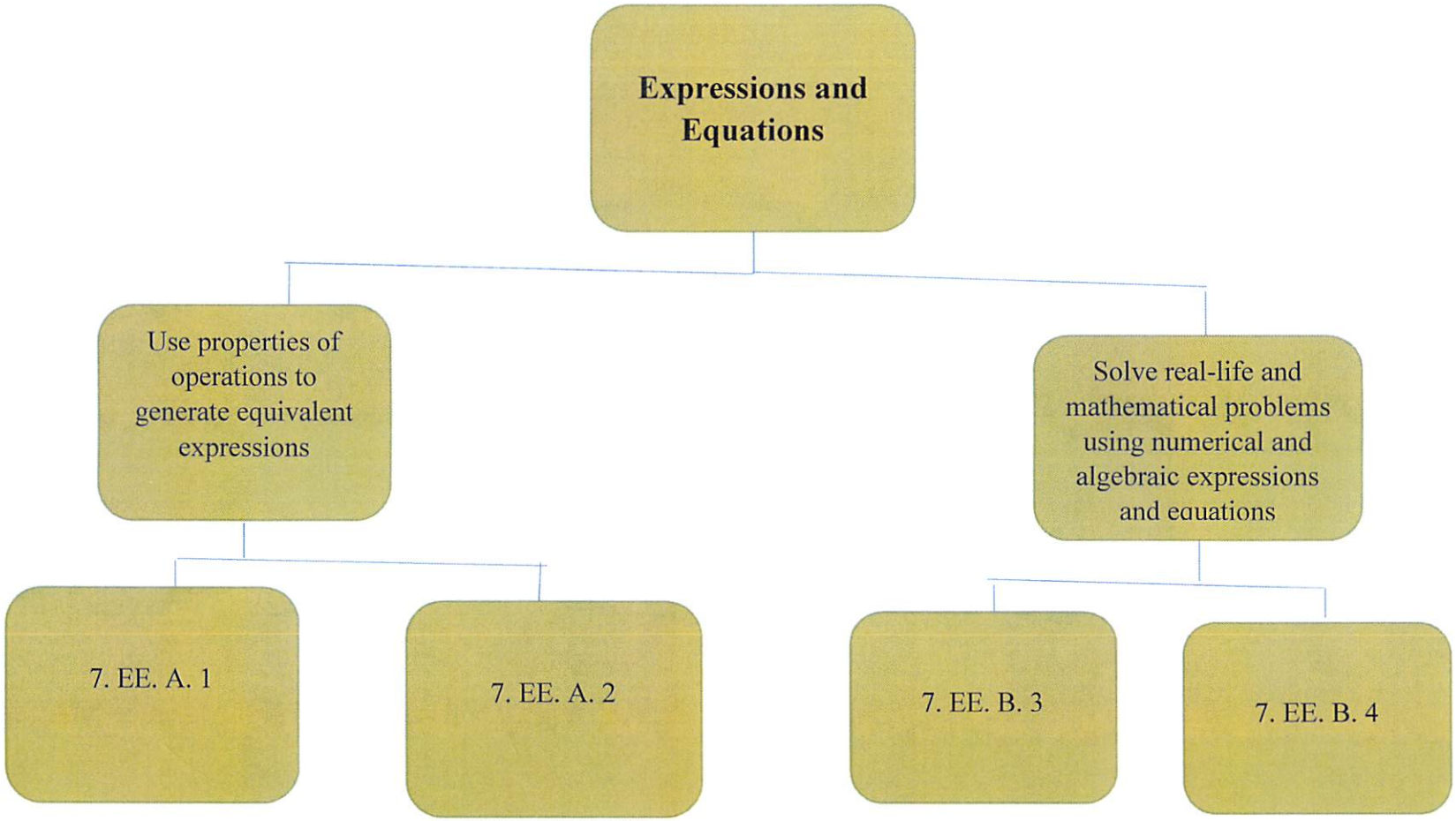
Unit 3- Analyze and Solve Percent Problems



7th Grade Math

Pacing Guide (YAG)

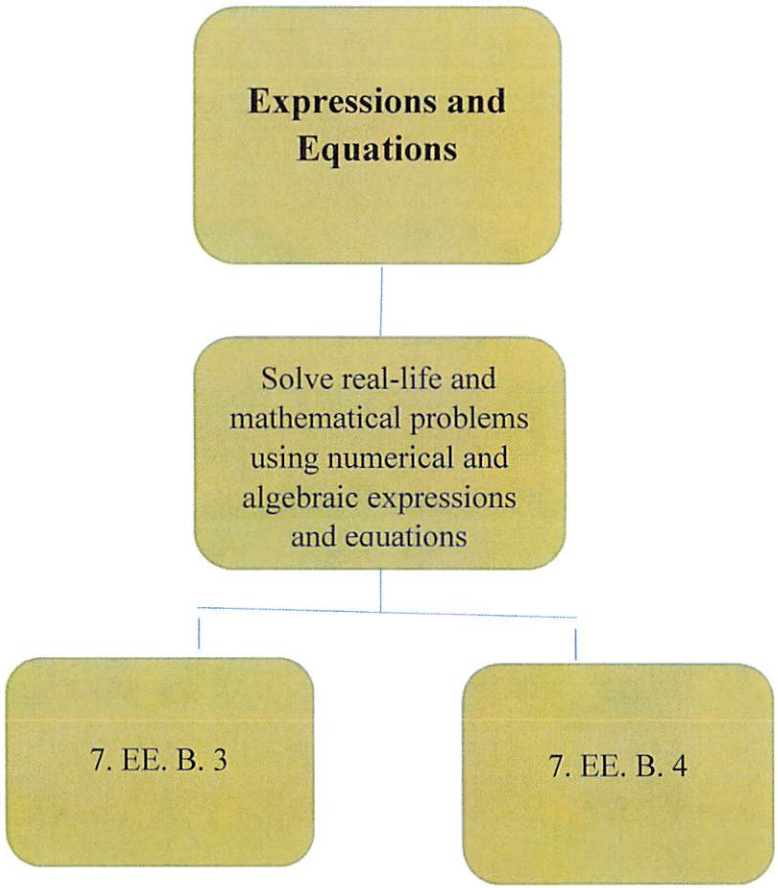
Unit 4- Generate Expressions and Equations



7th Grade Math

Pacing Guide (YAG)

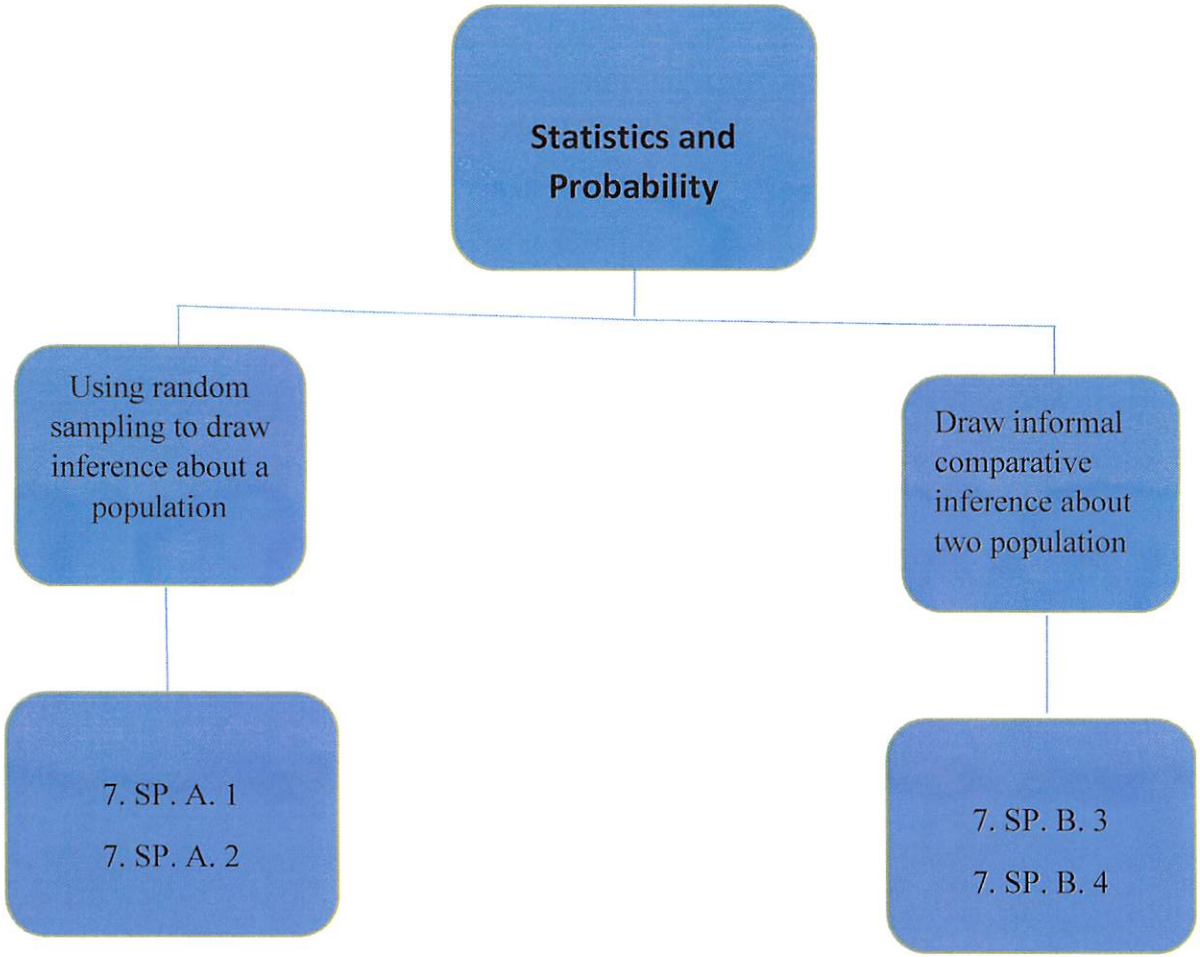
Unit 5: Solve problems using equations and inequalities



7th Grade Math

Pacing Guide (YAG)

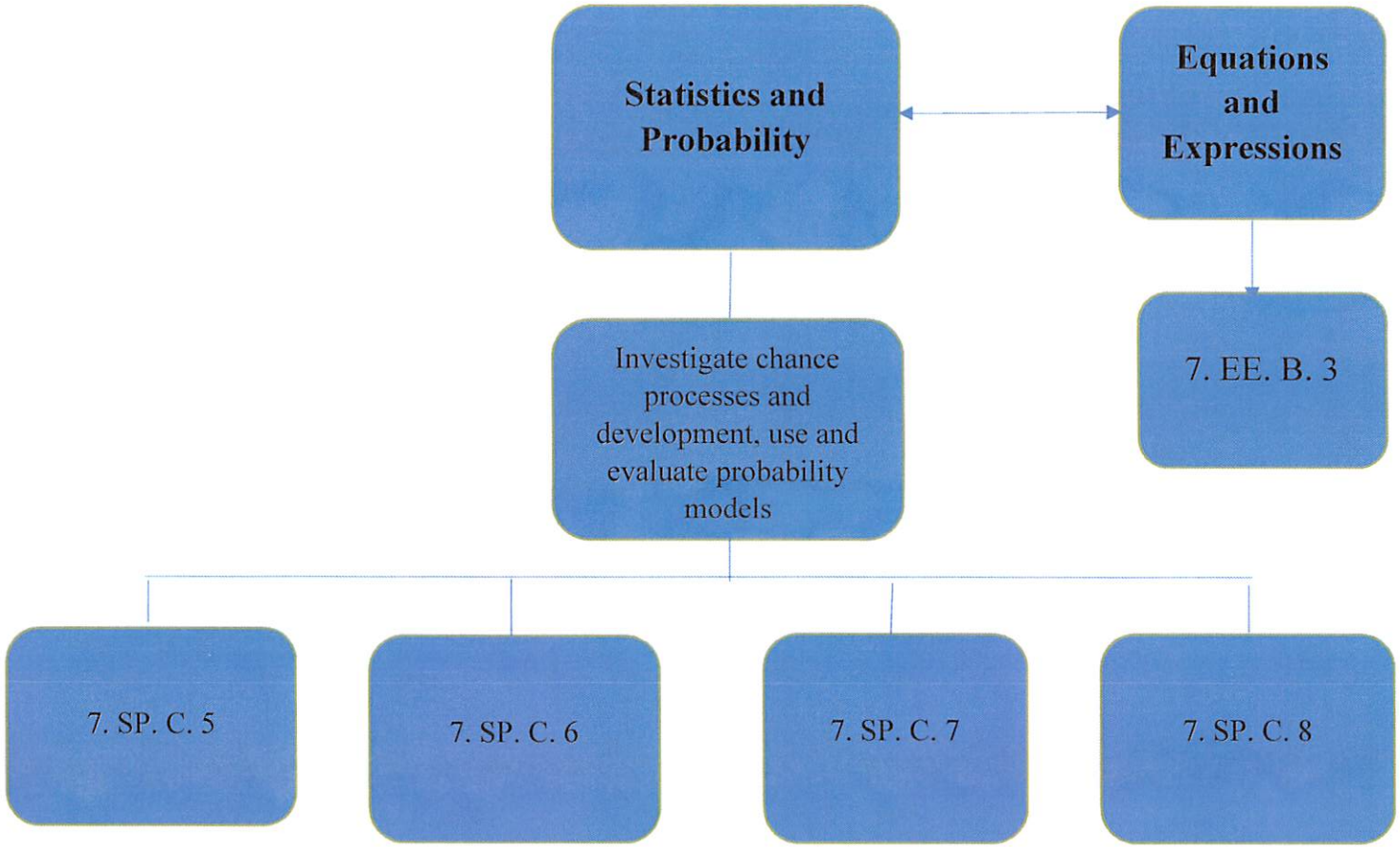
Unit 6- Using Sampling to Draw Inferences about population



7th Grade Math

Pacing Guide (YAG)

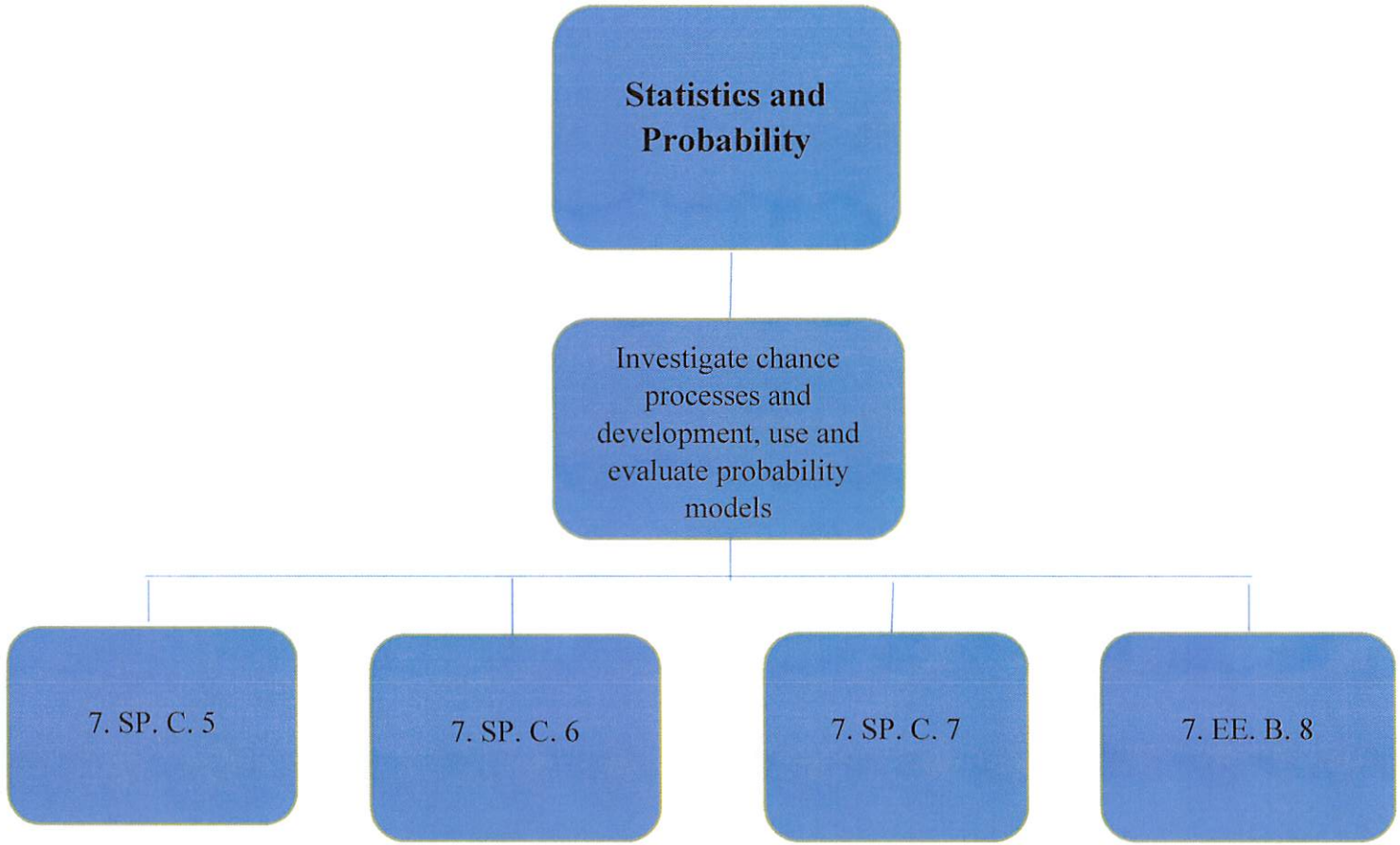
Unit 7: Probability



7th Grade Math

Pacing Guide (YAG)

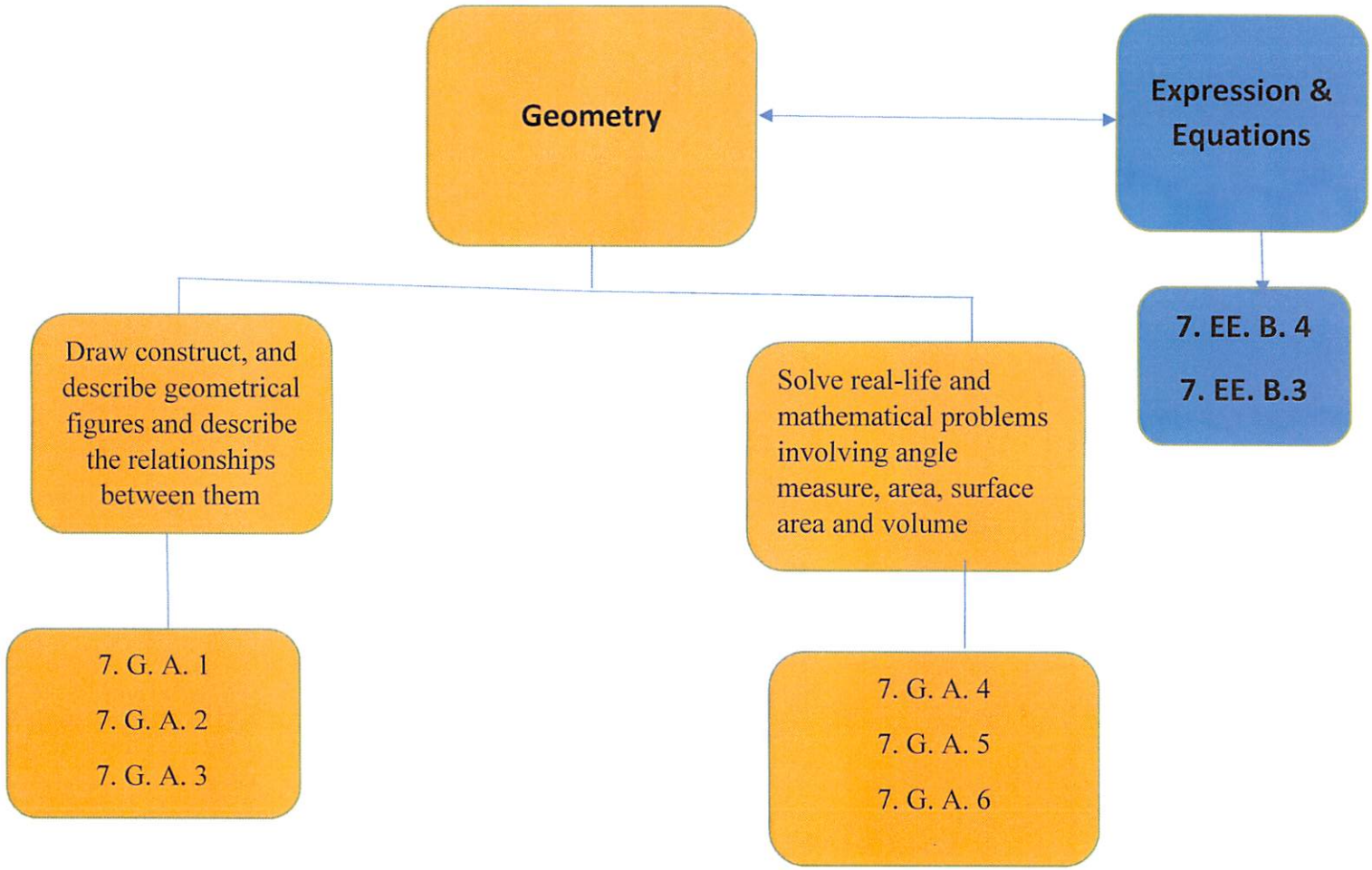
Unit 7: Probability



7th Grade Math

Pacing Guide (YAG)

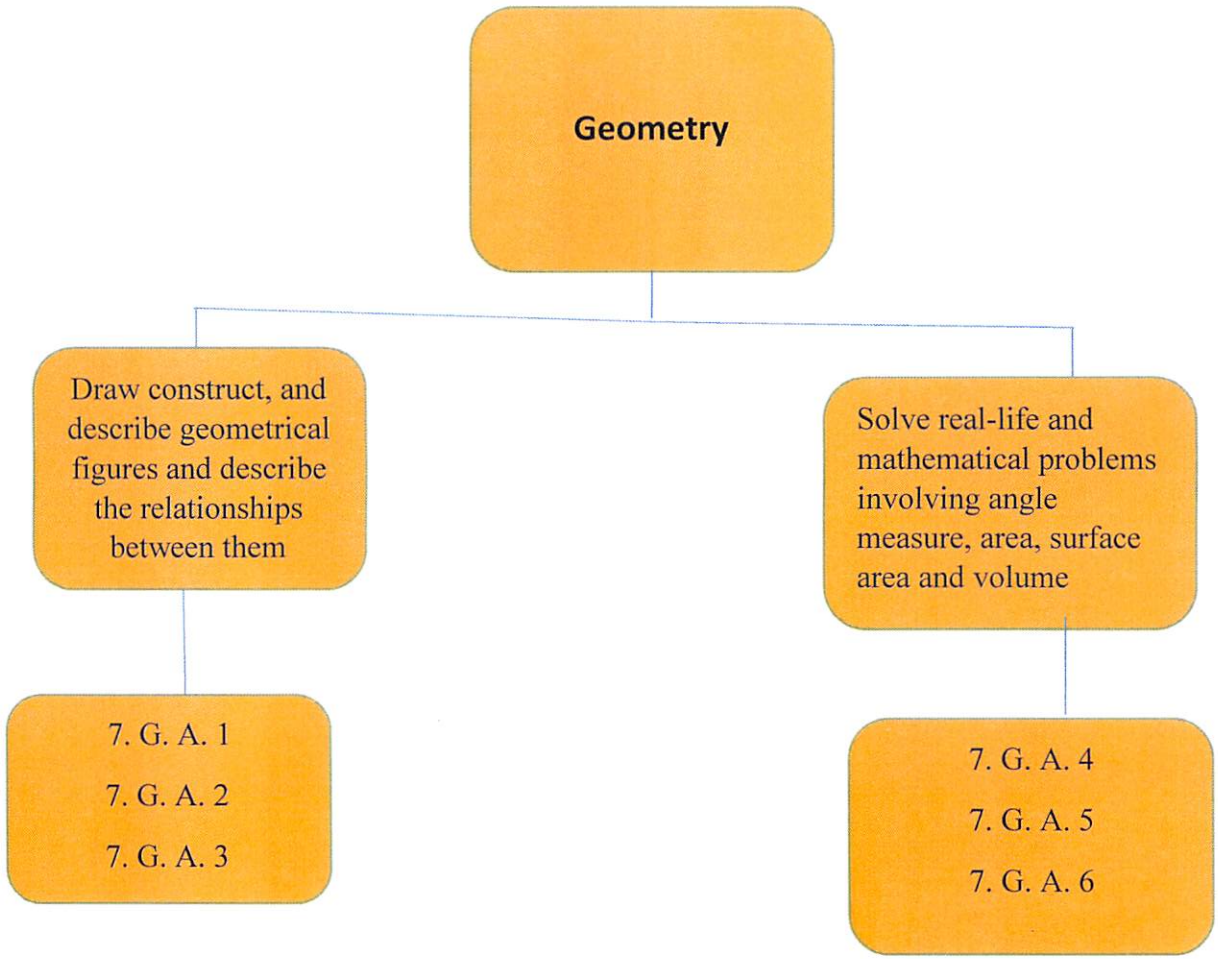
Unit 8: Solving Problems involving Geometry



7th Grade Math

Pacing Guide (YAG)

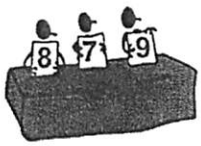
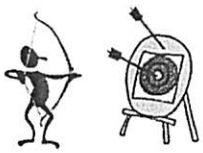
Unit 8: Solving Problems involving Geometry



Watson Chapel Jr. High School

Common Unit Assessment Schedule
7th Grade Accelerated Math
Year- 2019-2020

Assessment	Topic	Date
Unit 1 Common Assessment	Topic 1: Integers and Rational Numbers Topic 2: Real Numbers	September 27, 2019
Unit 2 Common Assessment	Topic 3: Analyze and Use Proportional Relationships Topic 4: Analyze and Solve Percent Problem	October 31, 2019
Unit 3 Common Assessment	Topic 5: Generate Equivalent Expressions Topic 6: Solve Problems Using Equations & Inequalities	December 16, 2019
End of 1st Semester- December 20, 2019		
Unit 4 Common Assessment	Topic 7: Analyze and Solve Linear Equations	January 24, 2020
Unit 5 Common Assessment	Topic 8: Using Sampling to Draw Inferences About Populations Topic 9: Probability	February 24, 2020
Unit 6 Common Assessment	Topic 10: Solve Problems Involving Geometry Topic 11: Congruence and Similarity Topic 12: Solve Problems Involving Surface Area and Volume	April 17, 2020
End of 2nd Semester- May 22, 2020		

Standard for Mathematical Practice	Student Friendly Language
1. Make sense of problems and persevere in solving them. 	• I can try many times to understand and solve a math problem.
2. Reason abstractly and quantitatively. 	• I can think about the math problem in my head, first.
3. Construct viable arguments and critique the reasoning of others. 	• I can make a plan, called a strategy, to solve the problem and discuss other students' strategies too.
4. Model with mathematics. 	• I can use math symbols and numbers to solve the problem.
5. Use appropriate tools strategically. 	• I can use math tools, pictures, drawings, and objects to solve the problem.
6. Attend to precision. 	• I can check to see if my strategy and calculations are correct.
7. Look for and make use of structure 	• I can use what I already know about math to solve the problem.
8. Look for and express regularity in repeated reasoning. 	• I can use a strategy that I used to solve another math problem.

Mathematics Practices		Students:	Teacher(s):
Modeling and Using Tools	**4. Model with mathematics**	☐ Apply prior knowledge to solve real world problems ☐ Identify important quantities and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts, and/or formulas ☐ Use assumptions and approximations to make a problem simpler ☐ Check to see if an answer makes sense within the context of a situation and change a model when necessary Comments:	☐ Use mathematical models appropriate for the focus of the lesson ☐ Encourage student use of developmentally and content-appropriate mathematical models (e.g., variables, equations, coordinate grids) ☐ Remind students that a mathematical model used to represent a problem's solution is 'a work in progress,' and may be revised as needed Comments:
	5. Use appropriate tools strategically	☐ Make sound decisions about the use of specific tools (Examples might include: calculator, concrete models, digital technologies, pencil/paper, ruler, compass, protractor) ☐ Use technological tools to visualize the results of assumptions, explore consequences, and compare predications with data ☐ Identify relevant external math resources (digital content on a website) and use them to pose or solve problems ☐ Use technological tools to explore and deepen understanding of concepts Comments:	☐ Use appropriate physical and/or digital tools to represent, explore and deepen student understanding ☐ Help students make sound decisions concerning the use of specific tools appropriate for the grade level and content focus of the lesson ☐ Provide access to materials, models, tools and/or technology-based resources that assist students in making conjectures necessary for solving problems Comments:
Seeing structure and generalizing	**7. Look for and make use of structure**	☐ Look for patterns or structure, recognizing that quantities can be represented in different ways ☐ Recognize the significance in concepts and models and use the patterns or structure for solving related problems ☐ View complicated quantities both as single objects or compositions of several objects and use operations to make sense of problems Comments:	☐ Engage students in discussions emphasizing relationships between particular topics within a content domain or across content domains ☐ Recognize that they quantitative relationships modeled by operations and their properties remain important regardless of the operational focus of a lesson ☐ Provide activities in which students demonstrate their flexibility in representing mathematics in a number of ways e.g., 76 = (7 x 10) + 6; discussing types of quadrilaterals, etc. Comments:
	8. Look for and express regularity in repeated reasoning	☐ Notice repeated calculations and look for general methods and shortcuts ☐ Continually evaluate the reasonableness of intermediate results (comparing estimates), while attending to details, and make generalizations based on findings Comments:	☐ Engage students in discussion related to repeated reasoning that may occur in a problem's solution ☐ Draw attention to the prerequisite steps necessary to consider when solving a problem ☐ Urge students to continually evaluate the reasonableness of their results Comments:

Engaging in the Mathematical Practices (Look-fors)

Mathematics Practices		Students:	Teachers:
Overarching habits of mind of a productive math thinker	**1. Make sense of problems and persevere in solving them**	☐ Understand the meaning of the problem and look for entry points to its solution ☐ Analyze information (givens, constrains, relationships, goals) ☐ Make conjectures and plan a solution pathway ☐ Monitor and evaluate the progress and change course as necessary ☐ Check answers to problems and ask, "Does this make sense?" Comments:	☐ Involve students in rich problem-based tasks that encourage them to persevere in order to reach a solution ☐ Provide opportunities for students to solve problems that have multiple solutions ☐ Encourage students to represent their thinking while problem solving Comments:
	6. Attend to precision	☐ Communicate precisely using clear definitions ☐ State the meaning of symbols, carefully specifying units of measure, and providing accurate labels ☐ Calculate accurately and efficiently, expressing numerical answers with a degree of precision ☐ Provide carefully formulated explanations ☐ Label accurately when measuring and graphing Comments:	☐ Emphasize the importance of precise communication by encouraging students to focus on clarity of the definitions, notation, and vocabulary used to convey their reasoning ☐ Encourage accuracy and efficiency in computation and problem-based solutions, expressing numerical answers, data, and/or measurements with a degree of precision appropriate for the context of the problem Comments:
Reasoning and Explaining	**2. Reason abstractly and quantitatively**	☐ Make sense of quantities and relationships in problem situations ☐ Represent abstract situations symbolically and understand the meaning of quantities ☐ Create a coherent representation of the problem at hand ☐ Consider the units involved ☐ Flexibly use properties of operations Comments:	☐ Facilitate opportunities for students to discuss or use representations to make sense of quantities and their relationships ☐ Encourage the flexible use of properties of operations, objects, and solution strategies when solving problems ☐ Provide opportunities for students to decontextualize (abstract a situation) and/or contextualize (identify referents for symbols involved) the mathematics they are learning Comments:
	3. Construct viable arguments and critique the reasoning of others	☐ Use definitions and previously established causes/effects (results) in constructing arguments ☐ Make conjectures and use counterexamples to build a logical progression of statements to explore and support ideas ☐ Communicate and defend mathematical reasoning using objects, drawings, diagrams, and/or actions ☐ Listen to or read the arguments of others ☐ Decide if the arguments of others make sense and ask probing questions to clarify or improve the arguments Comments:	☐ Provide and orchestrate opportunities for students to listen to the solution strategies of others, discuss alternative solutions, and defend their ideas ☐ Ask higher-order questions which encourage students to defend their ideas ☐ Provide prompts that encourage students to think critically about the mathematics they are learning Comments:

 * All indicators are not necessary for providing full evidence of practice(s). Each practice may not be evident during every lesson.

Arkansas Mathematics Standards

Grade 7th

2016

Introduction to the Grades 6-8 Arkansas Mathematics Standards

When charged with the task of revising the previous mathematics standards, a group of qualified individuals from across the state came together to craft standards that were specific for the schools and students of Arkansas. The result of this work, the Arkansas Mathematics Standards, is contained in this document. These standards reflect what educators across our state know to be best for our students.

These standards retain the same structure as the previous standards in terms of organization. The standards are organized by domains, clusters, and standards. Domains represent the big ideas that are to be studied at each grade level and sometimes across grade bands. These big ideas support educators in determining the proper amount of focus and instructional time to be given to each of these topics.
Clusters represent collections of standards that are grouped together to help educators understand the building blocks of rich and meaningful instructional units. These units help students make connections within clusters and avoid seeing mathematics as a discreet list of skills that they must master. Standards represent the foundational building blocks of math instruction. The standards outlined in this document work together to ensure that students are college and career ready and on track for success.

There are additional similarities shared by these new standards and the previous standards. The main similarity is the structure of the nomenclature. The only change that was made to the naming system was intended to reflect that these standards belong to Arkansas. However, educators may still search for open education resources by using the last part of the label, which will link to the resources for the previous standards. New standards can be found at the end of each cluster in which a new standard was deemed necessary.

Another similarity to the previous standards is the use of the symbols (+) and (*) to distinguish certain standards from others. The plus (+) symbol is used to designate standards that are typically beyond the scope of an Algebra II course. However, some of the plus (+) standards are now included in courses that are not considered to be beyond Algebra II. Standards denoted with the asterisk (*) symbol represent the modeling component of the standards. These standards should be presented in a modeling context where students are required to engage in the modeling process that is outlined in the Standards for Mathematical Practice.

The revision committee opted to include some new elements in the Arkansas Mathematics Standards that represent an attempt at greater clarity and more consistent implementation across the state. Many of the revisions are a rewording of the original Common Core State Standards. The purpose of the rewording is often to help educators better understand the areas of emphasis and focus within the existing standard. Likewise, many of the standards are separated into a bulleted list of content. This does not mean that teachers should treat this content as a checklist of items that they must teach one at a time. The content was bulleted out so that teachers can better understand all that is included in some of the broader standards.

Many of the examples that were included in the original standards were either changed for clarity or separated from the body of the actual standard. The committee wanted educators to understand that the examples included in the body of the standards document in no way reflect all of the possible examples. Likewise, these examples do not mandate curriculum or problem types. Local districts are free to select the curriculum and instructional methods they think best for their students.

In some instances, notes of clarification were added. These notes were intended to clarify, for teachers, what the expectations are for the student. Likewise, these notes provide instructional guidance as well as limitations so that teachers can better understand the scope of the standard. This will help the educators in determining what is developmentally appropriate for students when they are working with certain standards.

Finally, the Arkansas Mathematics Standards will become a living document. The staff of the Arkansas Department of Education hopes that this document portrays the hard work of the Arkansas educators who took part in the revision process and that it represents an improvement to the previous set of standards. As these standards are implemented across schools in the state, the Arkansas Department of Education welcomes further suggestions related to notes of clarification, examples, professional development needs, and future revisions of the standards.

Abbreviations:
Ratios and Proportional Relationships – RP
The Number System – NS
Expressions and Equations – EE
Geometry – G
Statistics and Probability – SP
Functions – F

Grade 7 – Arkansas Mathematics Standards

The Number System	**Apply and extend previous understandings of operations with fractions**
AR.Math.Content.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract *rational numbers* Represent addition and subtraction on a horizontal or vertical number line diagram: • Describe situations in which opposite quantities combine to make 0 and show that a number and its opposite have a sum of 0 (*additive inverses*) (e.g., A hydrogen atom has 0 charge because its two constituents are oppositely charged.) • Understand $p + q$ as a number where p is the starting point and q represents a distance from p in the positive or negative direction depending on whether q is positive or negative • Interpret sums of *rational numbers* by describing real-world contexts (e.g., 3 + 2 means beginning at 3, move 2 units to the right and end at the sum of 5; 3 + (-2) means beginning at 3, move 2 units to the left and end at the sum of 1; 70 + (-30) = 40 could mean after earning \$70, \$30 was spent on a new video game, leaving a balance of \$40) • 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 (e.g., the distance between -5 and 6 is 11. -5 and 6 are 11 units apart on the number line)
AR.Math.Content.7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide *rational numbers:* • Understand that multiplication is extended from fractions to all *rational numbers* by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, and the rules for multiplying signed numbers • Interpret products of *rational numbers* by describing real-world contexts • Understand that *integers* can be divided, provided that the divisor is not zero, and every quotient of *integers* (with non-zero divisor) is a rational number (e.g., if p and q are *integers*, then $-(p/q) = (-p)/q = p/(-q)$) • Interpret quotients of *rational numbers* by describing real-world contexts • Fluently multiply and divide *rational numbers* by applying properties of operations as strategies • Convert a fraction to a decimal using long division • Know that the decimal form of a fraction terminates in 0s or eventually repeats
AR.Math.Content.7.NS.A.3	Solve real-world and mathematical problems involving the four operations with *rational numbers*, including but not limited to *complex fractions*

Grade 7 – Arkansas Mathematics Standards

Ratios and Proportional	**Analyze proportional relationships and use them to solve real-world and mathematical problems**
AR.Math.Content.7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units For example: If a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the *complex fraction* $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour.
AR.Math.Content.7.RP.A.2	Recognize and represent proportional relationships between quantities: • 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) • Identify unit rate (also known as the constant of proportionality) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships • Represent proportional relationships by equations (e.g., 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 $t = pn$) • 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) where r is the unit rate Note: Unit rate connects to slope concept in 8th grade.
AR.Math.Content.7.RP.A.3	Use proportional relationships to solve multi-step ratio and percent problems Note: Examples include but are not limited to simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease.

Grade 7 – Arkansas Mathematics Standards

Expressions and Equations	Use properties of operations to generate equivalent expressions
AR.Math.Content.7.EE.A.1	Apply properties of operations as strategies to add, subtract, expand, and factor linear expressions with rational coefficients
AR.Math.Content.7.EE.A.2	Understand how the quantities in a problem are related by rewriting an expression in different forms For example: $a + 0.05a = 1.05a$ means that 'increase by 5%' is the same as 'multiply by 1.05' or the perimeter of a square with side length s can be written as $s+s+s+s$ or $4s$.

Expressions and Equations	Solve real-life and mathematical problems using numerical and algebraic expressions and equations
AR.Math.Content.7.EE.B.3	Solve multi-step, real-life, and mathematical problems posed with positive and negative *rational numbers* in any form using tools strategically: • Apply properties of operations to calculate with numbers in any form (e.g., -(1/4)(n-4)) • Convert between forms as appropriate (e.g., if a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50) • Assess the reasonableness of answers using mental computation and estimation strategies (e.g., if you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 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)
AR.Math.Content.7.EE.B.4	• Use variables to represent quantities in a real-world or mathematical problem • Construct simple equations and inequalities to solve problems by reasoning about the quantities • Solve word problems leading to equations of these forms $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific *rational numbers*. Solve equations of these forms fluently • Write an algebraic solution identifying the sequence of the operations used to mirror the arithmetic solution (e.g., The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? Subtract 2*6 from 54 and divide by 2; (2*6) + 2w = 54) • 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 (e.g., 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.)

Grade 7 – Arkansas Mathematics Standards

Statistics and Probability	**Use random sampling to draw inferences about a population**
AR.Math.Content.7.SP.A.1	Understand that: • Statistics can be used to gain information about a population by examining a sample of the population • Generalizations about a population from a sample are valid only if the sample is representative of that population • Random sampling tends to produce representative samples and support valid inferences
AR.Math.Content.7.SP.A.2	• Use data from a random sample to draw inferences about a population with a specific characteristic • Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions For example: Estimate the mean word length in a book by randomly sampling words from the book, or predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.

Statistics and Probability	**Draw informal comparative inferences about two populations**
AR.Math.Content.7.SP.B.3	Draw conclusions about the degree of visual overlap of two numerical data distributions with similar variability such as *interquartile range* or *mean absolute deviation*, expressing the difference between the centers as a multiple of a measure of variability such as *mean*, *median*, or *mode* For example: The mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability on either team; on a dot plot, the separation between the two distributions of heights is noticeable.
AR.Math.Content.7.SP.B.4	Draw informal comparative inferences about two populations using measures of center and measures of variability for numerical data from random samples For example: Decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.

Grade 7 – Arkansas Mathematics Standards

Statistics and Probability	**Investigate chance processes and develop, use, and evaluate probability models**
AR.Math.Content.7.SP.C.5	• Understand that the *probability* of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring • A *probability* near 0 indicates an unlikely event, a *probability* around 1/2 indicates an event that is neither unlikely nor likely, and a *probability* near 1 indicates a likely event
AR.Math.Content.7.SP.C.6	• Collect data to approximate the *probability* of a chance event • Observe its long-run relative frequency • Predict the approximate relative frequency given the *probability* For example: When rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. Note: Emphasis should be given to the relationship between *experimental* and *theoretical probability*.
AR.Math.Content.7.SP.C.7	Develop a probability model and use it to find probabilities of events Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy: • Develop a uniform probability model, assigning equal *probability* to all outcomes, and use the model to determine probabilities of events (e.g., If a student is selected at random from a class of 6 girls and 4 boys, the *probability* that Jane will be selected is .10 and the *probability* that a girl will be selected is .60.) • Develop a probability model, which may not be uniform, by observing frequencies in data generated from a chance process (e.g., Find the approximate *probability* that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?)
AR.Math.Content.7.SP.C.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation: • Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs • Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams • Identify the outcomes in the sample space which compose the event Generate frequencies for compound events using a simulation (e.g., What is the frequency of pulling a red card from a deck of cards and rolling a 5 on a die?)

Glossary

Absolute Value	A numbers' distance from 0 on the number line which gives its size, or magnitude, whether the number is positive or negative (in terms of functions, a piecewise defined function is the absolute value function)
Additive Inverses	Two numbers whose sum is 0 are additive inverses of one another
Bivariate Data	Data that has two variables
Complex Fraction	A fraction a/b where either a or b are fractions (b nonzero)
Coordinate Plane	A plane spanned by the x- and y-axis
Dependent Variable	A variable shows values depend on the values of another variable
Experimental Probability	The ratio of the number of times an event occurs to the total number of trials or times the activity is performed
Exponent	the power p in an expression of the form a^p used to show repeated multiplication
Expression	A mathematical phrase consisting of numbers, variables, and operations
First Quartile	For a data set with median M, the first quartile is the median of the data values less than M
Function	A rule or relationship in which there is exactly one output value for each input value
Function notation	A method of writing algebraic variables as function of other variables; for example $f(x) = 3x$ is the same as $y = 3x$
Greatest Common Factor	The greatest factor that divides two numbers
Independent Variable	A variable whose values don't depend on changes in other variables
Integer	A number expressible in the form of a or $-a$ for some whole number a
Interquartile Range	A measure of variation in a set of numerical data; the interquartile range is the distance between the first and third quartiles of the data set
Irrational Number	A number that cannot be expressed as a fraction p/q for any integers p and q; have decimal expansions that neither terminate nor become periodic
Least Common Multiple	The smallest number that is exactly divisible by each member of a set of numbers
Mean	A measure of center in a set of numerical data, computed by adding the values in a slit then dividing by the number of values in the list
Mean Absolute Deviation	A measure of variation in a set of numerical data, computed by adding the distances between each data value and the mean, then dividing by the number of data values
Median	A measure of center in a set of numerical data; the median of a list of values is the value appearing at the center of a sorted version of the list – or the mean of the two central values, if the list contains an even number of values
Mode	A measure of center in a set of numerical data; the most common value in list of values
Order of Operations	A set of rules that define which procedures to perform first in order to evaluate a given expression
Probability	A number between 0 and 1 used to quantify likelihood for processes that have uncertain outcomes (tossing a coin, selecting a person at random from a group of people, tossing a ball at a target, or testing for a medical condition)
Ratio	The ratio of two number r and s is written r/s, where r is the numerator and s is the denominator
Rational Number	A number that can be written as a ratio of two integers
Relation	A set of ordered pairs of data
Scale Drawing	A drawing with dimensions at a specific ratio relative to the actual size of the object
Scatter Plot	A graph in the coordinate plane representing a set of bivariate data
Standard Algorithm	Denotes any valid base-ten strategy
Theoretical Probability	The number of ways that the event can occur, divided by the total number of outcomes
Third Quartile	For a data set with median M, the third quartile is the median of the data values greater than M
Unit Rate	A comparison of two measurements in which one of the terms has a value of 1
Variable	A symbol used to represent an unknown or undetermined value in an expression or equation

Appendix

Table 1: Properties of Operations

Associative property of addition	$(a + b) + c = a + (b + c)$
Commutative property of addition	$a + b = b + a$
Additive identity property of 0	$a + 0 = 0 + a = a$
Existence of additive inverses	For every a there exists –a so that $a + (-a) = (-a) + a = 0$
Associative property of multiplication	$(a \times b) \times c = a \times (b \times c)$ *
Commutative property of multiplication	$a \times b = b \times a$ *
Multiplicative identity property 1	$a \times 1 = 1a = a$ *
Existence of multiplication inverses	For every $a \neq 0$ there exists $1/a$ so that $a \times 1/a = 1/a \times a = 1$ *
Distributive property of multiplication over addition	$a \times (b + c) = a \times b + a \times c$ *

*The x represents multiplication not a variable.

Table 2: Properties of Equality

Reflexive property of equality	$a = a$
Symmetric property of equality	If $a = b$, then $b = a$.
Transitive property of equality	If $a = b$ and $b = c$, then $a = c$.
Addition property of equality	If $a = b$, then $a + c = b + c$.
Subtraction property of equality	If $a = b$, then $a - c = b - c$.
Multiplication property of equality	If $a = b$, then $a \times c = b \times c$. *
Division property of equality	If $a = b$ and $c \neq 0$, then $a \div c = b \div c$.
Substitution property of equality	If $a = b$, then b may be substituted for a in any expression containing a.

*The x represents multiplication not a variable.

Table 3: Properties of Inequality

Exactly one of the following is true: $a < b$, $a = b$, $a > b$.
If $a > b$ and $b > c$, then $a > c$.
If $a > b$, $b < a$.
If $a > b$, then $a \pm c > b \pm c$.
If $a > b$ and $c > 0$, then $a \times c > b \times c$. *
If $a > b$ and $c < 0$, then $a \times c < b \times c$. *
If $a > b$ and $c > 0$, then $a \div c > b \div c$.
If $a > b$ and $c < 0$, then $a \div c < b \div c$.

*The x represents multiplication not a variable.