

# Arkansas Mathematics Curriculum Framework, Grade 8, Correlated to *Cord Bridges*

Standards and Student Learner Expectations		Student Edition Lesson(s)
<b>STRAND NUMBER AND OPERATIONS</b>		
<b>Standard 1. Number Sense</b>		
<i>Students shall understand numbers, ways of representing numbers, relationships among numbers and number systems.</i>		
Rational Numbers		
NO.1.8.1	Read, write, compare and solve problems, with and without appropriate <i>technology</i> , including numbers less than 1 in <i>scientific notation</i>	10.3
NO.1.8.3.	Convert between <i>scientific notation</i> and <i>standard notation</i> , including numbers from zero to one.	10.3
NO.1.8.4	Compare and order <i>real numbers</i> including <i>irrational numbers</i> and find their approximate location on a number <i>line</i> (Use <i>technology</i> when appropriate)	1.1, 3.1, 3.2, 5.2, 5.3, 7.1
NO.1.8.5	Understand and justify classifications of numbers in the <i>real number system</i>	10.5
<b>Standard 2. Properties of Number Operations</b>		
<i>Students shall understand meanings of operations and how they relate to one another.</i>		
Number Theory		
NO.2.8.1	Apply the addition, subtraction, multiplication and division properties of equality to <i>two-step equations</i>	4.3, 4.5
NO.2.8.2	Understand and apply the <i>inverse</i> and <i>identity</i> properties	1.4, 1.6, 4.1, 4.2, 4.3, 4.5
NO.2.8.3	Use <i>inverse</i> relationships (addition and subtraction, multiplication and division, squaring and <i>square roots</i> ) in problem solving situations	4.1, 4.2, 5.7, 5.8
NO.2.8.4	Apply rules (conventions) for <i>order of operations</i> to <i>rational numbers</i>	1.3
Understand Operations		
NO.2.8.5	<i>Model</i> and develop addition, subtraction, multiplication and division of <i>rational numbers</i> (Ex: $-8 \frac{1}{2} + 2 \frac{3}{4}$ )	1.4, 1.5, 1.6, 1.7, 3.3, 3.4, 3.5, 3.6, 3.7, 5.4, 5.5, 5.6
<b>Standard 3. Numerical Operations and Estimation</b>		
<i>Students shall compute fluently and make reasonable estimates</i>		
Computational Fluency		
NO.3.8.1	Compute, with and without appropriate <i>technology</i> , with <i>rational numbers</i> in multi-step problems	1.4, 1.5, 1.6, 1.7, 3.3, 3.4, 3.5, 3.6, 3.7, 5.4, 5.5, 5.6
NO.3.8.2	Solve, with and without appropriate <i>technology</i> , multi-step problems using a variety of methods and tools (i.e. objects, mental computation, paper and pencil)	1.8, 2.6, 3.6, 4.3, 5.4, 6.3, 7.5, 8.4, 9.3, 10.4, 11.5, 12.2
Estimation		
NO.3.8.3	Use <i>Estimation</i> to solve problems involving <i>rational numbers</i> ; including <i>ratio</i> , <i>proportion</i> , <i>percent</i> (increase or decrease) then judge the reasonableness of solutions	1.5, 1.7, 5.3, 6.2, 6.3, 7.5, 10.5

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Application of Computation		
NO.3.8.4	Apply <i>factorization</i> to find LCM and GCF of <i>algebraic expressions</i> Ex: $4x^2y^3$ $6xy^2$ $GCF=2xy^2$ $LCM=12x^2y^3$	Not Covered
NO.3.8.5	Calculate and find approximations of <i>square roots</i> with appropriate <i>technology</i>	10.5
NO.3.8.6	Solve, with and without <i>technology</i> , <i>real world percent</i> problems including <i>percent</i> of increase or decrease	7.5
<b>STRAND ALGEBRA</b>		
<b>Standard 4. Patterns, Relations and Functions</b>		
<i>Students shall recognize, describe, and develop patterns, relations and functions</i>		
Patterns, Relations and Functions		
A.4.8.1	Find the $n^{\text{th}}$ term in a pattern or a <i>function</i> table	8.7, 11.1
A.4.8.2	Using <i>real world</i> situations, describe <i>patterns</i> in words, tables, <i>pictures</i> , and symbolic representations	8.2, 8.3, 8.4, 8.5, 8.6, 8.7
A.4.8.3	Interpret and represent a <i>two operation function</i> as an <i>algebraic equation</i> (Ex: $y = 2x + 1$ )	8.4, 8.7
A.4.8.4	Use tables, graphs, and <i>equations</i> to identify independent/ <i>dependent variables</i> ( <i>input/output</i> )	8.7
<b>Standard 5. Algebraic Representations</b>		
<i>Students shall represent and analyze mathematical situations and structures using algebraic symbols</i>		
Expressions, Equations and Inequalities		
A.5.8.1	Solve and graph <i>two-step equations</i> and <i>inequalities</i> with one- <i>variable</i> and verify the reasonableness of the result with real world application with and without <i>technology</i>	4.3, 4.5, 5.7, 5.8
A.5.8.2	Solve and graph <i>linear equations</i> (in the form $y = mx + b$ )	8.2, 8.3, 8.4
A.5.8.3	Translate sentences into <i>algebraic equations</i> and <i>inequalities</i> and combine like terms within polynomials	4.1, 4.2, 4.3, 4.4, 4.5, 5.7, 5.8
A.5.8.4	Write and evaluate <i>algebraic expressions</i> using <i>rational numbers</i>	1.3

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<b>Standard 6. Algebraic Models</b>		
<i>Students shall develop and apply mathematical models to represent and understand quantitative relationships</i>		
Algebraic Models and Relationships		
A.6.8.1	Describe, with and without appropriate <i>technology</i> , the relationship between the graph of a <i>line</i> and its equation, including being able to explain the <i>meaning</i> of slope as a constant rate of change (rise/run) and <i>y-intercept</i> in <i>real-world</i> problems	8.2, 8.4
A.6.8.2	Represent, with and without appropriate <i>technology</i> , <i>linear</i> relationships concretely, using tables, graphs and <i>equations</i> .	8.2, 8.3, 8.4, 8.7
A.6.8.3	Differentiate between independent/dependent <i>variables</i> given a <i>linear relationship</i> in context	8.7
A.6.8.4	Represent, with and without appropriate <i>technology</i> , simple exponential and/or quadratic <i>functions</i> using verbal descriptions, tables, graphs and formulas and translate among these representations	Not Covered
<b>Standard 7. Analysis of Change</b>		
<i>Students shall analyze change in various contexts</i>		
Analyze Change		
A.7.8.1	Use, with and without <i>technology</i> , graphs of <i>real</i> life situations to describe the relationships and analyze change including graphs of change (cost per minute) and graphs of accumulation (total cost)	8.2, 8.3, 8.4, 8.6, 8.7

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<b>STRAND GEOMETRY</b>		
<b>Standard 8. Geometric Properties</b>		
<i>Students shall analyze characteristics and properties of 2 and 3 dimensional geometric shapes and develop mathematical arguments about geometric relationships</i>		
Characteristics of Geometric Shapes		
G.8.8.1	Form generalizations and validate conclusions about properties of geometric shapes	9.1, 9.2, 9.3, 9.4, 9.5
G.8.8.2	Make, with and without appropriate <i>technology</i> , and test <i>conjectures</i> about characteristics and properties between <i>two-dimensional</i> figures and <i>three-dimensional</i> objects (Ex: <i>circle</i> vs. <i>cylinder</i> , <i>square</i> vs. <i>cube</i> )	12.1, 12.2, 12.3, 12.4, 12.5, 12.6
G.8.8.3	Determine appropriate application of geometric ideas and relationships, such as congruence, similarity, and the Pythagorean theorem, with and without appropriate <i>technology</i>	9.5, 10.6, 11.2, 12.6
<b>Standard 9. Transformation of Shapes</b>		
<i>Students shall apply transformations and the use of symmetry to analyze mathematical situations</i>		
Symmetry and Transformations		
G.9.8.1	Determine a <i>transformation's</i> line of symmetry and compare the properties of the figure and its <i>transformation</i>	9.6, 9.7, 9.8
G.9.8.2	Draw the results of <i>translations</i> and <i>reflections</i> about the x- and y-axis and <i>rotations</i> of objects about the origin	9.6, 9.7, 9.8
<b>Standard 10. Coordinate Geometry</b>		
<i>Students shall specify locations and describe spatial relationships using coordinate geometry and other representational systems</i>		
Coordinate Geometry		
G.10.8.1	Use coordinate geometry to explore the links between geometric and algebraic representations of problems (lengths of <i>segments</i> /distance between points, <i>slope/perpendicular-parallel lines</i> )	8.3, 8.4
<b>Standard 11. Visualization and Geometric Models</b>		
<i>Students shall use visualization, spatial reasoning and geometric modeling</i>		
Spatial Visualization and Models		
G.11.8.1	Using isometric dot paper interpret and draw different views of buildings	12.1

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<b>STRAND MEASUREMENT</b>		
<b>Standard 12. Physical Attributes</b>		
<i>Students shall use attributes and tools of measurement to describe and compare mathematical and real-world objects</i>		
Attributes and Tools		
M.12.8.1	Understand, select and use, with and without appropriate <i>technology</i> , the appropriate units and tools to measure angles, <i>perimeter</i> , <i>area</i> , <i>surface area</i> and <i>volume</i> to solve <i>real world</i> problems	11.5, 12.2, 12.3, 12.4, 12.5, 12.6
M.12.8.2	Describe and apply equivalent measures using a variety of units within the same system of measurement	6.2, 6.3
<b>Standard 13. Systems of Measurement</b>		
<i>Students shall identify and use units, systems and processes of measurement</i>		
Attributes and Tools		
M.13.8.1	Draw and apply measurement skills with <i>fluency</i> to appropriate levels of precision	Not Covered
M.13.8.2	Solve problems involving <i>volume</i> and <i>surface area</i> of <i>pyramids</i> , <i>cones</i> and composite figures, with and without appropriate <i>technology</i>	12.5
M.13.8.3	Apply <i>proportional</i> reasoning to solve problems involving indirect measurements, scale drawings or rates	6.2, 6.3, 11.4
M.13.8.4	Find the distance between <i>two</i> points on a <i>coordinate plane</i> using with the Pythagorean theorem	10.6
M.13.8.5	Estimate and compute the <i>area</i> of <i>irregular two-dimensional</i> shapes	11.5

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<b>STRAND DATA ANALYSIS AND PROBABILITY</b>		
<b>Standard 14. Data Representation</b>		
<i>Students shall formulate questions that can be addressed with data and collect, organize and display</i>		
Collect, organize and display data		
DAP.14.8.1	Design and conduct investigations which include <ul style="list-style-type: none"> <li>• adequate number of trials</li> <li>• unbiased sampling</li> <li>• accurate measurement</li> <li>• record-keeping</li> </ul>	6.7, 6.8
DAP.14.8.2	Explain which types of display are appropriate for various data sets ( <i>scatter plot</i> for relationship between <i>two</i> variants and <i>line of best fit</i> )	2.3, 2.4, 2.5, 2.6, 2.Labs
DAP.14.8.3	Interpret or solve <i>real-world</i> problems using data from charts, <i>line</i> plots, stem-and leaf plots, <i>double-bar graphs</i> , <i>line graphs</i> , box-and whisker plots, <i>scatter plots</i> , <i>frequency tables</i> or <i>double line graphs</i>	2.2, 2.3, 2.4, 2.5, 2.6
<b>Standard 15. Data Analysis</b>		
<i>Students shall select and use appropriate statistical methods to analyze data</i>		
Data Analysis		
DAP.15.8.1	Compare and contrast the reliability of <i>data</i> sets with different size <i>populations</i> (Ex. 40/80 vs. 40/800)	6.7, 6.8
DAP.15.8.2	Analyze, with and without appropriate <i>technology</i> , <i>graphs</i> by comparing measures of <i>central tendencies</i> and <i>measures of spread</i>	2.1
DAP.15.8.3	Given at least one of the measures of central tendency create a data set	2.1
DAP.15.8.4	Describe how the inclusion of <i>outliers</i> affects those measures	2.1, 2.4
<b>Standard 16. Inferences and Predictions</b>		
<i>Students shall develop and evaluate inferences and predictions that are based on data</i>		
Data Analysis		
DAP.16.8.1	Use observations about differences between sets of data to make <i>conjectures</i> about the <i>populations</i> from which the data was taken	6.8
<b>Standard 17. Probability</b>		
<i>Students shall understand and apply basic concepts of probability</i>		
Data Analysis		
DAP.17.8.1	Compute, with and without appropriate <i>technology</i> , probabilities of compound events, using organized lists, <i>tree diagrams</i> and <i>logic grid</i>	6.4, 6.5, 6.6
DAP.17.8.2	Make predictions based on <i>theoretical</i> probabilities, design and conduct an experiment to test the predictions, compare actual results to predict results, and explain differences Ex. suggested materials for simulations are: polyhedra die, random number table, and <i>technology</i>	6.4, 6.5, 6.6, 6.7