Managed Curriculum

RSD LOUISIANA

Algebra I

2011- 2012 School Year

John White, RSD Superintendent

Algebra I
High School

RSD LOUISIANA

TEST SPECIFICATIONS		
Strand	***iLEAP***	***GEE***
Number & Num Relations	40%	10%
Algebra	12%	15%
Measurement	12%	15%
Geometry	13%	20%
Data Analysis, Probability, Discrete Math	13%	20%
Patterns,Relations, & Functions	10%	20%

The 2011-2012 Managed Curriculum

Teaching Mathematics for Meaning and Understanding

Research on teaching and learning document the need for educators to alter present teaching practices in order to close the achievement gap and to support improved student achievement in mathematics. The research message is strong: ***Teach for meaning initially, or risk never getting students beyond a superficial understanding that leaves them unprepared to apply their learning.*** Simply stated, educators can incorporate the following steps to put the research into practice.

- Promote students' discussion of making meaning by posing open-ended questions: *Why do you think that? Can you explain your reasoning? How do you know that?*
- Make explicit connections and incorporate pictures, concrete materials, and role playing as part of instruction so that students have multiple representations of concepts and alternative paths to developing understanding.
- Avoid instruction focused on teaching a single correct approach to arrive at a single correct answer.

The following list of best practices in mathematics is suggested to aid in the teaching and learning process daily.

- Use manipulative materials
- Use cooperative group work
- Discuss mathematics
- Question and make conjectures
- Justify thinking
- Write about mathematics
- Use a problem-solving approach to instruction
- Integrate content
- Use calculators and computers
- Be a facilitator of learning
- Assess learning as an integral part of instruction
- Use data to guide/drive instruction
- Solve problems in real world settings

Pacing for Content Coverage

There is much mathematics content to review and teach in the course of a year. The expectation is that the pace is set at the beginning of the school year. Students generally adjust to the pace of the teacher. This will ensure that *ALL* of the concepts will be covered. There may be times when it will seem difficult to maintain the pace. But it is important to understand that a slow pace can make it too easy to lose perspective and difficult to relate ideas. If you spend too much time on certain lessons, you will find that your slowest students may have learned more by having gone through content slowly, but the other students may have learned less. The wise teacher strikes a balance, goes quickly enough to keep things interesting but slowly enough to have time for explanations. Make adjustments for students with special needs: individualized lessons, learner center activities, additional homework and/or extended day/week/year opportunities.

Key Concepts for Grade 9 Assessment

Students in grade 9 extend their numeric understanding and computational skills to interpret and evaluate integer exponents, simplify and perform basic operations on numerical expressions involving radicals, represent and calculate with large and small numbers using scientific notation, and use proportional reasoning to deal with direct variation. Students use estimation, choice of computational methods, and show an ability to discuss the reasonableness of answers. In Measurement, students focus on units, describe measurement error, precision, and determine accuracy of measurements. Students use significant digits in computational problems and solve problems using indirect measurement. In Geometry, students extend their understanding of transformation representing results in the coordinate plane. Slope is explored geometrically and algebraically and graph lines using concepts of slope. In Data Analysis, students follow and interpret processes expressed in flow charts. In Algebra and in Patterns, Relations, and Functions , students study linear relations and learn to represent and solve linear equations and inequalities. Relationships are represented in tables, graphs, verbal, and algebraic forms, using differences and growth rates as the major determining characteristics. They understand the role of intercepts and slopes in interpretation and graphing. Students understand the role of domain and range and what happens to a graph when the parameters in its equation are changed. They identify and describe the characteristics of families of linear functions. Students also use equivalent forms of equations and inequalities to solve real-life problems. They use order of operations to simplify or rewrite variable expressions including evaluation of polynomial expressions for given values of the variables.

****

All of the grade 9 standards, most of the benchmarks, and the GLEs are eligible for assessment on the grade 9 *i*LEAP.
The Math test consists of three parts, or subtests, and is administered in a single day.

Part	*Items*	*Description*
I: NRT	40 timed for 40 minutes	Mathematics concepts and problem solving
II: CRT	20 items untimed	Multiple Choice
III: CRT	2 items untimed	Constructed response (4 points each)

Implementation Note

The Louisiana Comprehensive Curriculum, revised 2008 is aligned with state content standards, as defined by Grade-Level Expectations (GLEs), and organized into coherent, time-bound units with sample activities and classroom assessments to guide teaching and learning. The order of the units ensures that all GLEs to be tested are addressed prior to the administration of iLEAP assessments. It is strongly recommended that teachers utilize the LCC as a guide and resource to provide activities and assessments necessary to ensure effective implementation of the GLEs.

OPENING OF SCHOOL INTRODUCTORY UNIT

Teachers should use this unit to:

- establish classroom routines
- develop classroom culture to shape the mind
- administer Pre test to determine students' strengths and weaknesses
- practice using calculators with meaningful activities
- practice and use problem solving skills and strategies
- practice and use test taking strategies

Suggested Resources

- CHAMP Module 4
- Guide to Problem Solving
- Guide to Test Taking Strategies
- Calculator Practice
- Louisiana Guide to Statewide Assessment)

UNIT 1: Understanding Numeric Values, Variability, and Change

Unit Description

This unit examines numbers and number sets including basic operations on rational numbers, integer exponents, radicals, and scientific notation. It also includes investigations of situations in which quantities change and the study of the relative nature of the change through tables, graphs, and numerical relationships. The identification of independent and dependent variables is emphasized as well as the comparison of linear and non-linear data. Unit 1 is a connection between the student's middle school math courses and the Algebra I course. Topics previously studied are reviewed as a precursor to the ninth grade GLEs. Although this first unit does not follow the order of a traditional Algebra I textbook, it is a necessary unit in order for a student to develop and expand upon the basic knowledge of numbers and number operations as well as graphical representations of real-life situations.

Student Understandings

Students focus on developing the notion of a variable. They begin to understand inputs and outputs and how they reflect the nature of a given relationship. Students recognize and apply the notions of independent and dependent variables and write expressions modeling simple linear relationships. They should also come to understand the difference between linear and non-linear relationships.

Guiding Questions

Can students…

- perform basic operations on rational numbers with and without technology?
- Simplify, add, subtract and multiply radical expressions?
- evaluate and write expressions using scientific notation and integer exponents?
- identify independent and dependent variables?
- recognize patterns in and differentiate between linear and nonlinear sequence data?

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
1 4 5 34 6 8 2 3	Students will: ▪ identify and describe differences among natural numbers, whole numbers, integers, rational numbers, and irrational numbers. ▪ distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil) . ▪ follow and interpret processes expressed in flow charts. ▪ simplify and perform basic operations on numerical expressions involving radicals (e.g., $2\sqrt{3}+5\sqrt{3}=7\sqrt{3}$) use order of operations to simplify or rewrite variable expressions. ▪ evaluate and write numerical expressions involving integer exponents. ▪ apply scientific notation to perform computations, solve problems, and write representations of numbers.	Little Black Book (see Glencoe Instructional Materials)	LCC Activities: 1 -6 Black Line Master(s) Pg(s): 2 -11 Epic : Algebra *Epic: M2 L2, L3, L6* *Epic M2 L6 M10 L5 M12 L5* *Epic M7 L1, L2* Glencoe Algebra I *Ch 2 sec. 1-4 and 7, Ch. 1sec. 1-3* Prentice Hall Algebra I *Ch.2 sec. 1 and 2* *Ch11 Sec. 1* *Ch.2 sec. 5* *Ch3 sec. 8, Ch 8 sec. 1,2 and3* Carnegie Tier Activity: *http://promethean.statestandards.com/search.pl?state=LA&subject=MATH&grade=9&keyword=*

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
3 10 7 29 28	**Students will:** • apply scientific notation to perform computations, solve problems, and write representations of numbers. • identify independent and dependent variables in real-life relationships (use proportional reasoning to model and solve real-life problems involving direct and inverse variation. • create a scatter plot from a set of data and determine if the relationship is linear or nonlinear. • identify trends in data and support conclusions by using distribution characteristics such as patterns, clusters, and outliers.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 7-13 Black Line Master(s) : Pg(s): 12-27 Epic : Algebra *Epic M4 L1,L2,L6* *Epic M3 L1, L5, M4 L6, M5, L1* *Epic M7 L1* *Epic M5 L6* Glencoe Algebra I *Ch. 1 sec. 9 and Ch. 13 sec.3* *CH. 4 sec 8* Prentice Hall Algebra I *CH 5 sec.1, 2 5* *CH 3 sec.1,Ch. 5 sec 5* *CH 8 sec. 4* *CH 1 sec. 5* Carnegie Tier Activity:

Reflection on Teacher Content Coverage

Can students…

- perform basic operations on rational numbers with and without technology?
- Simplify, add, subtract and multiply radical expressions?
- evaluate and write expressions using scientific notation and integer exponents?
- identify independent and dependent variables?
- recognize patterns in and differentiate between linear and nonlinear sequence data?

UNIT 2: Writing and Solving Proportions and Linear Equations

Unit Description

This unit includes an introduction to the basic forms of linear equations and inequalities and the symbolic transformation rules that lead to their solutions. Topics such as rate of change related to linear data patterns, writing expressions for such patterns, forming equations, and solving them are also included. The relationship between direct variation, direct proportions and linear equations is studied as well as the graphs and equations related to proportional growth patterns.

Student Understandings

Students learn to recognize linear growth patterns and write the related linear expressions and equations for specific contexts. They need to see that linear relationships have graphs that are lines on the coordinate plane when graphed. They also link the relationships in linear equations to direct proportions and their constant differences numerically, graphically, and symbolically. Students can solve and justify the solution graphically and symbolically for single- and multi-step linear equations.

Guiding Questions

Can students…

- graph data from input-output tables on a coordinate graph?
- recognize linear relationships in graphs of input-output relationships?
- graph the points related to a direct proportion relationship on a coordinate graph?
- relate the constant of proportionality to the growth rate of the points on its graph?
- perform simple algebraic manipulations of collecting like terms and simplifying expressions?
- perform the algebraic manipulations on the symbols involved in a linear equation or inequality to find its solution and relate its meaning graphically?

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
5 8 11 34 7 9 37	Students will: • demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil). • use order of operations to simplify or rewrite variable expressions. • use equivalent forms of equations and inequalities to solve real-life problems. • follow and interpret processes expressed in flow charts. • model real-life situations using linear expressions, equations, and inequalities. • analyze real-life relationships that can be modeled by linear functions.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 1-5 Black Line Master(s) :Pg(s): 35-44 Glencoe Algebra I *Ch. 4 sec 3-7* *Ch. 5 sec. 1,3,4,5* *Ch. 1 sec. 7* Epic : Algebra *Epic M2 L1* *Epic M3 L2,L3, L4* *Epic M1 L3, L6, L5* Prentice Hall Algebra I *Ch. 3 sec. 6, sec. 8 , Ch 4 sec. 1* *Ch. 5 sec 2 and 3, Ch 6 sec.* 1 Carnegie Tier Activity:

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
9 7 22 11	Students will: • model real-life situations using linear expressions, equations, and inequalities. • use proportional reasoning to model and solve real-life problems involving direct and inverse variation. • solve problems using indirect measurement. • use equivalent forms of equations and inequalities to solve real-life problems.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 6-9 Black Line Master(s) Pg(s): 45-48 Epic : Algebra *Epic M4 L6, M5 L5* *Epic M4 L6* Epic M1, L3 Glencoe Algebra I *Ch. 4* *Ch. 3 sec. 6* Prentice Hall Algebra I *Ch.5 sec. 5* Ch. 6 sec 3 Carnegie Tier Activity:

Teacher Reflection on Content Coverage
Can students…

- understand and apply the definition of a function in evaluating expressions (output rules) as to whether they are functions or not?
- apply the vertical line test to a graph to determine if it is a function or not?
- identify the matched elements in the domain and range for a given function?
- describe the constant growth rate for a linear function in tables and graphs, as well as connecting it to the coefficient on the *x* term in the expression leading to the linear graph?
- intuitively relate slope (rate of change) to *m* and the *y*-intercept in graphs to *b* for linear relationships $mx + b$?

Unit 3: Linear Functions and Their Graphs, Rates of Change, and Applications

Unit Description

This unit leads to the investigation of the role of functions in the development of algebraic thinking and modeling. Heavy emphasis is given in this unit to understanding rates of change (intuitive slope) and graphing input-output relationships on the coordinate graph. In Unit 2, the understanding of linear relationships through the origin was tied to direct proportion. In this unit, emphasis is given to the formula and rate of change of a direct proportion as $y = kx$ or $\frac{y}{k} = \frac{x}{1}$, and that lines that do not run through the origin can be modeled by functions of the form $kx + b$, which are just lines of proportion translated up *b* units. Emphasis is also given to geometric transformations as functions and using their constant difference to relate to slope of linear equations.

Student Understandings

Students recognize functions as input-output relationships that have exactly one output for any given input. They can apply various strategies for determining if a relation is a function. Additionally, students note that the rate of change in graphs and tables is constant for linear relationships (one-differences are constant in tables) and for each change of 1 in *x* (the input), there is a constant amount of growth in *y* (the output). They can determine if a linear relationship is a direct proportion (or not) by examining the equation of the line and/or its graph.

Guiding Questions

Can students…

- understand and apply the definition of a function in evaluating expressions (output rules) as to whether they are functions or not?
- apply the vertical line test to a graph to determine if it is a function or not?
- identify the matched elements in the domain and range for a given function?
- describe the constant growth rate for a linear function in tables and graphs, as well as connecting it to the coefficient on the *x* term in the expression leading to the linear graph?
- intuitively relate slope (rate of change) to *m* and the *y*-intercept in graphs to *b* for linear relationships *mx* + *b*?

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
35 36 15 25 39	Students will: • determine if a relation is a function and use appropriate function notation. • identify the domain and range of functions. • translate among tabular, graphical, and algebraic representations of functions and real-life situations. • explain slope as a representation of "rate of change". • compare and contrast linear functions algebraically in terms of their rates of change and intercepts.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 1-4 and 6 Black Line Master(s) Pg(s): 49-66 Glencoe Algebra I *Ch. 5* Epic : Algebra I *M3 L1-4* *M5 L 1-5* Carnegie Tier Activity:

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
11 13 15 38 26	Students will: • use equivalent forms of equations and inequalities to solve real-life problems. • translate between the characteristics defining a line (i.e., slope, intercepts, points) and both its equation and graph. • translate among tabular, graphical, and algebraic representations of functions and real-life situations. • identify and describe the characteristics of families of linear functions, with and without technology. • perform translations and line reflections on the coordinate plane.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: : None Black Line Master(s) Glencoe Algebra I Ch 4 sec 2 and Ch 5 Carnegie Tier Activity:

Teacher Reflection on Content Coverage

Can students…

- understand and apply the definition of a function in evaluating expressions (output rules) as to whether they are functions or not?
- apply the vertical line test to a graph to determine if it is a function or not?
- identify the matched elements in the domain and range for a given function?
- describe the constant growth rate for a linear function in tables and graphs, as well as connecting it to the coefficient on the *x* term in the expression leading to the linear graph?
- intuitively relate slope (rate of change) to *m* and the *y*-intercept in graphs to *b* for linear relationships $mx + b$?

Unit 4: Linear Equations, Inequalities, and Their Solutions

Unit Description

This unit focuses on the various forms for writing the equation of a line (point-slope, slope intercept, two-point, and standard form) and how to interpret slope in each of these settings, as well as interpreting the *y*-intercept as the fixed cost, initial value, or sequence starting-point value. The algorithmic methods for finding slope and the equation of a line are emphasized. This leads to a study of linear data analysis. Linear equalities and inequalities are addressed through coordinate geometry. Linear and absolute value inequalities in one-variable are considered and their solutions graphed as intervals (open and closed) on the line. Linear
inequalities in two-variables are also introduced.

Student Understandings

Given information, students can write equations for and graph linear relationships. In addition, they can discuss the nature of slope as a rate of change and the *y*-intercept as a fixed cost, initial value, or beginning point in a sequence of values that differ by the value of the slope. Students learn the basic approaches to writing the equation of a line (two point, point-slope, slope-intercept, and standard form). They graph linear inequalities in one variable ($2x + 3 > -x + 5$ and $|x| > 3$) on the number line and two variables on a coordinate system.

Guiding Questions

Can students…

- write the equation of a linear function given appropriate information to determine slope and intercept?
- use the basic methods for writing the equation of a line (two point, slope-intercept, point-slope, and standard form)?
- discuss the meanings of slope and intercepts in the context of an application problem?
- relate linear inequalities in one variable to real-world settings?
- perform the symbolic manipulations needed to solve linear and absolute value inequalities and graph their solutions on the number line and the coordinate system?

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
13 23 24	Students will: • translate between the characteristics defining a line (i.e., slope, intercepts, points) and both its equation and graph. • use coordinate methods to solve and interpret problems (e.g., slope as rate of change, intercept as initial value, intersection as common solution, midpoint as equidistant). • graph a line when the slope and a point or when two points are known.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 3 and 4 Black Line Master(s) 77-78 Glencoe Algebra I Ch 5 sec 1-3 and 7 Ch 6 sec 1-3 Epic : Algebra I *M6 L 1-3* Carnegie Tier Activity:

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
15 23 25	Students will: • translate among tabular, graphical, and algebraic representations of functions and real-life situations. • use coordinate methods to solve and interpret problems (e.g., slope as rate of change, intercept as initial value, intersection as common solution, midpoint as equidistant). • explain slope as a representation of "rate of change".	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 5 Black Line Master(s) 79 -82 Glencoe Algebra I Ch 7 sec 5 Ch 10 sec 1 Carnegie Tier Activity:
GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
34 11 14	Students will: • Follow and interpret processes expressed in flow charts. • Use equivalent forms of equations and inequalities to solve real-life problems. • Graph and interpret linear inequalities in one or two variables and systems of linear inequalities.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 6 (7-9 none) Black Line Master(s) 83 Glencoe Algebra I Ch 3 sec15 Ch 4 sec 2, 5, 6 and 8 Ch 5 sec 1-3 and 6 Carnegie Tier Activity:

Teaching Refection on Content Coverage

Can students…

- write the equation of a linear function given appropriate information to determine slope and intercept?
- use the basic methods for writing the equation of a line (two point, slope-intercept, point-slope, and standard form)?
- discuss the meanings of slope and intercepts in the context of an application problem?
- relate linear inequalities in one variable to real-world settings?
- perform the symbolic manipulations needed to solve linear and absolute value inequalities and graph their solutions on the number line and the coordinate system?

Unit 5: Systems of Equations and Inequalities

Unit Description

In this unit, linear equations are considered in tandem. Solutions to systems of two linear equations are represented using graphical methods, substitution, and elimination. Matrices are introduced and used to solve systems of two and three linear equations with technology. Heavy emphasis is placed on the real-life applications of systems of equations. Graphs of systems of inequalities are considered in the coordinate plane.

Student Understandings

Students state the meaning of solutions for a system of equations and a system of inequalities. In the case of linear equations, students use graphical and symbolic methods of determining the solutions. Students use methods such as graphing, substitution, elimination or linear combinations, and matrices to solve systems of equations. In the case of linear inequalities in two variables, students need to see the role played by graphical analysis.

Guiding Questions

Can students…

- explain the meaning of a solution to a system of equations or inequalities?
- determine the solution to a system of two linear equations by graphing, substitution, elimination, or matrix methods (using technology)?
- use matrices and matrix methods by calculator to solve systems of two or three linear equations $Ax = B$ as $x = A^{-1}B$?
- solve real-world problems using systems of equations?
- graph systems of inequalities and recognize the solution set?

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
16	Students will: • Interpret and solve systems of linear equations using graphing, substitution, elimination, with and without technology, and matrices using technology.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 1 Black Line Master(s) 84-89 Glencoe Algebra I Ch 6 sec 4-6 Carnegie Tier Activity:
GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
16 23	Students will: • interpret and solve systems of linear equations using graphing, substitution, elimination, with and without technology, and matrices using technology (a-4-h) • use coordinate methods to solve and interpret problems (e.g., slope as rate of change, intercept as initial value, intersection as common solution, midpoint as equidistant)	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 2 and 6, 7,8 Black Line Master(s) 90-99 Glencoe Algebra I Ch 7 sec 1-4 Carnegie Tier Activity:

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
16 14	Students will: • interpret and solve systems of linear equations using graphing, substitution, elimination, with and without technology, and matrices using technology. • graph and interpret linear inequalities in one or two variables and systems of linear inequalities.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 8 Black Line Master(s) 100-106 Glencoe Algebra I Ch 5 sec 4 Ch 7 sec 1 Carnegie Tier Activity:

Teacher Reflection on Content Coverage
Can students…

- explain the meaning of a solution to a system of equations or inequalities?
- determine the solution to a system of two linear equations by graphing, substitution, elimination, or matrix methods (using technology)?
- use matrices and matrix methods by calculator to solve systems of two or three linear equations $Ax = B$ as $x = A^{-1}B$?
- solve real-world problems using systems of equations?
- graph systems of inequalities and recognize the solution set?

Unit 6: Measurement

Unit Description

This unit is an advanced study of measurement. It includes the topics of precision and accuracy and investigates the relationship between the two. The investigation of absolute and relative error and how they each relate to measurement is included. Significant digits are also studied as well as how computations on measurement are affected when considering precision and significant digits.

Student Understandings

Students should be able to find the precision of an instrument and determine the accuracy of a given measurement. They should know the difference between precision and accuracy. Students should see error as the uncertainty approximated by an interval around the true measurement. They should be able to calculate and use significant digits to solve problems.

Guiding Questions

Can students…

- determine the precision of a given measurement instrument?
- determine the accuracy of a measurement?
- differentiate between what it means to be precise and what it
- means to be accurate?
- discuss the nature of precision and accuracy in measurement and note the differences in final measurement values that may result from error?
- calculate using significant digits?

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
4 17 18 20	Students will: • distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology. • distinguish between precision and accuracy. • demonstrate and explain how the scale of a measuring instrument determines the precision of that instrument. • demonstrate and explain how relative measurement error is compounded when determining absolute error .	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 1-6 Black Line Master(s) 107-120 Glencoe Algebra I *Objectives are addressed throughout the text and found in every lesson Carnegie Tier Activity:

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
4 5 18 19 20 21	Students will: • distinguish between an exact and an approximate answer, and recognize errors introduced by the use of approximate numbers with technology. • demonstrate computational fluency with all rational numbers (e.g., estimation, mental math, technology, paper/pencil). • demonstrate and explain how the scale of a measuring instrument determines the precision of that instrument . • use significant digits in computational problems. • demonstrate and explain how relative measurement error is compounded when determining absolute error. • determine appropriate units and scales to use when solving measurement problems.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: None Glencoe Algebra I Ch57 sec 1 -3 and 5 Carnegie Tier Activity:

Teacher Reflection on Content Coverage

Can students…

- determine the precision of a given measurement instrument?
- determine the accuracy of a measurement?
- differentiate between what it means to be precise and what it
- means to be accurate?
- discuss the nature of precision and accuracy in measurement and note the differences in final measurement values that may result from error?
- calculate using significant digits?

Unit 7: Exponents, Exponential Functions, and Nonlinear Graphs

Unit Description

This unit is an introduction to exponential functions and their graphs. Special emphasis is given to examining their rate of change relative to that of linear equations. Focus is on the real-life applications of exponential growth and decay. Laws of exponents are introduced as well as the simplification of polynomial expressions. Radicals and scientific notation are re-introduced.

Student Understandings

Students develop the understanding of exponential growth and its relationship to repeated multiplications, rather than additions, and its relationship to exponents and radicals. Students recognize, graph, and write symbolic representations for simple exponential relationships of the form $a \cdot b^x$. They are able to evaluate and describe exponential changes in a sequence by citing the rules involved.

Guiding Questions

Can students…

- recognize the presence of an exponential rate of change from data, equations, or graphs?
- develop an expression or equation to represent a straightforward exponential relation of the form $y - a \cdot b^x$.
- differentiate between the rates of growth for exponential and linear relationships?
- use exponential growth and decay to model real-world relationships?
- use laws of exponents to simplify polynomial expressions?

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
10 11 12 15 29	Students will: • identify independent and dependent variables in real-life relationships. • use equivalent forms of equations and inequalities to solve real-life problems. • evaluate polynomial expressions for given values of the variable. • translate among tabular, graphical, and algebraic representations of functions and real-life situations. • create a scatter plot from a set of data and determine if the relationship is linear or nonlinear.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 1-5 Black Line Master(s) 121-127 Glencoe Algebra I Ch 8 sec 1-3 Ch 10 sec 1 and 5 Carnegie Tier Activity: *http://promethean.statestandards.com/search.pl?state=LA&subject=MATH&grade=9&keyword=*

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
2 3 6 7 8	Students will: • evaluate and write numerical expressions involving integer exponents. • apply scientific notation to perform computations, solve problems, and write representations of numbers. • simplify and perform basic operations on numerical expressions involving radicals (e.g., $2\sqrt{3}+5\sqrt{3}=7\sqrt{3}$). • use proportional reasoning to model and solve real-life problems involving direct and inverse variation. • use order of operations to simplify or rewrite variable expressions.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 6-10 Black Line Master(s) 128-131 Glencoe Algebra I Ch 8 sec 1-3 Ch 10 sec 1 and 5 Carnegie Tier Activity:

Teacher Reflection on Content Coverage

Can students…

- recognize the presence of an exponential rate of change from data, equations, or graphs?
- develop an expression or equation to represent a straightforward exponential relation of the form $y-a\cdot b^{x}$.
- differentiate between the rates of growth for exponential and
- linear relationships?
- use exponential growth and decay to model real-world relationships?
- use laws of exponents to simplify polynomial expressions?
-

Unit 8: Data, Chance, and Algebra

Unit Description

This unit is a study of probability and statistics. The focus is on examining probability through simulations and the use of odds. Probability concepts are extended to include geometric models, permutations, and combinations with more emphasis placed on counting and grouping methods. The study of the relationships between experimental (especially simulation-based) and theoretical probabilities is also included. Measures of central tendency are also incorporated to investigate which measure best represents a set of data.

Student Understandings

Students use simulations to determine experimental probabilities and compare those with the theoretical probabilities for the same situations. Students calculate permutations and combinations and the probability of events associated with them. Students recognize the difference between the odds of an event and the probability of an event. Students also look at measures of central tendency and which measure best represents a set of data.

Guiding Questions

Can students…

- create simulations to approximate the probabilities of simple and conditional events?
- relate the probabilities associated with experimental and theoretical probability analyses?
- find probabilities using combinations and permutations?
- relate probabilities of events to the odds associated with those events?
- determine the most appropriate measure of central tendency for a set of data?
-

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
27 30 31	Students will: • determine the most appropriate measure of central tendency for a set of data based on its distribution. • use simulations to estimate probabilities. • define probability in terms of sample spaces, outcomes, and events.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: 1 Black Line Master(s) 121-127 Glencoe Algebra I Ch 2 sec 5-6 http://promethean.statestandards.com/search.pl?state=LA&subject=MATH&grade=9&keyword= Carnegie Tier Activity:

GLEs	Teaching Objectives	Vocabulary	Suggested Resources and LCC Activities
30 31 32 33	Students will: • use simulations to estimate probabilities. • define probability in terms of sample spaces, outcomes, and events. • define probability in terms of sample spaces, outcomes, and events. • explain the relationship between the probability of an event occurring, and the odds of an event occurring and compute one given the other.	Little Black Book (see Glencoe Instructional Materials	LCC Activities: None Glencoe Algebra I Ch 14 sec 1-3 and 5 Ch 10 sec 1 Carnegie Tier Activity:

Teacher Reflection on Content Coverage
Can students…

- create simulations to approximate the probabilities of simple and conditional events?
- relate the probabilities associated with experimental and theoretical probability analyses?
- find probabilities using combinations and permutations?
- relate probabilities of events to the odds associated with those events?
- determine the most appropriate measure of central tendency for a set of data?

Readiness for High School Geometry and GEE