DOINGWHATWORKS

Algebra I Initial Units
Legend High School, Colorado

Topic: National Math Panel: Major Topics of School Algebra

Practice: Multiple Paths

Algebra I teachers at Legend High School use these units to initiate students into algebra content. After teaching a first unit on transition from arithmetic to algebra (not included in this document), teachers then use the second unit which introduces equations and expressions and the third which begins students on graphing. Note that each unit addresses the district's standards and benchmarks and specifies what students will be able to do as well as the tasks that they will carry out. Also note the "enduring understandings" that relate to connections across mathematics topics and the guiding questions that lead to building those understandings. The units specify algebra vocabulary to be mastered along with expected investigations and assignments as well as required assessments.

Name: _____

Algebra I
Legend High School

Title of Unit: Expressions and Equations
Approximate Time Frame: 5 Weeks

Standards/Benchmarks: *What will I know and be able to do?*
Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.

Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculator, and computers in problem solving situations and communicate the reasoning used in solving these problems

Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Students will…
- Model real world situations using expressions and equations
- Evaluating and simplifying expressions
- Rephrase the basic rules of solving equations
- Explore solutions of linear equations
- Focus on the distributive property in solving equations

Students will be able to…
- Model real-world phenomena using functions and equations
- Represent functional relationships using written explanations, tables, equations, and graphs, and describing the connections among these representations.
- Solve problems involving functional relationships using computers as well as appropriate paper and pencil techniques.
- Simplify expressions in real world situations.
- Understand the difference between an expression and an equations

Enduring Understanding: *Big Ideas (for ex: principles, themes, generalizations)*
        To explore expressions and equations using real world situations to predict outcomes based on applications relevant to the students.

Essential Questions: *Guiding, driving questions which leads to enduring understandings.*
- What is the difference between an expression and an equation?
- How do I write and evaluate an expression?
- How do I use reverse operation and backtracking to solve an equation?
- What are the Basic moves to solving linear equations?
- When do we use the distributive property to solve equations
- Why do we build equations?
- Where are we going to use problem solving equations
- How do we solve multi-step equations

Vocabulary

Backtracking	Like terms
Basic moves for solving equations	Linear equations
Evaluate	Reversible operation
Expression	Solution
Guess-Check	Theorem
Variable	

Investigations		**Date:**
2.2	Modeling General Situations	
2.3	Evaluating Expressions	
2.4	Simplifying Expressions	
2.5	Rephrasing the Basic Rules	
2.7	Reverse Operations	
2.8	Solving Equations by Backtracking	
2.10	When Backtracking Does Not Work	
2.11	The Basic Moves for Solving Equations	
2.12	Solutions for Linear Equations	
2.13	Focus on the Distributive Property	
2.15	Building Equations	
2.16	Solving Word Problems	
2.17	More than One Variable	

Assignments

Number	**Location (Book)**	**Description**	**Due Date**
2.2	CME	Pg. 96-97/ 6-13	
2. 3	CME	Pg. 101-102/ 7-13	
2.4	CME	Pg. 107-109/ 6-12	
2.4-2.5	CME	Additional Practice	
2.5	CME	Pg. 124-125/ 7-14	
2.8	CME	Pg. 128-130/ 1-11 Odd, 10	
2.7-2.8	CME	Additional Practice	
2.10	CME	Pg. 140-141/ 1-11	

2.11	CME	Pg. 146-147/ 2-16 even, 11	
2.12	CME	Pg. 151-152/ 12-18	
2.13	CME	Pg. 155/ 15-23	
2.15	CME	Pg. 265-266/ 6-12	
2.16	CME	Pg. 170-171/ 7-12	
2.15-2.16	CME	Additional Practice	
2.17	CME	Pg.176-177/ 8-12	

Technical Writings

Writing in Math	*Algebra Out Loud*
Technical Writing	*Algebra Out Loud*

In-Class Experiments

Project	TBA

Assessments

Quiz #1	Lessons 2.2-2.8
Quiz #2	Lessons 2.10-2.13
Unit 2 Assessment	100pts

Name: _____

Algebra I
Legend High School
Period 1

Title of Unit: Graphs
Approximate Time Frame:

Standards/Benchmarks: *What will I know and be able to do?*
Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculator, and computers in problem solving situations and communicate the reasoning used in solving these problems

Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.

Students will…
- Model real world situations using graphs, tables, and equations
- Be able to transform functions using mapping
- Define absolute value as a distance between two points
- Interpret data using statistical graphs and analysis
- Use graphs of lines to predict outcomes

Students will be able to…
- Model real-world phenomena using functions graphs and tables
- Represent functional relationships using written explanations, tables, equations, and graphs, and describing the connections among these representations.
- Solve problems involving functional relationships using computers as well as appropriate paper and pencil techniques.
- Analyze and explain the behaviors, transformations, and general properties of types of equations and functions

Enduring Understanding: *Big Ideas (for ex: principles, themes, generalizations)*
    To explore graphs that interprets situations from data and functions that are relevant to the students.

Essential Questions: *Guiding, driving questions which leads to enduring understandings.*
- How do transformation of maps relevant to moving points on a graph?
- What type of graph can demonstrate absolute value?
- Can you model real situations on a coordinate graph?
- What types of graphs can you organize data in?
- In what way could we use a box-and-whisker plot?

- How does a scatter plot compare to a linear line?
- Using scatter plot, how can we predict what happens next?
- How do we graph by plotting points.?
- What does it mean when two lines intersect on a graph?
- Why is direct and inverse variation Important?
- What are the different types of graphs and how can you translate?

Vocabulary

Absolute Value	Box-and-whisker plot
Cartesian plane	Coordinate plane
Coordinate	Direct variation
Quartiles	Frequency table
Graph of an equation	Intersection point
Inverse variation	Maximum
Mean	Median
Mode	Minimum
Ordered pair	Outlier
Point tester	Scatter plot
Stem leaf plot	Transformation
X, Y axis	

Investigations		Date:
3.1	Getting Started	
3.2	Transformations	
3.3	Distance and absolute value	
3.4	Graphing Related Quantities	
3.6	Mean, median, mode	
3.7	Data Display	
3.8	Paired comparisons – Box whisker plot	
3.9	Two variable data – Scatter Plots	
3.11	Equations as point testers	
3.12	Graphing by plotting	
3.13	Intersection of graphs	
3.15	Two basic graphs: variation	
3.16	Four more basic graphs	
3.17	Translating graphs	

Assignments

Number	Location (Book)	Description	Due Date
3.1	CME	Pg. 192-194/ 9-21 odd	
3.2	CME	Pg. 200-201/ 8-14	
3.2	WKSHT		
3.3	CME	Pg. 208-209/ 8-12,15,16	

3.4	CME	Pg. 215-216/ 5-9	
3.3/3.4	WKSHT		
3.6	CME	Pg. 227-229/ 5-10	
3.7	CME	Pg. 233-234/ 4-9	
3.6/3.7	WKSHT		
3.8	CME	Pg. 240-241/ 6-11	
3.9	CME	Pg.246-247/ 6-10,12	
3.8/3.9	WKSHT		
3.11	CME	Pg. 256-257/ 7-11, 15	
3.11	WKSHT		
3.12	CME	Pg. 264-265/ 7-13	
3.13	CME	Pg. 267-268/ 6-10	
3.12/3.13	WKSHT		
3.15	CME	Pg. 282-283/ 10-16	
3.15	WKSHT		
3.16	CME	Pg. 289-290/ 8-12	
3.17	CME	Pg. 298-299/ 5-12	
3.16/3.17	WKSHT		

Technical Writings

Writing in Math	*Algebra Out Loud*	
Research Project	Team 3A	Team 3B
	Dylan Laurer Travis Jensen Jacob Thomas	Carey Reimer Brielle Kissack Kelly Thomas Brenna Leenarts

In-Class Experiments

Project	Pennies
Project	Scatter Plot

Assessments

Quiz #3A	Lessons 3.1-3.4
Quiz #3B	Lessons 3.6-3.9
Quiz #3C	Lessons 3.11-3.13
Unit 3 Assessment	100pts