

Unit 1

Difference of Squares: Organizing Data

Standards

- 1.1 Simplify expressions with and without grouping symbols.
- 1.3 Find solution sets for equations and inequalities over a given domain.
- 2.2 Find sums of rational numbers.
- 2.3 Find differences of rational numbers.
- 2.4 Find products of rational numbers.
- 2.5 Determine the reciprocals of specified rational numbers.
- 2.6 Find quotients of rational numbers.
- 3.3 Use the distributive property to combine similar terms.

Day 1 Organizing Data

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Representing data with charts and graphs. 	<ul style="list-style-type: none"> Interpreting graphs. 	<ul style="list-style-type: none"> Graphing using tables.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 5-8 minutes	<ul style="list-style-type: none"> Student places a “dot” above his/her height to indicate their shoe size on a large graph. Read PZL-5. 	<ul style="list-style-type: none"> Make large graph for the wall. Have instructions for students so that they will place a “dot” above their height to indicate their shoe size. Discuss “Mission Possible” with class. 	<ul style="list-style-type: none"> Student may put their entries for height and shoe size in table form as they enter the class. Watch for errors in notation for feet and inches.
Explore 10-15 minutes	<ul style="list-style-type: none"> Complete SQ-1 through SQ-4 with study team. 	<ul style="list-style-type: none"> Review guidelines for study team. Ask one student to read the data from the graph or from the table for the class. 	<ul style="list-style-type: none"> Emphasize using complete sentences in answering the questions.
Summarize 15-20 minutes	<ul style="list-style-type: none"> Discuss SQ-4 with class. 	<ul style="list-style-type: none"> Part (g) of SQ-4 lends itself to a class discussion of the concept of “average.” 	

Steps	Student activity	Teacher Support	Comment/Evaluation
Homework	<ul style="list-style-type: none">• SQ- through SQ-7.		

Day 2

Adding and Subtracting Integers

Connections

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Addition and subtraction of whole numbers. 	<ul style="list-style-type: none"> Addition and subtraction of integers. 	<ul style="list-style-type: none"> Use the distributive property to combine similar terms.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 5-8 minutes	<ul style="list-style-type: none"> Work in pair and follow teacher demonstration in working with integer tiles. 	<ul style="list-style-type: none"> Demonstrate the use of integer tiles. Make sure students the meaning of the neutral field. Addition is putting on tiles and subtraction is removing tiles. Model problems until the class is comfortable. 	<ul style="list-style-type: none"> Insist on starting with a neutral field. Practice using the integer tiles before demonstration.
Explore 10-15 minutes	<ul style="list-style-type: none"> Complete SQ-8 through SQ-12 with study partner. 	<ul style="list-style-type: none"> Monitor student use of integer tiles. 	<ul style="list-style-type: none"> Check for understanding. Students may use calculators to check their work.
Summarize 15-20 minutes	<ul style="list-style-type: none"> Discuss rules for working with integers. 	<ul style="list-style-type: none"> Help students formulate rules for working with integers. 	<ul style="list-style-type: none"> Do not give students rules for working with integers. Encourage students to formulate their own rules. Emphasize the use of integer

Steps	Student activity	Teacher Support	Comment/Evaluation
			tiles or the number line until students are able to formulate their own rules.
Homework	<ul style="list-style-type: none">• SQ-14 through SQ-17.		

Day 3

Interpreting Graphs and Comparing Areas

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Representing data with charts and graphs. 	<ul style="list-style-type: none"> Interpreting graphs. Find area of irregular shapes. 	<ul style="list-style-type: none"> Creating rules from tables.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 5-10 minutes	<ul style="list-style-type: none"> Start creation of tool kit pages. Read SQ-18. 	<ul style="list-style-type: none"> Discuss the completion and use of tool kit pages. Demonstrate the process for completing one item for the tool kit page. 	
Explore 10-15 minutes	<ul style="list-style-type: none"> Complete SQ-21 through SQ-23 with study team. 	<ul style="list-style-type: none"> Listen to study team discussion relating to interpretation of graphs for SQ-21. Listen for the process each study team used to find the area for SQ-22. Students should answer all questions in complete sentences. 	<ul style="list-style-type: none"> Students should justify their answers for SQ-21 in terms of interpreting the graphs; such as the cost increases as the graph moves further to the right; the age increases as the graph moves up.
Summarize	<ul style="list-style-type: none"> Present and discuss SQ-21 through 	Select study teams to present SQ-21 and	

Steps	Student activity	Teacher Support	Comment/Evaluation
15-20 minutes	SQ-23.	SQ22.	
Homework	<ul style="list-style-type: none">• SQ-24 through SQ-27.		

Day 4
Multiplying and Dividing Integers

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Adding and Subtracting integers. 	<ul style="list-style-type: none"> Multiplying and Diving integers. 	<ul style="list-style-type: none"> Find solutions to given equations.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 5-8 minutes	<ul style="list-style-type: none"> Read PZL-6. 	<ul style="list-style-type: none"> Discuss PZL-6. Talk about one interpretation of multiplication is repeated addition. Demonstrate multiplication of integers with integer tiles. 	
Explore 10-15 minutes	<ul style="list-style-type: none"> Complete SQ-28 through SQ-31 with study team. 	<ul style="list-style-type: none"> Students should formulate own rules for multiplication and division of integers. What is one meaning for multiplication? What do rules for multiplication and division of integers have in common? 	
Summarize	<ul style="list-style-type: none"> Discuss rules for multiplication and division of integers. 	<ul style="list-style-type: none"> Select study teams to present their rules for multiplication and division of 	

Steps	Student activity	Teacher Support	Comment/Evaluation
15-20 minutes		integers. <ul style="list-style-type: none"> • Help students formulate rules for multiplication and division of integers. 	
Homework	<ul style="list-style-type: none"> • SQ-32 through SQ-35. 		

Day 5 Interpreting Graphs

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Representing data with charts and graphs. 	<ul style="list-style-type: none"> Interpreting graphs. 	<ul style="list-style-type: none"> Graphing using tables.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 5-8 minutes	<ul style="list-style-type: none"> Read PZL-7. 	<ul style="list-style-type: none"> Discuss PZL-7 and Mission Possible. 	
Explore 15-20 minutes	<ul style="list-style-type: none"> Complete SQ-36 through SQ-38 with study team. 	<ul style="list-style-type: none"> Begin SQ-36 together as a class. Clarify key vocabulary: "modes of transportation" and "rate." Require justification for answers. 	
Summarize 10-15 minutes	<ul style="list-style-type: none"> Discuss possible interpretation of graph in SQ-36. Enter notes for integer multiplication into tool kit. 	<ul style="list-style-type: none"> Facilitate discussion for SQ-36. Formulate notes on integer multiplication for entry into tool kit. 	
Homework	<ul style="list-style-type: none"> SQ-40 through SQ-43. 		

Day 6
Problems Solving with Guess and Check Tables

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Operations with rational numbers. 	<ul style="list-style-type: none"> Use Guess and Check tables to solve given problems. 	<ul style="list-style-type: none"> Write equations from word problems. Find solutions for specified equations.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 5-8 minutes	<ul style="list-style-type: none"> Read SQ-45. Follow teacher demonstration on Guess and Check example. 	<ul style="list-style-type: none"> Discuss the ideas of using guesses and checking to find solutions to given problems. Demonstrate the process of using Guess and Check to solve problems. 	<ul style="list-style-type: none"> Emphasize that guesses are to give us information that lead to solution. There are no “wrong” guesses.
Explore 15-20 minutes	<ul style="list-style-type: none"> Complete SQ-46 through SQ-49 with study team. 	<ul style="list-style-type: none"> Emphasize organization and readability in construction of Guess and Check tables. There may be a discussion about consecutive numbers. 	<ul style="list-style-type: none"> Guess and Check tables set the foundation for helping students master approaches to problem solving.
Summarize 10-15 minutes	<ul style="list-style-type: none"> Model SQ-46 through SQ-49. 	<ul style="list-style-type: none"> Study teams should model one of their solutions for the class. 	

Steps	Student activity	Teacher Support	Comment/Evaluation
Homework	<ul style="list-style-type: none">• SQ-50 through SQ-54.		<ul style="list-style-type: none">• SQ-50 and SQ-51 may be used for assessment.

Day 7
Patterns and Special Numbers

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Find solution using Guess and Check. 	<ul style="list-style-type: none"> Use patterns as a problem solving strategy. 	<ul style="list-style-type: none"> Write equations for work problems. Find solutions to given equations.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
<p>Launch 10-15 minutes</p>	<ul style="list-style-type: none"> Complete Guess and Check problems specified by teacher. 	<ul style="list-style-type: none"> Use Guess and Check problems from Teacher's Text. 	<ul style="list-style-type: none"> Vary the type and the level of difficulty for the word problems used in Guess and Check. The same type of word problems allows students to memorize solutions for particular problems.
<p>Explore 15-20 minutes</p>	<ul style="list-style-type: none"> Complete SQ-55 through SQ-58 with study team. 	<ul style="list-style-type: none"> Other famous number patterns, such as the figurate numbers, Fibonacci numbers, Pascal's triangle, may be introduced. Facilitate the wording for generalizations of patterns. 	<ul style="list-style-type: none"> Giving a general rule for specified patterns will be difficult for many students.

Steps	Student activity	Teacher Support	Comment/Evaluation
Summarize 8-10 minutes	<ul style="list-style-type: none"> Share generalizations related to patterns from SQ-57 and SQ-58. 	<ul style="list-style-type: none"> Students should state the generalizations in their own words. 	<ul style="list-style-type: none"> Do not expect algebraic formulas for specification of the nth term.
Homework	<ul style="list-style-type: none"> SQ 59 through SQ-63. 		

Day 8
Introduction to Variables and Combining Like terms

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Interpreting multiplication as arrays. 	<ul style="list-style-type: none"> Use algebra tiles to combine like terms. 	<ul style="list-style-type: none"> Addition and subtraction of polynomials.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 8-10 minutes	<ul style="list-style-type: none"> Read PZL-8. Follow teacher demonstration of SQ-65. 	<ul style="list-style-type: none"> Facilitate discussion of PZL-8. Demonstrate SQ-65 using algebra tiles. 	<ul style="list-style-type: none"> Be sure to demonstrate that the tiles are not commensurable and that the students are familiar with this concept.
Explore 10-15 minutes	<ul style="list-style-type: none"> Complete SQ-66 through SQ-70 with study team. 	<ul style="list-style-type: none"> Start SQ-66 together with class. Model combining like terms. Model example from Teacher Text. 	
Summarize 15-20 minutes	<ul style="list-style-type: none"> Summarize the idea of combining like terms for the tool kit. 	<ul style="list-style-type: none"> Facilitate the summarization of combining like terms so students may record the ideas for their tool kits. 	
Homework	<ul style="list-style-type: none"> SQ-71 through SQ-74. 		

Day 9

Guess and Check Tables: More Practice

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none">Combine like terms using algebra tiles.Use Guess and Check to find solutions.	<ul style="list-style-type: none">More practice on Guess and Check.	<ul style="list-style-type: none">Write equations for word problems.Find solutions to given equations.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 5-8 minutes	<ul style="list-style-type: none">Write expression for each group of algebra tiles shown by teacher.	<ul style="list-style-type: none">Put random selection of algebra tiles on the overhead. Ask students to write expressions to represent the amount.	
Explore 10-15 minutes	<ul style="list-style-type: none">Complete SQ-76 through SQ-79 with study team.	<ul style="list-style-type: none">Emphasize the organization and readability of the Guess and Check tables.	
Summarize 15-20 minutes	<ul style="list-style-type: none">Share and discuss SQ-76 through SQ-79.	<ul style="list-style-type: none">Have study teams present SQ-76 through SQ-79 for discussion.	
Homework	<ul style="list-style-type: none">SQ-80 through SQ-84.		

Day 10
Difference of Squares

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Find patterns for given sequences. 	<ul style="list-style-type: none"> Organize data and present findings. 	<ul style="list-style-type: none"> Analyzing and interpreting data.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 5-8 minutes	<ul style="list-style-type: none"> Read SQ-85. Discuss strategies for finding solutions. 	<ul style="list-style-type: none"> Discuss the importance of organizing data. 	<ul style="list-style-type: none"> Suggest that students make all decisions in ways of organizing data and finding solutions.
Explore 10-15 minutes	<ul style="list-style-type: none"> Complete SQ-85 with study team. 	<ul style="list-style-type: none"> Guide students in their work but do not suggest methods of attacking the problem. 	
Summarize 15-20 minutes	<ul style="list-style-type: none"> Prepare for presentation of SQ-85 for class the following day. 	<ul style="list-style-type: none"> Remind students to finish their chars and prepare their presentation for the following day. 	
Homework	<ul style="list-style-type: none"> Complete presentation for SQ-85. SQ-86 through SQ-89. 		

Day 11
Difference of Squares

Connection

Prior Work	Current Big Idea	Future Work
<ul style="list-style-type: none"> Find patterns for given sequences. 	<ul style="list-style-type: none"> Organize data and present findings. 	<ul style="list-style-type: none"> Analyzing and interpreting data.

Lesson Process

Steps	Student activity	Teacher Support	Comment/Evaluation
Launch 4-5 minutes	<ul style="list-style-type: none"> Prepare for presentations of SQ-85. 	<ul style="list-style-type: none"> Students prepare for presentations of SQ-85. 	
Explore 40-45 minutes	<ul style="list-style-type: none"> Team presentation of SQ-85. 	<ul style="list-style-type: none"> Facilitation of student presentations of SQ-85. 	
Summarize 5-8 minutes	<ul style="list-style-type: none"> Read PZL-9. 	<ul style="list-style-type: none"> Discuss PZL-9. 	
Homework	<ul style="list-style-type: none"> SQ-90. 		