CHAPTER SUMMARY

BIG IDEAS
For Your Notebook

Big Idea 1

TEKS *a.6*

Performing Operations with Real Numbers

To add or multiply two real numbers a and b, you can use the following rules:

Expression	Rule when a and b have the same sign	Rule when a and b have different signs
$a + b$	Add $|a|$ and $|b|$. The sum has the same sign as a and b.	Subtract the lesser absolute value from the greater absolute value. The sum has the same sign as the number with the greater absolute value.
ab	The product is positive.	The product is negative.

You can use these rules to subtract or divide numbers, but first you rewrite the difference or quotient using the subtraction rule or the division rule.

Big Idea 2

TEKS *A.4.B*

Applying Properties of Real Numbers

You can apply the properties of real numbers to evaluate and simplify expressions. Many of the properties of addition and multiplication are similar.

Property	Addition	Multiplication
Commutative property	$a + b = b + a$	$ab = ba$
Associative property	$(a + b) + c = a + (b + c)$	$(ab)c = a(bc)$
Identity property	$a + 0 = 0 + a = a$	$a \cdot 1 = 1 \cdot a = a$
Inverse property	$a + (-a) = -a + a = 0$	$a \cdot \frac{1}{a} = \frac{1}{a} \cdot a = 1, a \neq 0$
Distributive property	$a(b + c) = ab + ac$ (and three variations)	

Big Idea 3

TEKS *a.1*

Classifying and Reasoning with Real Numbers

Being able to classify numbers can help you tell whether a conditional statement about real numbers is true or false. For example, the following statement is false: "All real numbers are integers." A counterexample is 3.5.

Numbers	Description
Whole numbers	The numbers 0, 1, 2, 3, 4, . . .
Integers	The numbers . . . , -3, -2, -1, 0, 1, 2, 3, . . .
Rational numbers	Numbers of the form $\frac{a}{b}$ where a and b are integers and $b \neq 0$
Irrational numbers	Numbers that cannot be written as a quotient of two integers
Real numbers	All rational and irrational numbers