Before This Module

Grade 3 Module 3

Beginning in grade 3, students apply properties of operations as strategies to multiply and divide. In grades 3 and 4, students solve word problems involving the four operations. They represent situations by using equations with a symbol or letter standing for the unknown number.

Grade 5 Module 1

In grade 5, students use whole number exponents to express powers of 10. Students also evaluate numerical expressions involving parentheses, brackets, or braces. They write numerical expressions to record calculations and interpret numerical expressions.

Overview

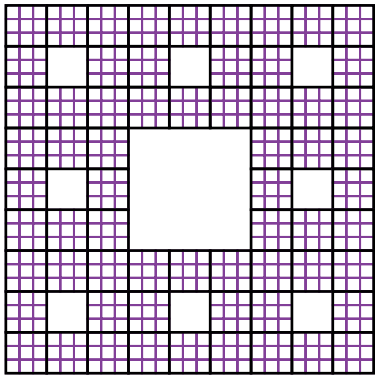
Expressions and One-Step Equations

Topic A

Numerical Expressions

In topic A, students write, interpret, and evaluate numerical expressions. Students learn that exponents represent repeated multiplication, and they evaluate powers with whole number, fraction, and decimal bases. Through an exploration of the hierarchy of operations, students learn the conventional order of operations and then apply it to evaluate numerical expressions.

Step	Number of Purple Squares	Expanded Form of the Number	Exponential Notation of the Number
1	8	8	8^1
2	64	$8 \cdot 8$	8^2
3	512	$8 \cdot 8 \cdot 8$	8^3



Topic B

Expressions and Real-World Problems

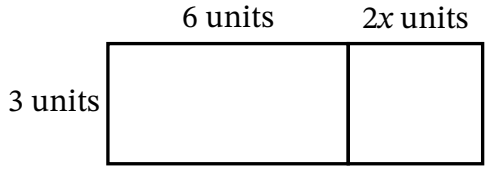
Students transition from numerical expressions to algebraic expressions in topic B as they learn why and how to use variables to represent unknown numbers and quantities. Students learn to precisely define variables as values with units and to identify constraints on variables. When representing mathematical and real-world descriptions with algebraic expressions, students use common conventions and recognize how subtle variations in wording indicate different meanings.

Topic C

Equivalent Expressions Using the Properties of Operations

In topic C, students write and identify equivalent algebraic expressions. Students use the distributive property to write products as sums or differences, to factor algebraic expressions, and to combine like terms.

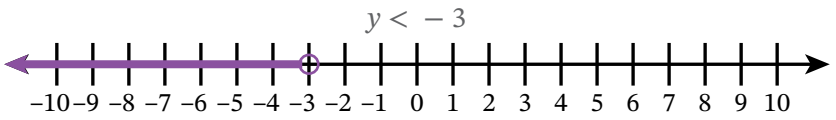
$3(6 + 2x) = 18 + 6x$



Topic D

Equations and Inequalities

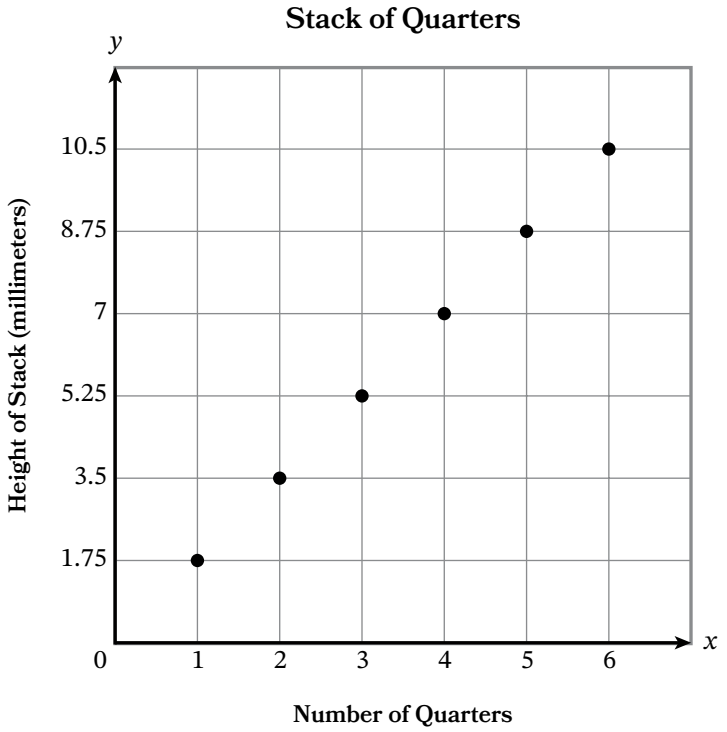
Students transition from working with algebraic expressions to working with equations and inequalities in topic D. They use substitution to determine whether a given number makes an equation or inequality a true number sentence, and they develop an understanding of the meaning of a solution. Students graph solutions to inequalities on number lines and interpret solutions graphed on number lines by writing inequalities. Students solve single-variable equations by using tape diagrams and algebraic reasoning, and they apply their understanding of equations to solve geometric problems involving angle measures.



Topic E

Relating Variables by Using Tables, Graphs, and Equations

In topic E, students write and graph two-variable equations and identify independent and dependent variables. After representing ratio relationships with graphs and two-variable equations, students transition to representing relationships of the form $y = x + b$ and $y = x - b$. Students interpret the meanings of points on graphs and also interpret the meanings of coefficients, variables, operators, and constants in equations that represent real-world situations. At the end of the topic, students analyze and model relationships between two quantities when they complete a modeling task about climbing the steps of the Statue of Liberty.



Number of Quarters	Height of Stack (millimeters)
6	10.5
12	21
18	31.5

After This Module

Grade 7 Module 1

In grade 7 module 1, students use their understanding of independent and dependent variables and ratio relationships to write equations to model proportional relationships, recognizing the unit rate as the constant of proportionality.

Grade 7 Module 3

Grade 7 Module 4

In grade 7 module 3, students add, subtract, factor, and expand linear expressions with rational number coefficients. In grade 7 module 4, students apply their understanding of equations and solutions from grade 6 to write and solve equations and inequalities involving two operations.