Unit 4: Multi-Digit Multiplication

Content Area:	Mathematics
Course(s):	Mathematics 4
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Enduring Understandings

Computational fluency requires efficient, accurate, and flexible methods for computing.

Success in all future math learning is contingent upon acquisition of multiplication.

Essential Questions

What does it mean to be computationally fluent?

Why is it important to use a strategic approach for acquisition of the basic multiplication facts?

Content
Vocabulary
Array
Multiplication
Commutative property
Associative property
Estimate
Grid
Multiple
Partial products
Table
Units

http://www.mathplayground.com/common_core_state_standards_for_mathematics_grade_4.html

Tenmarks.com k5learning.com http://nextgen.apps.sparcc.org/math/3-5 http://www.insidemathematics.org/common-core-resources/mathematical-content-standards/standards-bygrade/4th-grade https://learnzillion.com/resources/17036-math-lesson-plans-4th-grade http://www.mathgoodies.com/standards/alignments/grade4.html

Skills

Use base ten blocks to show that numbers are multiples of 10.

Use an array and a chart to model multiplication.

Use simpler problems to solve multi-digit multiplication problems.

Find products using various methods.

Use Guess and Check as a problem solving strategy.

Persevere in problem solving by solving multistep word problems.

Solve word problems by representing the unknown quantity with a letter.

Describe what a digit represents in a multi-digit number compared to the same digit in a different place.

Create a word web.

Use a word definition map.

Discuss partial products with a partner.

Explore profitable products.

Multiply a whole number of three digits by a one-digit whole number.

Multiply a whole number of four digits by a one-digit whole number.

Use strategies based on place value.

Use strategies based on properties of operation.

Illustrate and explain calculations.

Standards

CCSS.Math.Practice.MP1	Make sense of problems and persevere in solving them.
CCSS.Math.Practice.MP2	Reason abstractly and quantitatively.
CCSS.Math.Content.4.OA.A.2	Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
CCSS.Math.Practice.MP3	Construct viable arguments and critique the reasoning of others.
CCSS.Math.Content.4.OA.A.3	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
CCSS.Math.Practice.MP4	Model with mathematics.

CCSS.Math.Practice.MP5	Use appropriate tools strategically.
CCSS.Math.Practice.MP6	Attend to precision.
CCSS.Math.Practice.MP7	Look for and make use of structure.
CCSS.Math.Content.4.NBT.A	Generalize place value understanding for multi-digit whole numbers.
CCSS.Math.Content.4.NBT.A.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
CCSS.Math.Practice.MP8	Look for and express regularity in repeated reasoning.
CCSS.Math.Content.4.NBT.B	Use place value understanding and properties of operations to perform multi-digit arithmetic.
CCSS.Math.Content.4.NBT.B.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.