



Subject Area: Math	Course: Fourth Grade		
Unit Title: Module 3: Multiplication and Division of Multi-Digit Numbers	Grade: 4	Start: December	End: February
Unit Summary: In module 3, students multiply numbers of up to four digits by one-digit numbers and two-digit numbers by two-digit numbers. Students also divide numbers of up to four digits by one-digit numbers, resulting in whole-number quotients and remainders.			

Stage 1: Desired Results

Massachusetts Learning Standards

- 4.OA.A.3 Solve multi-step 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.
- 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.
- 4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 4.MD.A.1 Know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.
For example, know that 1 ft. is 12 times as long as 1 in. Express the length of a 4 ft. snake as 48 in. Generate a

conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...

- 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

[Vision of a Graduate Performance Outcome\(s\)](#)

Transfer (Authentic, relevant application of learning to new situations)

Students will be able to...

- Simulate the Performance Task: Organizing a School Carnival
 - Scenario: Your class is planning a school carnival to raise funds for new library books. You'll be responsible for calculating costs, setting prices, and dividing responsibilities among volunteers
 - Objectives:
 - Multiply numbers up to four digits by one-digit numbers and two-digit numbers by two-digit numbers.
 - Divide numbers up to four digits by one-digit numbers, resulting in whole-number quotients and remainders.

Meaning

Enduring Understandings

- Mastering the multiplication and division of multi-digit numbers equips us with essential skills to navigate and solve complex, real-world challenges efficiently.

Essential Questions

Students will consider...

- How do advanced multiplication and division techniques empower us to tackle everyday problems and make informed decisions?

Acquisition

Knowledge

Students will know...

New Vocabulary:

- cup
- gallon
- long division
- ounce
- pint
- pound
- quart
- remainder

Familiar Vocabulary

- algorithm
- area
- area model
- array
- associative property of multiplication
- commutative property of multiplication
- compare
- customary units
- distribute
- distributive property
- divide, division

Skills

Students will be skilled at...

- Multiplying and dividing multiples of 10, 100, and 1000 by focusing on place value units.
- Using place value disks and writing equations in unit form to help them recognize that they can use familiar multiplication and division facts to find products and quotients.
- Applying the associative property to rewrite two-factor multiplication expressions as three-factor expressions so, again, they can multiply by using familiar facts.
- Dividing numbers of up to four digits by one-digit numbers.
- Drawing an area model, representing the divisor as one side length, and composing the unknown side length by building up to the total.
- Representing the division on a place value chart.
- Decomposing the totals into place value units, divide each unit, and record long division in vertical form alongside the place value chart to reinforce conceptual understanding.
- Recognizing that, although the value of the unit is different, the process of dividing each unit remains the same.
- Applying the distributive property to multiply numbers of up to four digits by one-digit numbers.

- divisor
- equation
- expression
- factor
- hours, minutes, seconds
- length
- metric units
- mixed units
- multiple
- multiply, multiplication
- partial product
- partial quotient
- perimeter
- place value
- product
- quotient
- regroup, rename
- rows, columns
- total
- width
- yard

Academic Verbs

- indicate
- interpret
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- Breaking apart the larger factor by place value and multiplying the number of each unit by the one-digit factor.
- Representing the multiplication by using place value charts, area models, and vertical form.
- Applying the associative and distributive properties to multiply a two-digit number by a multiple of 10 and then progress to multiplying two-digit numbers by two-digit numbers.
- Using Area models to represent the multiplication and to help students recognize how each factor is broken apart and multiplied.
- Using multiplicative relationships to convert units of time and customary units of weight and liquid volume to smaller units.
- Using conversion tables and number lines to express larger measurement units in terms of smaller units and recognize that the smaller units are all multiples of the same number.
- Dividing with numbers that result in whole-number quotients and remainders.
- Recognizing the remainder as the amount remaining after finding a whole-number quotient, and they solve word problems that require interpretation of the whole-number quotient and remainder.
- Estimating quotients by finding a multiple of the divisor that is close to the total and then dividing.
- Reasoning about the relationship between their estimate and the actual quotient and applying their

thinking to assess the reasonableness of their answers to division word problems.

- Using the four operations to solve multi-step word problems.