3 Math Unit 05: Use Properties to Multiply by 3, 4, 6, 7, 8, and 9

Content Area: **Mathematics**
Course(s):
Time Period: **Marking Period 2**
Length: **12 Days**
Status: **Published**

Unit Overview

Using the Distributive Property to Multiply

As students progress through Grade 3, they learn more strategies to solve multiplication problems. One multiplication strategy that this unit emphasizes is doubling. Students learn that when a factor doubles, the product also doubles.

Students are first introduced to the doubling strategy when relating products of 2s to products of 4s using the Multiplication Fact Table and patterns from equations. Students know that 2 is half of 4, which means 4 is double 2. This is when they discover they can double products of 2s to find the products of 4s. Students learn that they can double a 2s product to find a 4s product by using representations. They conclude that when a factor doubles, the products also doubles.

Similarly the factor 6 id double 3, so a 3s product can be doubled to get a 6s product for the same other factor. Then, arrays are used to represent the doubling of products of 4s to get products of 8s. Students can visually see how the dimensions of two 4 x 5 arrays equal one 8 x 5 array.

To find the unknown 3s facts, students can also use the known 2s facts and then add one more group. for example, they can combine the products of 2 groups of 4 and 1 group of 4 to make 3 groups of 4.

The same methods are used to multiply by 6 as students learn to decompose the factor of 6 into 5 and 1, which means 6 x 7 = (5 x 7) + (1 X 7).

What Students Are Learning

- Students use the Distributive Property to decompose factors in different ways and find products.
- Students double the product of a 2s fact to find a product of 4, double the product of a 3s fact to find product of 6, and double the product of a 4s fact to find the product of 8.
- Students solve word problems involving arrays.

Number Routines

- About How Much?
- Find the Pattern, Make a Pattern
- Let's Count
- Notice & Wonder
- Numberless Word Problem

Standards

3.OA.A.3	Use multiplication and division within 100 to solve word problems in situations involving

	equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
3.OA.A.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
3.OA.B.5	Apply properties of operations as strategies to multiply and divide.
3.OA.C.7	With accuracy and efficiency, multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

Materials

Core Materials:

Reveal Math

5.1 Understand the Distributive Property

5.2 Use Properties to Multiply by 3

5.3 Use Properties to Multiply by 4

5.4 Use Properties to Multiply by 6

5.5 Use Properties to Multiply by 8

5.6 Use Properties to Multiply by 7 and 9

5.7 Solve Problems Involving Arrays

Supplemental Materials:

- ST Math
- Happy Numbers
- 3 Act Lessons
- Building Fact Fluency Kit
- Brainingcamp Manipulatives
- Nearpod Lessons
- Brainpop Resources
- Online Resources

Technology

DA	Data & Analysis
	Data can be organized, displayed, and presented to highlight relationships.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.

	Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.
8.1.5.DA.3	Organize and present collected data visually to communicate insights gained from different views of the data.
8.1.5.DA.4	Organize and present climate change data visually to highlight relationships or support a claim.
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

Assessment

Formative Assessment

- Unit Readiness Diagnostics
- Lesson Checks
- Exit Tickets
- Teacher Observation

Summative Assessment

- Unit Assessment Performance Task
- Benchmark Tests
- Alternative Assessments: Performance Tasks & Projects

Accommodations & Modifications

Special Education

Differentiated Instruction			
Accommodate Based on Students Individual Needs: Strategies			
Time/General • Extra time for assigned tasks • Adjust length of assignment • Timeline with due dates for reports and projects • Communication system between home and school • Provide lecture	**Processing** • Extra response time • Have students verbalize steps • Repeat, clarify, or reword directions • Mini-breaks between tasks • Provide a warning for transitions	**Comprehension** • Precise step-by-step directions • Short manageable tasks • Brief and concrete directions • Provide	**Recall** • Teacher-made checklist • Use visual graphic organizers • Reference resources to promote independence

notes/outline	• Reading partners	immediate feedback • Small group instruction • Emphasize multi-sensory learning	• Visual and verbal reminders • Graphic organizers
Assistive Technology • Computer/whiteboard • Tape recorder • Spell-checker • Audio-taped books	**Tests/Quizzes/Grading** • Extended time • Study guides • Focused/chunked tests • Read directions aloud	**Behavior/Attention** • Consistent daily structured routine • Simple and clear classroom rules • Frequent feedback	**Organization** • Individual daily planner • Display a written agenda • Note-taking assistance • Color code materials

504

- In class/pull out support with special ed teacher Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks Graphic organizers
- Vocabulary support Mnemonic devices
- Songs/videos to reinforce concepts Limit number of questions
- Scribe Manipulatives Calculators Reteach pages Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System Another look homework video
- Practice buddy

ELL

- Translation device/dictionary
- In class/pull out support with ESL teacher
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives

- Math Diagnosis & Intervention System

At-risk of Failure

- Additional time during intervention time
- Questions read aloud
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives
- Calculators
- Reteach pages
- Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System
- Another look homework video
- Practice buddy

Gifted & Talented

- Independent projects
- Enrichment pages
- Online games
- Leveled Homework
- Extension Activities
- Today's Challenge

Interdisciplinary Connections

3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
RL.CR.3.1	Ask and answer questions and make relevant connections to demonstrate understanding of a literary text, referring explicitly to textual evidence as the basis for the answers.
RL.TS.3.4	Utilize and reference features of a text when writing or speaking about a text, referring to parts of stories, dramas, and poems, using terms such as chapter, scene, and stanza; describe how each successive part builds on earlier sections.
W.IW.3.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
3-ESS2-1	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

Career Readiness, Life Literacies & Key Skills

9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.

9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.
9.4.5.CT	Critical Thinking and Problem-solving
	The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
9.4.5.CT.1	Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
9.4.5.CT.3	Describe how digital tools and technology may be used to solve problems.
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).
9.1.5.FI	Financial Institutions
	People can choose to save money in many places such as home in a piggy bank, bank, or credit union.
9.1.5.FI.1	Identify various types of financial institutions and the services they offer including banks, credit unions, and credit card companies.
9.1.5.PB.1	Develop a personal budget and explain how it reflects spending, saving, and charitable contributions.

Career Ready Practices

STEM in Action

STEM Career: Nurse: Noah discusses his aspirations of being a nurse.

Noah Measures Medicine: Noah uses multiplication to help him figure out how much medicine is needed.

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP12. Work productively in teams while using cultural global competence.