3 Math Unit 04: Use Patterns to Multiply by 0, 1, 2, 5, and 10

Content Area: **Mathematics**
Course(s):
Time Period: **Marking Period 1**
Length: **10 Days**
Status: **Published**

Unit Overview

Patterns

Starting in Grade 3, students begin to delve into a variety of multiplication problems. In the previous unit, students were introduced to multiplication and division representations.

In this unit, students discover patterns in products involving the numbers 0, 1, 2, 5, and 10. Products of 2 have 0, 2, 4, 6, or 8 in the ones place. Products of 5 have either a 5 or 0 in the ones place. Products of 10 have a 0 in the ones place. When multiplying by 1, the product is the same as the other factor, and when a number is multiplied by 0, the product is always 0. Knowing about patterns can help students determine whether a product is reasonable or accurate.

Multiplication Representations

Students use varying methods and representations to remember multiplication with the factors 2, 5, and 10. They relate multiplying by 2 as doubling or twice as much. They also refer back to what they have previously learned about equal groups and repeated addition. In order to connect multiplication to addition, doubling can be thought of as adding two equal groups. To multiply by 5, students use arrays with rows of 5. Students also skip count to multiply by 10. A multiplication fact table is also used to find patterns in the products that can help student recall multiplication facts.

What Students Are Learning

- Students se patterns and skip counting to multiply.
- Students use properties of multiplication to multiply by 0 and 1.
- Students make connections between doubling and multiplying by 2 and 10.

Number Routines

- About How Much?
- Mystery Number
- Find the Pattern, Make a Pattern
- Notice & Wonder
- Is It Always True?
- Which Doesn't Belong?
- 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.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.
3.OA.D.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations.

Materials

Core Materials:

Reveal Math

4.1 Use Patterns to Multiply by 2

4.2 Use Patterns to Multiply by 5

4.3 Use Patterns to Multiply by 10

4.4 Use Patterns to Multiply by 1 and 0

4.5 Multiply Fluently by 0, 1, 2, 5, and 10

4.6 Solve Problems Involving Equal Groups

Supplemental Materials:

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

Technology

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.
8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

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	**Processing**	**Comprehension**	**Recall**
• Extra time for assigned tasks • Adjust length of assignment • Timeline with due dates for reports and projects • Communication system	• Extra response time • Have students verbalize steps • Repeat, clarify, or reword directions • Mini-breaks between tasks	• Precise step-by-step directions • Short manageable tasks • Brief and	• Teacher-made checklist • Use visual graphic organizers • Reference

between home and school • Provide lecture notes/outline	• Provide a warning for transitions • Reading partners	concrete directions • Provide immediate feedback • Small group instruction • Emphasize multi-sensory learning	resources to promote independence • 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.
RI.CR.3.1	Ask and answer questions and make relevant connections to demonstrate understanding of an informational text, referring explicitly to textual evidence as the basis for the answers.
RI.TS.3.4	Utilize and reference features of a text when writing or speaking about a text, using text features (e.g., graphics, images, captions, headings) and search tools (e.g., key words, sidebars, hyperlinks) to locate and integrate information relevant to a given topic efficiently.
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. Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships.

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).
9.1.5.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: Computer Programmer: Grace talks about the work of a computer programmer.

Grace Writes a Computer Program: Grace talks about using multiplication to write computer codes.

- 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.