BOE Approved 8/18

Cliffside Park Public Schools Grade 3

Mathematics

Topic Name: Topic 1: Understand Multiplication and Division of Whole Numbers

Topic 2: Multiplication Facts: Use Patterns

Resource: enVision Math 2.0, Pearson, 2016

Duration: September

Topic 1 (9 days)

Topic 2 (8 days)

Enduring Understanding

Topic 1

- Some real-world problems that involve joining or separating equal groups or making comparisons can be solved using multiplication. Repeated addition that involves joining equal groups is one way to think about multiplication.
- Some real-world problems that involve joining or separating equal groups or making comparisons can be solved using multiplication. Multiplication on the number line can involve joining equal groups and is one way to think about multiplication.
- Some real-world problems that involve joining or separating equal groups or making comparisons can be solved using multiplication. An array involves displaying objects in equal rows and columns, and is one way to think about multiplication.
- Two numbers can be multiplied in any order and the product remains the same.
- Sharing involves separating equal groups and is one way to think about division.
- Some real-world problems that involve joining or separating equal groups or making comparisons can be solved using multiplication and division. Repeated subtraction involves separating equal groups and is one way to think about division.
- Different tools can be used in different ways to solve problems.

Topic 2

- There are patterns in the products for multiplication with factors 2 or 5.
- There are patterns in the products for multiplication with a factor of 9.

- There are patterns in the products for multiplication facts with a factor of 0 or 1. The product of 0 and any number is 0. The product of 1 and any number is that same number.
- Patterns can be used to solve multiplication problems.
- Basic multiplication facts can be found by identifying patterns.
- Information in a problem often can be shown using a diagram that can be used to solve the problem. Some problems have hidden questions that need to be answered.

Essential Questions

Topic 1

- How can you find the total number of objects in equal groups?
- How can you use a number line to show multiplication?
- How does an array show multiplication?
- Does order matter when you multiply?
- How can you divide using repeated subtraction?
- How can you use appropriate tools to represent and solve problems?
- What are different meanings of multiplication and division?

Topic 2

- How can you use patterns to multiply by 2 and 5?
- How can patterns be used to find the factors of 9?
- What are the patterns in multiples on 1 and 0?
- What are the patterns in multiples of 10?
- How do you use multiplication facts to solve problems?
- How can unknown multiplication facts be found using patterns and properties?

Focus of Standards

Student Outcomes	**Skills**	**Assessments**	**Resources**
Topic 1 • I can use addition or multiplication to join equal groups. • I can use a number line to represent and solve multiplication facts.	• Solving addition, subtraction, multiplication, and division problems • Understanding	**Formative** • Diagnostic assessment • Study Island • Exit tickets	**Texts** • enVision math 2.0 **Digital** • Student/Teacher

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• I can use arrays to show and solve multiplication problems.
• I can multiply factors in any order to solve multiplication problems.
• I can use objects or pictures to show how objects can be divided into equal groups.
• I can use repeated subtraction to understand and solve division problems.
• I can think strategically to determine which tool will be most useful.
Topic 2
• I can use patterns to multiply by 2 and five.
• I can use patterns to multiply by 9.
• I can use patterns and properties to multiply by 0 and 1.
• I can use patterns to multiply by 10.
• I can use basic multiplication facts to solve problems.
• I can use math I know to solve problems.
	concepts
	• Reasoning
		• Round Robin group work
		  ○ Open ended questions
		  ○ May/may not be game activity
		• Analysis of student homework
		• Class polls
		  ○ Show of hands: 1 finger ok, 2 fingers need help, 3 fingers lost
		• One thing I learned/One thing I need work on
		
		Summative
		• End topic tests
		• Group topic assessment
		• EOY test
		• SGO tests
		
		Benchmark
		• Diagnostic assessment
		• Pearson benchmark tests
		• PARCC test
			eText
			• Interactive math story
			• Home-school connection
			
			Classroom Math Materials
			
			• Two-color counters
			• Number lines
			• Colored pencils
			• Centimeter grid paper
			• Crayons
			• Cups
			• Paper cups
			• Color cubes
			• Place-value blocks

		Alternative ● Work paper from tests will also be graded for additional points if reasoning is clear and correct, even if answer is wrong ● One on one conferencing ● Oral presentation on math strand ● Weekly time capsule:summary of what was learned ● Topic Pattern search: find the thread in topic ● Crosswords with math vocab	

Vocabulary
Topic 1
equal groups, multiplication, factors, product, equation, unknown, number line, array, row, column, commutative (order) property of multiplication, division
Topic 2
multiples, identity (one) property of multiplication, zero property of multiplication,

NJ Student Learning Standards: Math
Operations and Algebraic Thinking
3.OA.A.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example,

describe a context in which a total number of objects can be expressed as 5 × 7.
3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.
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.B.5 Apply properties of operations as strategies to multiply and divide.1 Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)
3.OA.B.6 Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.
3.OA.D.8 Solve two-step word problems using the four operations. 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.2
3.OA.D.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

Standards for Mathematical Practice
MP1. Make sense of problems and persevere in solving them.
MP2. Reason abstractly and quantitatively.
MP3. Construct viable arguments and critique the reasoning of others.
MP4. Model with mathematics.
MP5. Use appropriate tools strategically.
MP6. Attend to precision.
MP7. Look for and make use of structure.
MP8. Look for and express regularity in repeated reasoning.

Career Ready Practices
CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.

CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP10. Plan education and career paths aligned to personal goals.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

NJSLS Technology Standards
8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
8.1.5.A.3 Use a graphic organizer to organize information about a problem or issue.

Interdisciplinary Connections and Activities
NJSLS for ELA and Science are introduced, developed, and practiced in the context of learning math content and engaging in mathematical practices.
ELA Standards

- RL.3.1. Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- RI.3.4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.

Science

- 3-PS2-2 Science findings are based on recognizing patterns.
- 3-LS2-1 Construct an argument with data, evidence and/or a model.
- 3-LS3-2 Use evidence (eg., observations, patterns) to support an explanation.

- 3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a
- particular season.

NJSLS: 21st Century Life and Careers

Key Subjects and 21st Century: Themes Mastery of key subjects and 21st century themes is essential to student success. Key subjects include English, reading or language arts, world languages, arts, mathematics, economics, science, geography, history, government and civics. In addition, schools must promote an understanding of academic content at much higher levels by weaving 21st century interdisciplinary themes into key subjects:

• Global Awareness
• Financial, Economic, Business and Entrepreneurial Literacy

9.1.4.A.2 Identify potential sources of income
9.1.4.C.5 Determine the relationship among income, expense and interest
9.1.4.D.2 Explain what it means to “invest”.

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Integrated Differentiation/Accommodations/Modifications for Mathematics *(Alternate Modes of Instruction and Support)*		
Modifications to Support Gifted and Talented Students	**Modifications to Support English Language Learners**	**Modifications to Support Our Learners (Students with IEPs/504s and At-Risk Learners)**
Provide appropriate challenge for wide ranging skills and development areas. Participate in inquiry and project-based learning units of study Assigning roles within partnerships Differentiated supports: content, process, product, environment	Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary) Pair visual prompts with verbal presentations Front load and immerse students in literacy and language experiences related to content Provide students with visual models, sentence stems, concrete objects, and hands-on materials. Model procedures for life skills. Collaboration between ELL and general education teacher to maximize learning	Review student individual educational plan and/or 504 plan. Establish procedures for accommodations and modifications for assessments as per IEP/504. Establish procedures for modification of classwork and homework as per IEP/504. Modify classroom environment to support academic and physical needs of the students as per IEP/504. Provide appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team. Differentiation through content, process, product, environment Provide Title I services to students not meeting academic standards in ELA and/or Math. Provide instructional adaptations and interventions in the general education classroom. Modify classroom environment to support student needs. Differentiated instruction Basic Skills

		Intensive individual intervention

Sources

New Jersey Student Learning Standards (2016) http://www.state.nj.us/education/cccs/2016/math/standards.pdf
New Jersey Student Learning Standards: Technology (2014) - http://www.state.nj.us/education/cccs/2014/tech/8.pdf
New Jersey Student Learning Standards: ELA (2014) - https://www.state.nj.us/education/cccs/2016/ela/g03.pdf
New Jersey Science and Engineering Practices - https://www.state.nj.us/education/aps/cccs/science/resources/QR35.pdf
New Jersey 21st Century Life and Careers 9.1 - https://www.state.nj.us/education/cccs/2014/career/91.pdf
Pearson enVision 2.0 (2016) https://www.pearsonrealize.com/index.html#/