



**Mathematics**

**Topic Name: Topic 3: Use Strategies and Properties to Multiply by 1-Digit Numbers**

**Topic 4: Use Strategies and Properties to Multiply by 2-Digit Numbers.**

**Resource: enVision Math 2.0, Pearson, 2016**

**Duration: October (Carries into First Week of November)**

**Topic 3: 12 Days**

**Topic 4: 13 Days**

**Enduring Understandings**

**Topic 3**

- Basic facts and place-value patterns can be used to find products when one factor is 10, 100, or 1,000.
- Rounding is one way to estimate products.
- The properties of multiplication can be used to simplify computation and to verify mental math and paper and pencil algorithms.
- Properties of multiplication and place-value understanding can be used to multiply without paper and pencil.
- The expanded algorithm for multiplication can be represented with arrays. In the algorithm, numbers are broken apart using place value, and the parts are used to find partial products.
- The expanded algorithm for multiplication breaks numbers apart using place value, and the parts are used to find partial products. The partial products are then added together to find the product.
- The standard multiplication algorithm is a shortcut for the expanded algorithm. Regrouping is used rather than showing all the partial products.
- The standard algorithm for multiplication involves breaking apart numbers using place value, finding partial products, and then adding partial products to get the final product. The process is the same regardless of the size of the factors.
- Good math thinkers choose and apply math they know to show and solve problems from everyday life.

**Topic 4**

- Basic facts and place-value patterns can be used to mentally multiply a two-digit number by a power of 10.
- Place-value blocks, area models, and arrays provide ways to visualize and find products.



- Products of 2-digit by 2-digit multiplication problems can be estimated by replacing each factor with the closest multiple of ten.
- Products can be estimated by replacing factors with other numbers that are close and easy to multiply mentally.
- The expanded algorithm for multiplying with two-digit numbers is an extension of the expanded algorithm for multiplying with 1-digit numbers.
- The distributive property can be used to multiply two 2-digit numbers by breaking the computation down into 4 simpler products and adding the partial products together.
- The expanded algorithm for multiplication can be represented with arrays. In the algorithm, numbers are broken apart using place value, and the parts are used to find partial products.
- The standard algorithm for multiplying a 2-digit number by a multiple of 10 is an extension of the algorithm for multiplying multi-digit numbers by a 1-digit number.
- The standard multiplication algorithm involves breaking down the calculation into simpler ones using place value and properties of operations. Regrouping is used rather than showing all partial products.

## Essential Questions

### Topic 3

- How can you multiply by multiples of 10, 100, and 1,000?
- How can you estimate when you multiply?
- How can you use the distributive property to multiply?
- How can you multiply mentally?
- How can you record multiplication?
- What is one way to record multiplication?
- What is a common way to record multiplication?
- How can you multiply 4-digit numbers by 1-digit numbers?
- What are the steps to record multiplication?
- How can you represent a situation with a math model?

### Topic 4

- How can you use a model to multiply?
- How can you use the Distributive Property to multiply?
- How can you use multiplication to solve problems?
- How can you multiply by multiples of 10?



- How can you use an array or array or area model to multiply?
- How can you use rounding to estimate?
- How can you use compatible numbers to estimate?
- How can you multiply using an array?
- How can you use the Distributive Property to multiply?
- How can you record multiplication?
- What is a common way to record multiplication?
- How can we use multiplication to solve problems?
- How can you make sense if an persevere in solving problems with more than one step?

**Focus of Standards**

Student Outcomes	Skills	Assessments	Resources
<p><b>Topic 3</b></p> <ul style="list-style-type: none"> <li>• I can find the products of multiples of 10, 100 and 1,000 using mental math and place-value strategies.</li> <li>• I can use rounding to estimate products and check if my answer is reasonable.</li> <li>• I can use place value and a property of operations to multiply larger numbers.</li> <li>• I can use mental math strategies based on place value and properties of operations to multiply.</li> <li>• I can use tools and multiplication strategies to help find products.</li> <li>• I can use place value and partial products to help multiply.</li> <li>• I can use place-value strategies and algorithms to multiply 2-digit and 3-digit numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Solving problems</li> <li>• Understanding concepts</li> <li>• Reasoning</li> </ul>	<p><b>Formative</b></p> <ul style="list-style-type: none"> <li>• Diagnostic assessment</li> <li>• Study Island</li> <li>• Xtra Math</li> <li>• Exit tickets</li> <li>• Round Robin group work               <ul style="list-style-type: none"> <li>○ Open ended questions</li> <li>○ May/may not be game activity</li> </ul> </li> <li>• Analysis of student homework</li> <li>• Class polls               <ul style="list-style-type: none"> <li>○ Show of</li> </ul> </li> </ul>	<p><b>Envision Math 2.0</b></p> <p><b>Digital:</b></p> <ul style="list-style-type: none"> <li>• Student and Teacher eTexts</li> <li>• Interactive Math story</li> <li>• Home-School Connection</li> </ul> <p><b>Classroom Math Materials</b></p> <ul style="list-style-type: none"> <li>• Place-value blocks</li> <li>• Number lines</li> <li>• Money</li> <li>• Colored Pencils</li> </ul>



<ul style="list-style-type: none"> <li>• I can multiply greater numbers following the same steps as when multiplying smaller numbers.</li> <li>• I can use an algorithm to multiply numbers and estimate to check if the answer is reasonable.</li> <li>• I can apply the math I know to solve problems.</li> </ul> <p><b>Topic 4</b></p> <ul style="list-style-type: none"> <li>• I can use place-value strategies or patterns to multiply by multiples of 10.</li> <li>• I can use models and properties of operations to help multiply.</li> <li>• I can estimate products by rounding the factors.</li> <li>• I can use compatible numbers to estimate products when multiplying two 2-digit numbers.</li> <li>• I can use arrays, place value, partial products and properties of operations to help multiply.</li> <li>• I can use area models and properties of operations to multiply two 2-digit numbers.</li> <li>• I can use place value and partial products to multiply.</li> <li>• I can use area models and place-value strategies to multiply by multiples of 10.</li> <li>• I can use area models, place-value strategies, and properties of operations to help multiply 2-digit by 2-digit numbers.</li> <li>• I can use area models and algorithms to multiply 2-digit by 2-digit numbers.</li> <li>• I can make sense of problems and keep working if I get stuck.</li> </ul>		<p>hands: 1 finger ok, 2 fingers need help, 3 fingers lost</p> <ul style="list-style-type: none"> <li>• One thing I learned/One thing I need work on</li> </ul> <p><b>Summative</b></p> <ul style="list-style-type: none"> <li>• End topic tests</li> <li>• Group topic assessment</li> <li>• EOY test</li> <li>• SGO tests</li> </ul> <p><b>Benchmark</b></p> <ul style="list-style-type: none"> <li>• Diagnostic assessment</li> <li>• Pearson benchmark tests</li> <li>• PARCC test</li> </ul> <p><b>Alternative</b></p> <ul style="list-style-type: none"> <li>• Work paper from tests will also be graded for additional points if reasoning is clear and correct, even if answer is wrong</li> <li>• One on one conferencing</li> <li>• Oral presentation on math strand</li> </ul>	<ul style="list-style-type: none"> <li>• Scissors</li> <li>• Tape</li> <li>• ¼-inch grid</li> <li>• Index cards</li> <li>• Markers</li> </ul>
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		<ul style="list-style-type: none"> <li>• Weekly time capsule:summary of what was learned</li> <li>• Topic Pattern search: find the thread in topic</li> <li>• Crosswords with math vocab</li> </ul>	
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### Vocabulary

**Topic 3:** associative property of multiplication, numerical expression, distributive property, compensation, commutative property of multiplication, partial products

**Topic 4:** compatible numbers

### NJ Student Learning Standards: Math

#### Topic 3 and Topic 4

#### Number and Operations in Base Ten

**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.

#### Operations and Algebraic Thinking

**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.

#### 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

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.4.1. Refer to details and examples in a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.
- RI.4.1. Refer to details and examples in a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.
- RI.4.3. Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- RI.4.4. Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or



subject area.

## Science

- 4-PS3-1 Use evidence (eg., measurements, observations, patterns) to construct an explanation.
- 4-LS1-1 Construct an argument with evidence, data, and/or a model.
- 4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.
- ETS1.A: Defining Engineering Problems: Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (secondary to 4-PS3-4)

## Science and Engineering Practices

### Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in 3– 5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Identify the evidence that supports particular points in an explanation. (4-ESS1-1)

## 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”.



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





BOE Approved 8/18

# Cliffside Park Public Schools

# Grade 4

		Basic Skills  Intensive individual intervention
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**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/g04.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#/>