BOE Approved 8/18

Cliffside Park Public Schools Grade 5

Mathematics

Topic Name: Topic 3: Fluently Multiplying Multi-Digit Whole Numbers

Topic 4: Use Models and Strategies to Multiply Decimals

Resource: enVision Math 2.0, Pearson, 2016

Duration: October (carries into November)

Topic 3 (9 days to 2 weeks)

Topic 4 (12 days to 3 weeks)

Enduring Understandings

Topic 3

- Place-value patterns and mental math can be used to write the product of a whole number and a power of 10 by simply annexing the correct number of zeros to the whole number factor.
- Estimating products is a useful technique to quickly solve mathematical problems and understand the value of numbers used in real-world situations. There is more than one way to estimate a product.
- Multiply 3-digit numbers by 2-digit numbers by combining equal groups. Rounding to the nearest 10 or using compatible numbers help estimate with greater accuracy when multiplying with greater numbers.
- The process for multiplying factors with zeros is always the same regardless of the size of the numbers with zeros. Estimation is a strategy that can be used to check the final product for reasonableness.
- No matter the size of the numbers, the standard algorithm for multiplying whole numbers is always based on properties of operations and can be used to solve problems.
- Using a bar diagram and writing an equation are two strategies that can be used to solve multi-step problems.
- Good math thinkers use math to explain why they are right. They can talk about the math that others do, too.

Topic 4

- Patterns can be identified and used to multiply decimals by 10, 100, and 1,000.
- Representations such as symbols, diagrams, and words can help you multiply and communicate mathematical ideas.
- You can estimate the product of a decimal and a whole number by using compatible numbers and rounding. Comparing two strategies can help you decide which strategy provides an estimate that is closer to the exact answer.
- The standard multiplication algorithm used with decimals is an extension of the standard algorithm used when multiplying whole numbers. You can use models to represent multiplication problems and communicate ideas to others.
- The steps involved in multiplying a decimal by a whole number are similar to the steps used in multiplying two whole numbers. Place value in the factors determines the placement of the decimal point in the product.
- The process for multiplying a decimal by a decimal is similar to the process for multiplying whole numbers but the decimal point must be located in the correct place.
- The partial products process for multiplying whole numbers can be used for multiplying with decimals. You can use models and other strategies to find the answer and determine if it is reasonable.
- The Associative and Commutative Properties can be used to break apart and multiply two decimals.
- Thinking about the relative size of the decimals being multiplied can help you determine the relative size of the product, and the location of the decimal point in the product.
- Steps for multiplying decimals are similar to steps for multiplying whole numbers. Place value determines the placement of the decimal point in a product.
- Good math thinkers choose and apply math they know to show and solve problems from everyday life

Essential Questions
Topic 3

- What are the standard procedures for estimating and finding products of multi-digit numbers?
- How can you use patterns and mental math to multiply a whole number by powers of 10?
- How can we estimate products?
- How do you multiply 3-digit numbers by 2-digit numbers?
- How can you multiply with zeros?
- How can you use multiplication to solve problems?

- How can you use a bar diagram to solve multiplication problems?
- How can you critique the reasoning of others?

Topic 4

- What are the standard procedures for estimating and finding products involving decimals?
- What patterns can help you multiply decimals by powers of 10?
- What are some ways to estimate products with decimals?
- How can you model multiplying a decimal by a whole number?
- How do you multiply a decimal by a whole number?
- How can you model decimal multiplication?
- How can you multiply decimals using partial products?
- How can you use properties to multiply decimals?
- How can you use number sense to multiply decimals?
- How can you use the standard algorithm to multiply decimals?
- How can you model a problem with an equation?

Focus of Standards

Student Outcomes	Skills	Assessments	Resources
Topic 3 ● I can use mental math to multiply a whole number by a power of 10. ● I can estimate products using mental math. ● I can multiply 3-digit by 2-digit numbers. ● I can multiply numbers that have a zero in them. ● I can find a product of multi-digit numbers. ● I can solve word problems involving	● Solving addition, subtraction, multiplication and division problems ● Construct math arguments in order to solve addition and subtraction problems.	**Formative** ● Diagnostic assessment ● Study Island ● Kahoot! ● Exit tickets ● Round Robin group work ○ Open ended questions	**Texts** ● enVision math 2.0 **Digital** ● Student/Teacher eText ● Interactive math story ● Home-school connection

multiplication. ● I can critique the reasoning of others by using what I know about estimating products. ● I can multiply multi-digit numbers fluently. **Topic 4** ● I can find the product of a decimal number and a power of 10. ● I can use rounding and compatible numbers to estimate the product of a decimal and a whole number. ● I can use models to represent multiplying a decimal and a whole number. ● I can multiply a decimal by a whole number. ● I can use grids to multiply decimals. ● I can multiply two decimals using partial products. ● I can use properties to multiply decimals. ● I can use number sense to place the decimal point in a product. ● I can multiply decimals using the standard algorithm. ● I can apply the math I know to solve problems. ● I can multiply multi-digit numbers.	● Understanding concepts ● Reasoning	○ 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 **Alternative** ● Work paper from tests will also be graded for	**Classroom Math Materials** ● Place-value blocks ● Place-value chart ● Paper ● Red pencil ● Paper ● Index cards ● Decimals grids

		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
Topics 3 and 4
underestimate, overestimate, partial products, variable

NJ Student Learning Standards: Math
Numbers and Operations in Base Ten
5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.
5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

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

- RI.5.1. Quote accurately from a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.
- RI.5.4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- RI.5.7. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently

Science

- 5-ESS2-2. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
- 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. The performance expectations above were

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

9.1.8.B.7 Construct a budget to save for long-term, short-term, and charitable goals
9.1.8.C.2 Compare and contrast credit cards and debit cards and the advantages and disadvantages of using each.
9.1.8.C.5 Calculate the cost of borrowing various amounts of money using different types of credit (e.g., credit cards, installment loans, and mortgages) and compare the interest rates associated with each.

Cliffside Park Public Schools Grade 5

Integrated Differentiation/Accommodations/Modifications *(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/g05.pdf
New Jersey 21st Century Life and Careers 9.1 - https://www.state.nj.us/education/cccs/2014/career/91.pdf
New Jersey Science and Engineering Practices - https://www.state.nj.us/education/aps/cccs/science/resources/QR35.pdf
Pearson enVision 2.0 (2016) https://www.pearsonrealize.com/index.html#/