BOE Approved 8/18

# Cliffside Park Public Schools Grade 4

**Mathematics**

**Topic Name: Topic 12: Understand and Compare Decimals**

**Topic 13: Measurement: Find Equivalence in Units of Measure**

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

**Duration: March**

**Topic 12 (8 Days)**

**Topic 13 (9 Days)**

**Enduring Understandings**

**Topic 12**

- A decimal is another way to represent a fraction.
- Points on a number line can represent fractions and decimals. A fraction and a decimal tell the distance a point is from 0 on the number line.
- Place value can be used to compare decimals.
- Fractions with denominators of 10 can be written as equivalent fractions with denominators of 100. Fractions with like denominators can be added.
- Fractions and decimals can be used to represent amounts of money. Pictorial models and equations can represent problems involving money.
- Good math thinkers look for relationships in math to help solve problems.

**Topic 13**

- To convert from a larger unit of length to a smaller unit of length, multiply the number of larger units by the conversion factor, that is, the number of smaller units in each larger unit.
- To convert from a larger unit of capacity to a smaller unit of capacity, multiply the number of larger units by the conversion factor, that is, the number of smaller units in each larger unit.
- To convert from a larger unit of weight to a smaller unit of weight, multiply the number of larger units by the conversion factor, that is, the number of smaller units in each larger unit.

- To convert from a larger unit of capacity or mass to a smaller unit, multiply the number of larger units by the conversion factor, that is, the number of smaller units in each larger unit.
- Same problems can be solved by applying the formula for the perimeter of a rectangle or the formula for the area of a rectangle.
- Good math thinkers are careful about what they write and say, so their ideas about math are clear.

**Essential Questions**

**Topic 12**

- How can you write a fraction as a decimal?
- How can you locate points on a number line?
- How do you compare decimals?
- How can we add fractions with denominators of 10 and 100?
- How can we solve word problems involving money?
- How can we look for and make use of structure to solve problems?

**Topic 13**

- How can you convert from one unit to another?
- How can you convert from one unit of capacity to another?
- How can you convert from one unit of weight to another?
- How can you convert from one metric unit of length to another?
- How can you convert from one metric unit of capacity or mass to another?
- How can you use perimeter and area to solve problems?
- How can you be precise when solving math problems?

**Focus of Standards**

| Student Outcomes | Skills | Assessments | Resources |
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| **Topic 12**<br>• I can relate fractions and decimals.<br>• I can locate and describe fractions and | • Solving problems<br>• Understanding concepts<br>• Reasoning | **Formative**<br>• Diagnostic assessment<br>• Study Island<br>• Xtra Math<br>• Exit tickets | **Envision Math 2.0**<br>**Digital:**<br>• Student and Teacher eTexts |

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| decimals on number lines.<br>● I can compare decimals by reasoning about their size.<br>● I can use equivalence to add fractions with denominators of 10 and 100.<br>● I can use fractions or decimals to solve word problems involving money.<br>● I can use the structure of the place-value system to solve problems.<br>**Topic 13**<br>● I can convert customary units of length from one unit to another and recognize the relative size of different units.<br>● I can convert customary units of capacity from one unit to another and recognize the relative size of different units.<br>● I can convert customary units of weight from one unit to another and recognize the relative size of different units.<br>● I can convert metric units of length from one unit to another and recognize the relative size of different units.<br>● I can convert metric units of capacity from one unit to another and recognize the relative size of different units.<br>● I can find the unknown length or width of a rectangle using known area or perimeter.<br>● I can be precise when solving math problems. | | ● Round Robin group work<br>○ Open ended questions<br>○ May/may not be game activity<br>● Analysis of student homework<br>● Class polls<br>○ Show of hands: 1 finger ok, 2 fingers need help, 3 fingers lost<br>● One thing I learned/One thing I need work on<br><br>**Summative**<br>● End topic tests<br>● Group topic assessment<br>● EOY test<br>● SGO tests<br><br>**Benchmark**<br>● Diagnostic assessment<br>● Pearson benchmark tests<br>● PARCC test<br><br>**Alternative** | ● Interactive Math story<br>● Home-School Connection<br><br>**Classroom Math Materials**<br>● Decimal place value<br>● Decimal models<br>● 2-color counters<br>● Colored pencils<br>● Index cards<br>● Hundredths grids<br>● Money<br>● Inch ruler<br>● Yardstick<br>● Rice<br>● Three 1-quart containers,<br>● One 1-pint container<br>● One 1-cup container<br>● Centimeter ruler<br>● Meter stick<br>● Centimeter grid paper |

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

**Vocabulary**
**Topic 12:** tenth, hundredth decimal, decimal point
**Topic 13:** capacity, quart, gallon, cup, pint, fluid ounce, weight, ounce, pound, ton, millimeter, centimeter, meter, kilometer, mass, milliliter, liter, gram, milligram, kilogram, perimeter, area, formula

**NJ Student Learning Standards: Math**
**Topic 12**
**Numbers and Operations: Fractions**
**4.NF.C.5** Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.3 For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.
**4.NF.C.6** Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
**4.NF.C.7** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or
**Measurement and Data**

**4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

**Topic 13**
**Measurement and Data**
**4.MD.A.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36),
**4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
**4.MD.A.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

**Numbers and Operations: Fractions**
**4.NF.B.3d** Understand a fraction a/b with a > 1 as a sum of fractions 1/b. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
**4.NF.B.4c** Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?
**4.NF.C.5** Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.3 For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.

**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-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide. [4-PS3-1 Use evidence (eg., measurements, observations, patterns] to construct an explanation.
- 4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

**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.C.5 Determine the relationship among income, expense and interest
9.1.4.D.2 Explain what it means to “invest”.

| Integrated Differentiation/Accommodations/Modifications *(Alternate Modes of Instruction and Support)* | | |
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| **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.<br><br>Participate in inquiry and project-based learning units of study<br><br>Assigning roles within partnerships<br><br>Differentiated supports: content, process, product, environment | Native Language Translation (peer, online assistive technology, translation device, bilingual dictionary)<br><br>Pair visual prompts with verbal presentations<br><br>Front load and immerse students in literacy and language experiences related to content<br><br>Provide students with visual models, sentence stems, concrete objects, and hands-on materials.<br><br>Model procedures for life skills.<br><br>Collaboration between ELL and general education teacher to maximize learning | Review student individual educational plan and/or 504 plan.<br><br>Establish procedures for accommodations and modifications for assessments as per IEP/504.<br><br>Establish procedures for modification of classwork and homework as per IEP/504.<br><br>Modify classroom environment to support academic and physical needs of the students as per IEP/504.<br><br>Provide appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team.<br><br>Differentiation through content, process, product, environment<br><br>Provide Title I services to students not meeting academic standards in ELA and/or Math.<br><br>Provide instructional adaptations and interventions in the general education classroom. See RtI and ELL intervention in EnVision 2.0 resources.<br><br>Modify classroom environment to support student needs.<br><br>Differentiated instruction |

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| | | Basic Skills<br><br>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/g04.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#/