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## Mathematics

**Topic Name: Step Up to Grade 5**

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

**Duration: June**

### Enduring Understandings

#### Step Up to Grade 5

- Learners are engaged by connecting prior knowledge to new ideas.
- Digits within decimal numbers have place value.
- Place value can be used to compare and order whole numbers and decimals.
- Models and algorithms for adding/subtracting decimals are just an extension of models and algorithms for adding/subtracting whole numbers.
- The product of a decimal and whole number can be estimated by using compatible numbers and by rounding.
- Fractions with unlike denominators can be represented using equivalent fractions with like denominators.
- Fractions with unlike denominators can be added by replacing them with equivalent fractions that have common denominators.
- Fractions with unlike denominators can be subtracted by replacing them with equivalent fractions that have common denominators.
- Different methods can be used to multiply fractions and whole numbers.
- Visual fraction models can be used to represent and solve problems involving whole numbers divided by unit fractions.
- Volume can be measured by counting the number of cubic units needed to fill a three-dimensional figure.

### Essential Question



<p><b>Step Up to Grade 5</b></p> <ul style="list-style-type: none"> <li>• How can I apply what I learned to future math concepts?</li> </ul>
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**Focus of Standards**

Student Outcomes	Skills	Assessments	Resources
<p><b>Step Up to Grade 5</b></p> <ul style="list-style-type: none"> <li>• I can read and write decimals in different ways.</li> <li>• I can compare decimals to the thousandths.</li> <li>• I can model sums and differences of decimals.</li> <li>• I can use rounding and compatible numbers to estimate the product of a decimal and a whole number.</li> <li>• I can find common denominators for fractions with unlike denominators.</li> <li>• I can add fractions with unlike denominators.</li> <li>• I can subtract fractions with unlike denominators.</li> <li>• I can multiply fractions and whole numbers.</li> <li>• I can divide a whole number by a unit fraction.</li> <li>• I can find the volume of solid figures.</li> </ul>	<ul style="list-style-type: none"> <li>• Solving addition, subtraction, multiplication and division problems</li> <li>• Construct math arguments in order to solve addition and subtraction 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 hands: 1 finger ok, 2 fingers need help, 3 fingers lost</li> </ul> </li> <li>• One thing I learned/One thing I need work on</li> </ul>	<p><b>Texts</b></p> <ul style="list-style-type: none"> <li>• enVision math 2.0</li> </ul> <p><b>Digital</b></p> <ul style="list-style-type: none"> <li>• Student/Teacher eText</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>• Decimal place value</li> <li>• Decimal models</li> <li>• Fraction Strips</li> <li>• Unit cubes</li> </ul>



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		<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><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>	
<b>Vocabulary</b>			



**Step Up to Grade 5:** equivalent decimals, equivalent fractions, common denominator, volume, cubic unit, cube, rectangular prism, unit cube

**NJ Student Learning Standards: Math**  
**Number and Operations in Base Ten**

**5.NBT.A.3a** Read, write, and compare decimals to thousandths. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g.,  $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$ .

**5.NBT.A.3b** Read, write, and compare decimals to thousandths. Compare two decimals to thousandths based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.

**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.

**Numbers and Operations: Fractions**

**5.NF.A.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example,  $2/3 + 5/4 = 8/12 + 15/12 = 23/12$ . (In general,  $a/b + c/d = (ad + bc)/bd$ .)

**5.NF.A.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result  $2/5 + 1/2 = 3/7$ , by observing that  $3/7 < 1/2$ .

**5.NF.B.4a** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. Interpret the product  $(a/b) \times q$  as a parts of a partition of  $q$  into  $b$  equal parts; equivalently, as the result of a sequence of operations  $a \times q \div b$ . For example, use a visual fraction model to show  $(2/3) \times 4 = 8/3$ , and create a story context for this equation. Do the same with  $(2/3) \times (4/5) = 8/15$ . (In general,  $(a/b) \times (c/d) = ac/bd$ .)

**5.NF.B.7b** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for  $4 \div (1/5)$ , and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that  $4 \div (1/5) = 20$  because  $20 \times (1/5) = 4$ .

**5.NF.B.7c** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share  $1/2$  lb of chocolate equally? How many  $1/3$ -cup servings are in 2 cups of raisins?

**Measurement and Data**

**5.MD.C.3a** Recognize volume as an attribute of solid figures and understand concepts of volume measurement. A cube with side length 1 unit,



called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.

**5.MD.C.3b** Recognize volume as an attribute of solid figures and understand concepts of volume measurement. A solid figure which can be packed without gaps or overlaps using  $n$  unit cubes is said to have a volume of  $n$  cubic units.

**5.MD.C.4** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

#### **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**



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**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 the evidence that supports particular points in an explanation.

### 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



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- 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”.



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<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.</p> <p>Modify classroom environment to support student needs.</p> <p>Differentiated instruction</p>



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		Basic Skills  Intensive individual intervention
<b>Sources</b> New Jersey Student Learning Standards (2016) <a href="http://www.state.nj.us/education/cccs/2016/math/standards.pdf">http://www.state.nj.us/education/cccs/2016/math/standards.pdf</a> New Jersey Student Learning Standards: Technology (2014) - <a href="http://www.state.nj.us/education/cccs/2014/tech/8.pdf">http://www.state.nj.us/education/cccs/2014/tech/8.pdf</a> New Jersey Student Learning Standards: ELA (2014) - <a href="https://www.state.nj.us/education/cccs/2016/ela/g04.pdf">https://www.state.nj.us/education/cccs/2016/ela/g04.pdf</a> New Jersey Science and Engineering Practices - <a href="https://www.state.nj.us/education/aps/cccs/science/resources/QR35.pdf">https://www.state.nj.us/education/aps/cccs/science/resources/QR35.pdf</a> Pearson enVision 2.0 (2016) <a href="https://www.pearsonrealize.com/index.html#/">https://www.pearsonrealize.com/index.html#/</a>		