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# Cliffside Park Public Schools

# Grade 3

## Mathematics

**Topic Name: Topic 6: Connect Area to Multiplication and Division**

**Topic 7: Represent and Interpret Data**

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

**Duration: December**

**Topic 6 (9 days)**

**Topic 7 (7 days)**

## Enduring Understandings

### Topic 6

- The amount of space inside a shape is its area, and area can be found or estimated using unit squares.
- Area can be measured using nonstandard units, including unit squares of different sizes.
- Standard measurement units are used for consistency in finding and communicating measurements.
- The amount of space inside a region is its area, and area can be found by counting unit squares or by multiplying the side lengths.
- The areas of rectangles can be used to model the Distributive Property.
- The area of some irregular shapes can be found by dividing the original shape into rectangles, finding the area of each rectangle, and adding all of the areas.
- Good math thinkers look for relationships in math to help solve problems.

### Topic 7

- Certain types of graphs are appropriate for certain kinds of data. Picture graphs and bar graphs make it easy to compare data.
- The type of graph used is based on the data being presented. The key for a picture graph determines the number of pictures needed to represent the data.



BOE Approved 8/18

# Cliffside Park Public Schools

# Grade 3

- The type of graph used is based on the data being presented. In a scaled bar graph, the scale determines how long each bar needs to be to represent every number in the data set.
- Some problems can be solved by making, reading, and analyzing a graph.
- Good math thinkers are careful about what they write and say, so their ideas about math are clear.

## Essential Questions

### Topic 6

- How do you measure area?
- How can you measure area using non-standard units?
- How can you measure area using standard units of length?
- How can you find the area of a figure?
- How can the area of a rectangles represent the distributive property?
- How can you find the area of an irregular shape?
- How can you use structure to solve a word problem?
- How can area be measured and found?

### Topic 7

- How can you read a picture graph?
- How do you make a picture graph?
- How do you make a bar graph?
- How do you solve problems using graphs?
- How can you be precise when solving math problems?
- How can data be represented, interpreted, and analyzed?

## Focus of Standards

Student Outcomes	Skills	Assessments	Resources
<b>Topic 6</b> <ul style="list-style-type: none"> <li>• I can count unit squares to find the area of a shape.</li> <li>• I can measure the area of a shape using standard units.</li> </ul>	<ul style="list-style-type: none"> <li>• Solving addition, subtraction, multiplication, and division problems</li> </ul>	<b>Formative</b> <ul style="list-style-type: none"> <li>• Diagnostic assessment</li> <li>• Study Island</li> </ul>	<b>Texts</b> <ul style="list-style-type: none"> <li>• enVision math 2.0</li> </ul> <b>Digital</b>



<ul style="list-style-type: none"><li>• I can find the area of squares and rectangles by multiplying.</li><li>• I can use properties when multiplying to find the area of squares and rectangles.</li><li>• I can use properties to find the area of irregular shapes by breaking the shape into smaller parts.</li><li>• I can use the relationships between quantities to break a problem into simpler parts.</li></ul> <p><b>Topic 7</b></p> <ul style="list-style-type: none"><li>• I can use picture graphs and bar graphs to answer questions about data sets.</li><li>• I can make a picture graph to record information and answer questions about a data set.</li><li>• I can make a bar graph to record information and answer questions about a data set.</li><li>• I can use graphs and other tools to solve word problems.</li><li>• I can be precise when solving math problems.</li></ul>	<ul style="list-style-type: none"><li>• Understanding concepts</li><li>• Reasoning</li></ul>	<ul style="list-style-type: none"><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>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></ul>	<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>• Two-color tiles</li><li>• Area of shapes</li><li>• Centimeter grid paper</li><li>• Unlined white paper</li><li>• Colored pencils</li><li>• Rulers</li><li>• 1-inch grid paper</li><li>• Pieces of colored yarn (about 1 foot long)</li><li>• Scissors</li></ul>
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# Cliffside Park Public Schools

# Grade 3

		<ul style="list-style-type: none"> <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>	
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**Vocabulary**  
**Topic 6**  
 area, unit square, square unit, estimate  
**Topic 7**  
 data, scaled picture graph, scale, key, scaled bar graph, frequency table, survey

**NJ Student Learning Standards: Math**  
**Topic 6**  
**Measurement and Data**



**3.MD.C.5a** Recognize area as an attribute of plane figures and understand concepts of area measurement. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.

**3.MD.C.5b** Recognize area as an attribute of plane figures and understand concepts of area measurement. A plane figure which can be covered without gaps or overlaps by  $n$  unit squares is said to have an area of  $n$  square units.

**3.MD.C.6** Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

**3.MD.C.7a** Relate area to the operations of multiplication and addition. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

**3.MD.C.7b** Relate area to the operations of multiplication and addition. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

**3.MD.C.7c** Relate area to the operations of multiplication and addition. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths  $a$  and  $b + c$  is the sum of  $a \times b$  and  $a \times c$ . Use area models to represent the distributive property in mathematical reasoning.

**3.MD.C.7d** Relate area to the operations of multiplication and addition. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

### Topic 7

#### Measurement and Data

**3.MD.B.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.

#### Operations and Algebraic Thinking

**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.A.4** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations  $8 \times ? = 48$ ,  $5 = \square \div 3$ ,  $6 \times 6 = ?$ .

**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.

#### 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



BOE Approved 8/18

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## Grade 3

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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# Grade 3

<b>Integrated Differentiation/Accommodations/Modifications for Mathematics</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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# Grade 3

		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/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#/>