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Cliffside Park Public Schools

Grade 2

Mathematics

Topic Name: Topic 14: Graphs and Data, Topic 15: Shapes and Their Attributes, Step-Up To Third Grade

Resource: enVision Math 2.0, Pearson, 2016

Duration: April-June (26 days)

Enduring Understanding

Topic 14

- The lengths of objects can be organized in different ways. A line plot can be used as a visual representation of the relative lengths of objects.
- Different types of data can be displayed on a line plot. Line plots are useful for organizing large sets of data.
- Bar graphs can be used to organize and display data. The height, or length, or bars in a bar graph makes it easy to compare data.
- Picture graphs use a single symbol to show data. This makes it easy to compare two or more categories.
- Picture graphs and bar graphs are useful tools for comparing data and drawing conclusions.
- Good math thinkers know how to think about words and numbers to solve problems.

Topic 15

- Two-dimensional shapes can be classified and sorted based on their attributes.
- Polygons can be described by their number of sides and angles.
- Two-dimensional shapes can be defined and differentiated based on attributes. These attributes can be used to draw a specific two-dimensional shape.
- You can describe a cube by talking about its faces, edges, and vertices. Knowing these attributes helps you draw a cube.
- A rectangle can be divided into rows and columns of squares that are all the same size; you can count or add in different ways to find the total number of squares.
- A whole can have equal shares called halves, thirds, fourths. You can show halves, thirds, and fourths of the same whole in different ways.
- You can divide a whole into equal shares in different ways. Equal shares of the same whole do not have to have the same shape.



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- Good math thinkers look for things that repeat in a problem. They use what they learn from one problem to help them solve other problems.

Step Up to Grade 3

- Repeated addition that involves joining equal groups is one way to think about multiplication.
- An array involves displaying objects in equal rows and columns, and is one way to think about multiplication.
- Sharing involves separating equal groups and is one way to think about division.
- Repeated subtraction involves separating equal groups and is one way to think about division.
- Answers to simpler problems are added together to determine the final sum.
- Models and the standard algorithm for adding 3-digit numbers are just an extension to the hundreds place of the models and standard algorithm for adding 2-digit numbers.
- Answers to the simpler problems are used to find the final difference.
- Models and the standard algorithm for subtracting 3-digit numbers are just an extension to the hundreds place of the models and standard algorithm for subtracting 2-digit numbers.
- A fraction describes the division of a whole (region, set, segment) into equal parts.

Essential Questions

Topic 14

- How can line plots, bar graphs, and picture graphs be used to show data and answer questions?

Topic 15

- How can shapes be described, compared, and broken into parts?

Step-Up to Grade 3

- How can I use what I learned to future math concepts?

Focus of Standards



Student Outcomes	Skills	Assessments	Resources
<p>Topic 14</p> <ul style="list-style-type: none"> I can measure the lengths of objects, then make a line plot to organize the data. I can measure the lengths of objects, then make a line plot to organize the data. I can draw bar graphs and use them to solve problems. I can draw picture graphs and use them to solve problems. I can draw conclusions from graphs. I can reason about data in bar graphs and picture graphs to write and solve problems. <p>Topic 15</p> <ul style="list-style-type: none"> I can recognize shapes by how many they look. I can describe plane shapes by how they look. I can draw polygon shapes. I can draw cubes and describe how they look. I can divide rectangles into equal squares. I can divide circles and rectangles into halves, thirds, and fourths. I can make equal shares that do not have the same shape. I can use repeated reasoning to divide rectangles into rows and columns and to create designs with equal shares. <p>Step Up to Grade 3</p> <ul style="list-style-type: none"> I can use addition or multiplication to join equal groups. I can use arrays to show and solve multiplication problems. 	<ul style="list-style-type: none"> Solving problems Understanding concepts Reasoning 	<p>Formative</p> <ul style="list-style-type: none"> Diagnostic assessment Exit tickets Round robin group work Analysis of homework Class polls <ul style="list-style-type: none"> Show of hands: 1 for all set, 2 for just ok, 3 for help One thing I learned/One thing I need work on <p>Summative</p> <ul style="list-style-type: none"> End topic tests Post group topic EOY tests SGO tests <p>Benchmark</p> <ul style="list-style-type: none"> Diagnostic Assessment Pearson benchmark tests <p>Alternative</p> <ul style="list-style-type: none"> Math diagnosis and intervention system 2.0 Reteaching Set Online Learning <ul style="list-style-type: none"> Games Higher Order Thinking Problems 	<p>Envision Math 2.0 Digital:</p> <ul style="list-style-type: none"> <i>Student and Teacher eTexts</i> <i>Interactive Math story</i> <i>Home-School Connection</i> <p>Classroom Math Materials</p> <ul style="list-style-type: none"> Inch Rulers Blank Table and Line Plot Classroom Objects Blank Table and Bar Graph Blank Bar Graphs Index Cards Centimeter Rulers Blank Tally Chart and Picture Graph Rulers Plane Shapes Toothpicks Centimeter Grid Paper Straws of different lengths Counting Cubes Solid Figures



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- I can use objects or pictures to show how objects can be divided into equal groups.
- I can use repeated subtraction to understand and solve division problems.
- I can add numbers using partial sums.
- I can add 3-digit numbers using models, drawings, and place-value.
- I can subtract numbers using partial differences.
- I can subtract 3-digit numbers using models, drawings, and place value.
- I can read and write a unit fraction.
- I can show and name part of a region.

- Leveled homework and practice
- Center games
- One on one conferencing

- $\frac{3}{4}$ -Inch Squares
- $\frac{3}{4}$ - Inch Grid Paper
- Halves, Thirds, and Fourths
- Equal Shares
- Different Shapes
- Sticky Notes

Vocabulary

Topic 14

data, plot line, bar graph, symbol, picture graph

Topic 15

vertices, quadrilaterals, pentagons, hexagons, polygon, angle, right angle, cube, face, edge, equal shares, halves, thirds, fourths

Step Up to Grade 3

multiplication, factors, product, equations, unknown, rows, columns, division, regroup, fraction, unit fraction, numerator, denominator

NJSLS Math Standards

Operations and Algebraic Thinking

2.OA.A.1-Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

2.OA.C.4-Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

3.OA.A.1-Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe and/or represent a context in which a total number of objects can be expressed as 5×7 .*

3.OA.A.2-Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example,*



describe and/or represent a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.

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.

Numbers and Operations in Base Ten

3.NBT.A.2-Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Measurement and Data

2.MD.A.1-Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

2.MD.D.9-Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

2.MD.D.10-Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.

Geometry

2.G.A.1-Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.⁵ Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

2.G.A.2-Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

2.G.A.3-Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

3.G.A.2- Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as $1/4$ of the area of the shape.*

Number and Operations-Fractions

3.NF.A.1-Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.

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.



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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

E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.

8.2 Technology Education, Engineering, Design, and Computational Thinking

E. Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

8.2.2.E.1 List and demonstrate the steps to an everyday task.

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

- RI.2.1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.



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- RI.2.3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
- RI.2.4. Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
- RI.2.5. Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

Science

- 2-LS4-1 Scientists look for patterns and order when making observations about the world.
- 2-ESS2-1 Compare multiple solutions to a problem.

NJ: 2014 SLS: 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”.



Integrated Differentiation/Accommodations/Modifications <i>(Alternate Modes of Instruction and Support)</i>		
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)
<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
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/g02.pdf New Jersey Science and Engineering Practices - https://www.state.nj.us/education/aps/cccs/science/resources/QRk2.pdf Pearson enVision 2.0 (2016) https://www.pearsonrealize.com/index.html#/		