BOE Approved 8/18

Cliffside Park Public Schools Grade 4

Mathematics

Topic Name: Topic 14: Algebra: Generate and Analyze Patterns

Topic 15: Geometric Measurement: Understand Concepts of Angles and Angle Measurement

Resource: enVision Math 2.0, Pearson, 2016

Duration: April

Topic 14: (6 Days)

Topic 15: (8 Days)

Enduring Understandings

Topic 14

- Rules can be used to create or extend number sequences that form a pattern. Those patterns sometimes have features not described by the rule.
- Rules can be used to create or extend patterns in tables. Patterns sometimes have features not described by the rule.
- It is possible to predict a shape in a repeating pattern of shapes.
- Good math thinkers look for relationships in math to help solve problems.

Topic 15

- Line segments and rays are sets of points that describe parts of line and angles. Angles are classified by their measure.
- The measure of an angle depends upon the fraction of a circle that the angle turns through.
- The unit for measuring angles is 1", the unit angle.
- The unit for measuring angles is 1', the unit angle. A protractor can be used to measure angles.
- Angle measures can be added and subtracted.
- Good math thinkers know how to pick the right tools to solve math problems.

Essential Questions
Topic 14

- How can you use a rule to continue a pattern?
- How can you use a table to extend a pattern?
- How can you use a repeating pattern to predict a shape?

Topic 15

- What are some common geometric terms?
- How can you measure angles?

Focus of Standards

Student Outcomes	**Skills**	**Assessments**	**Resources**
Topic 14 ● I can use a rule to create and extend a number pattern and identify features of the number pattern not described by the rule. ● I can use a rule to create and extend a number pattern, identify features of the number pattern and use the number pattern to solve a problem. ● I can use a rule to predict a number or shape in a pattern. ● I can use patterns to help solve problems. **Topic 15** ● I can recognize and draw lines, rays and angles with different measures. ● I can use what I know about fractions to measure angles. ● I can use angles I know to measure angles I do not know. ● I can use a protractor to measure and draw angles.	● Solving problems ● Understanding concepts ● Reasoning	**Formative** ● Diagnostic assessment ● Study Island ● Xtra Math ● Exit tickets ● Round Robin group work ○ Open ended questions ○ 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	**Envision Math 2.0** **Digital:** ● Student and Teacher eTexts ● Interactive Math story ● Home-School Connection **Classroom Math Materials** ● Pattern blocks ● Clock face ● Pattern blocks ● Protractors ● Straightedge ● Index cards ● Scissors ● Centimeter grid paper

• I can use addition and subtraction to solve problems with unknown angle measures. • I can use appropriate tools strategically to solve problems.		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 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	• Centimeter ruler • Meter stick • Inch ruler • Yardstick • Pattern blocks

		vocab	

Vocabulary
Topic 14: rule, repeating pattern
Topic 15: point, line, line segment, ray, right angle, acute angle, obtuse angle, straight angle, degree, unit angle, angle measure, protractor, vertex

NJ Student Learning Standards: Math Standards
Topic 14
Operations and Algebraic Thinking
4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way

Topic 15
Measurement and Data
4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint
4.MD.C.5a Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.
4.MD.C.5b Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: An angle that turns through n one-degree angles is said to have an angle measure of n degrees.
4.MD.C.6 Measure angles in whole number degrees using a protractor. Sketch angles of specified measure.
4.MD.C.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.
Geometry
4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

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-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.

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”.

Cliffside Park Public Schools Grade 4

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/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#/