

Englewood Public School District

Mathematics

Grade 8

Fourth Marking Period

Unit - Fluency and In-Depth Review

Overview: During this unit, students will learn about statistics and fluency and in-depth review of grade 8 standards.

Time Frame: Chapter 10 - 20 days, Fluency and In-depth review – 15 days

Enduring Understandings:

A line of best fit can model the linear association of bivariate quantitative data.

A two-way table displays the relative frequencies of categorical data.

Essential Questions:

How can scatter plots be constructed and used to interpret data?

How is the line-of-best-fit used to assess data?

How can the equations for the line-of-best-fit be used to solve mathematical and real-world problems?

How can a two-way table be constructed and interpreted?

| Standards | Topics and Objectives | Activities | Resources | Assessments |
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| Chapter 10 | | | | |
| 8.SP.A.1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. | Topics Scatter plots, modeling linear associations, and two-way tables. Twenty-First Century Themes and Skills include: <ul style="list-style-type: none"> • <u>Creativity and Innovation</u> • <u>Critical Thinking and Problem Solving</u> • <u>Communication and Collaboration</u> | <u>8.SP.A.1 Texting and Grades 1 (8.1.8.D.5)</u> <u>8.SP.A.2 Animal Brains</u> <u>8.SP.A.3 US Airports</u> <u>8.SP.A.4 What's Your Favorite Subject</u> <u>8.SP.A.4 Music and Sports</u> Math Playground http://www.mathplayground.com | SE-8B: 172-215 My HRW - Online access to all Math in Focus materials listed above and Virtual Manipulatives Technology Resources <ul style="list-style-type: none"> • Math in Focus eBooks • Math in Focus Teacher Resources CD • Interactive Whiteboard lessons | Unit 4 Benchmark Assessment: Exact Path Summative Assessments: Math in Focus Assessments SE/TE: pp. 210, 211–215 Assessments Course 3: Chapter 10 |
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| <p>quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.</p> <p>8.SP.A.3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. <i>For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.</i></p> <p>8.SP.A.4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. <i>For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is</i></p> | <p>Objectives</p> <p>The students will be able to:</p> <ul style="list-style-type: none"> • Draw a scatter plot given two sets of quantitative data. • Identify patterns of association between two sets of quantitative data. • Identify outliers in a scatter plot. • Understand a line of best fit. • Write a linear equation for a line of best fit. • Use an equation for a line of best fit. • Read data from a two-way table. • Construct and interpret a two-way table. • Convert data to relative frequencies in a two-way table. • Reinforce, consolidate and extend chapter skills and concepts. • Reinforce and extend skills and concepts covered in fluency and in-depth standards. | <p>com/</p> <p>Math Fact Practice http://www.playkidsgames.com/games/mathfact/mathfact.htm</p> <p>Grades 6-8 Math Fluency Support https://www.engageny.org/resource/mathematics-fluency-support-grades-6-8</p> <p>Brain Genie http://braingenie.ck12.org/</p> <p>Math Game Time http://www.mathgametime.com/</p> <p>Everything you need to know about math journals: https://thecornerstoneforteachers.com/math-journals/ (NJSLSA.R1, NJSLSA.W2, NJSLSA.L1)</p> <p>Shake it up with scatterplots lesson plan: https://www.scholastic.com/teachers/sponsored-content/unexpected-math/17-18/shake-it-up-with-scatterplots/ (CRP2, CRP6, CRP8)</p> <p>Opening weekend – Avengers, Infinity war –</p> | <ul style="list-style-type: none"> • Virtual Manipulatives • Online Professional Development Videos <p>North Carolina Dept of Ed. Wikispaces: http://maccss.ncdpi.wikispaces.net/Middle+School</p> <p>Math Goodies – Math Lessons http://www.mathgoodies.com/</p> <p>Standards Solution Lessons:</p> <ul style="list-style-type: none"> • PARCC Lesson 18: Practice Type I items – Statistics and Probabilities domain • CCSS Lesson Plan: Interpreting Linear Relationships in Context • CCSS Lesson Plan: Linear Association • CCSS Lesson Plan: Patterns in Scatter Plots • CCSS Lesson Plan: It's Playtime: Calculating Relative Frequencies • CCSS Prescriptive Lesson Plan: Describing Patterns in Bivariate Data • CCSS Prescriptive Lesson Plan: Using Data to Make Predictions <p>Worksheets for every topic: http://kutasoftware.com/freeipa.html (CRP2, CRP4, CRP8)</p> <p>8th grade assessments,</p> | <p>Test A pp. 170–174; Test B pp. 175–178</p> <p>ExamView Assessment Suite – Test and Practice Generator</p> <p>Formative Assessments: Math journal (NJSLSA.R1, NJSLSA.W2, NJSLSA.L1)</p> <p>Multiple choice / short answer assessments (CRP8)</p> <p>Mini quizzes – assess just one topic, or what was done within 1 or 2 days (CRP8)</p> <p>Alternative Assessments: Learning centers: each learning center focuses on a different type of problem (CRP8)(9.2.8.B.3)</p> <p>Create posters illustrating the main objectives of the unit (RH.6-8.7)</p> <p>Create a dictionary defining and illustrating vocabulary terms (RH.6-8.7)</p> |
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there evidence that those who have a curfew also tend to have chores?

Mathematical Practices
MP.1, MP.2, MP.4,

scatter plot activity:

<https://www.yummymath.com/2018/opening-weekend-avengers-infinity-war/>
(CRP2, CRP6, CRP8)

Scatter plot game:

<https://www.mathgames.com/skill/8.51-scatter-plots>
(8.1.8.A.1)

Line of best fit activities:

<https://www.teacherspayteachers.com/Browse/Search:line%20of%20best%20fit%20activity/Grade-Level/Eighth/Price-Range/Free>
(CRP2, CRP6, CRP8)

Will college be affordable line of best fit activity:

<https://www.yummymath.com/2016/will-college-be-affordable/>
(CRP2, CRP6, CRP8, 9.1.8.B.7, 9.1.8.C.5)

Two way table talk – two way frequency tables:

<https://betterlesson.com/lesson/638561/two-way-table-talk-day-1-of-2>
(NJSLA.W2)

Two way table talk #2 – two way frequency tables:

<https://betterlesson.com/lesson/639333/two-way-table->

interactive, videos, games, lessons, homework:

https://www.opened.com/search?area=mathematics&grade=8&offset=0&resource_type=interactive-assessment
(CRP2, CRP4, CRP8, 8.1.8.A.1)

8th grade common core worksheets:

<https://www.ixl.com/math/grade-8>
(CRP2, CRP4, CRP8)

Khan Academy – videos, lessons, assessments

www.khanacademy.org
(8.1.8.A.1)

[talk-day-2-of-2?from=mtp_lesson](#)
(NJSLSA.W2)

Additional texts:
www.newsela.com
www.readworks.org
www.commonlit.org

Review of Gr. 8 Standards: In-Depth Focus

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| <p>Fluency:</p> <p>8.EE.C.7. Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.</p> <p>8.G.C.9. Know the formulas for the volumes of cones, cylinders,</p> | <p>Fluency:</p> <p>8.EE.7 Students have been working informally with one-variable linear equations since as early as kindergarten. This important line of development culminates in grade 8 with the solution of general one-variable linear equations, including cases with infinitely many solutions or no solutions as well as cases requiring algebraic manipulation using properties of operations. Coefficients and constants in these equations may be any rational numbers.</p> <p>8.G.9 When students learn to solve problems involving volumes of cones, cylinders, and spheres — together with their previous grade 7 work in angle measure, area, surface area and volume (7.G.4–6) — they will have acquired a well-</p> | <p>Math Playground http://www.mathplayground.com/</p> <p>Math Fact Practice http://www.playkidsgames.com/games/mathfact/mathfact.htm</p> <p>Grades 6-8 Math Fluency Support https://www.engageny.org/resource/mathematics-fluency-support-grades-6-8</p> <p>Brain Genie http://braingenie.ck12.org/</p> <p>Math Game Time http://www.mathgametime.com/</p> <p>Everything you need to know about math journals:</p> | <p>North Carolina Dept of Ed. Wikispaces: http://maccss.ncdpi.wikispaces.net/Middle+School</p> <p>Math Goodies – Math Lessons http://www.mathgoodies.com/</p> <p>Worksheets for every topic: http://kutasoftware.com/freeipa.html (CRP2, CRP4, CRP8)</p> <p>8th grade assessments, interactive, videos, games, lessons, homework: https://www.opened.com/search?area=mathematics&grade=8&offset=0&resource_type=interactive-assessment (CRP2, CRP4, CRP8, 8.1.8.A.1)</p> <p>8th grade common core</p> | <p>Summative Assessments:</p> <p>Math in Focus Assessments</p> <p>ExamView Assessment Suite – Test and Practice Generator</p> <p>Formative Assessments:</p> <p>Math journal (NJSLSA.R1, NJSLSA.W2, NJSLSA.L1)</p> <p>Multiple choice / short answer assessments (CRP8)</p> <p>Mini quizzes – assess just one topic, or what was done within 1 or 2 days (CRP8)</p> <p>Alternative Assessments:</p> |
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and spheres and use them to solve real-world and mathematical problems.

In-Depth Focus:

8.EE.B.5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*

8.EE.C.7. Solve linear equations in one variable.

a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).

b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

8.EE.C.8. Analyze and solve

developed set of geometric measurement skills. These skills, along with proportional reasoning (7.RP) and multistep numerical problem solving (7.EE.3), can be combined and used in flexible ways as part of modeling during high school — not to mention after high school for college and careers.

Examples of Opportunities for In-Depth Focus:

8.EE.5 When students work toward meeting this standard, they build on grades 6–7 work with proportions and position themselves for grade 8 work with functions and the equation of a line.

8.EE.7 This is a culminating standard for solving one-variable linear equations.

8.EE.8 When students work toward meeting this standard, they build on what they know about two-variable linear equations, and they enlarge the varieties of real-world and mathematical problems they can solve.

8.F.2 Work toward meeting this standard repositions previous work with tables and graphs in the new context of input/output rules.

8.G.7 The Pythagorean theorem

<https://thecornerstoneforteachers.com/math-journals/> (NJSLSA.R1, NJSLSA.W2, NJSLSA.L1)

Additional texts:
www.newsela.com
www.readworks.org
www.commonlit.org

worksheets:
<https://www.ixl.com/math/grade-8>
(CRP2, CRP4, CRP8)

Khan Academy – videos, lessons, assessments
www.khanacademy.org
(8.1.8.A.1)

Learning centers: each learning center focuses on a different type of problem (CRP8)(9.2.8.B.3)

Create posters illustrating the main objectives of the unit (RH.6-8.7)

Create a dictionary defining and illustrating vocabulary terms (RH.6-8.7)

pairs of simultaneous linear equations.

a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.*

c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

8.F.A.2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of*

is useful in practical problems, relates to grade-level work in irrational numbers and plays an important role mathematically in coordinate geometry in high school.

change.

8.G.B.7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

Key Vocabulary:

Chapter 10:

Scatter plot, quantitative data, association, bivariate data, clustering, line of best fit, interpolate, extrapolate

NJ Learning Standards Vocabulary:

8.SP.A.1, 2, 3, & 4

Investigate patterns of association in bivariate data.

bivariate data, scatter plot, linear model, clustering, linear association, non-linear association, outliers, positive association, negative association, categorical data, two-way table, relative frequency

Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered. Additional staff should be included so all students can fully participate in the standards associated with this curriculum.

ELL/ESL students: Students will be supported according to the recommendations for “can do’s” as outlined by WIDA - https://www.wida.us/standards/CAN_DOs/

Students at risk of school failure: Formative and summative data will be used to monitor student success at first signs of failure. Student work will be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations. More time will be made available with a certified instructor to aid students in reaching the standards.

Gifted and Talented Students: Students excelling in mastery of standards will be challenged with complex, high level challenges.

English Language Learners:

Special Education:

At-Risk:

Gifted and Talented:

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| <ul style="list-style-type: none"> • Teaching modeling • Peer modeling • Word walls • Give directions in small steps and in as few words as possible • Provide visual aids • Group similar problems together • Repeat directions when necessary • Provide a vocabulary list with definitions • Use of alge-tiles when needed • Use of number line when needed | <ul style="list-style-type: none"> • Utilize modifications & accommodations delineated in the students' IEP • Work with paraprofessional • Work with a partner • Shorten assignments to focus on mastery or key concepts • Maintain adequate space between desks • Keep workspaces clear of unrelated materials • Provide fewer problems to attain passing grades • Tape a number line to the student's desk • Create a math journal that they can use during class, on assignments and (if teacher allows) on assessments • Provide extra time to complete a task when needed • Provide definitions of different graphs / charts with illustrations • Allow tests to be taken in a separate room • Allow students to use a calculator when appropriate • Divide test into small sections of similar questions or problems • Use of alge-tiles when needed • Use of number line when | <ul style="list-style-type: none"> • Use visual demonstrations, illustrations and models • Give directions / instructions verbally and in simple written format • Peer support • Increased one – on – one time • Teachers may modify instructions by modeling what the student is expected to do • Instructions may be printed out in large print and hung up for the students to see during the time of the lesson • Review behavior expectations and make adjustments • Create a math journal that they can use during class, on assignments and (if teacher allows) on assessments • Allow students to complete an independent project as an alternative test • Use of alge-tiles when needed • Use of number line when needed | <ul style="list-style-type: none"> • Inquiry based instruction • Independent study • Higher order thinking skills • Adjusting the pace of the lessons • Real world scenarios • Student driven instruction • Allow students to complete an independent project as an alternative test |
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Interdisciplinary Connections: ELA

NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content

W.8.1: Write arguments to support claims with clear reasons and relevant evidence.

W.8.10: Write routinely over extended time frames (time for research, reflection, metacognition/self correction, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

NJSLSA.L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking

Integration of Technology Standards NJSLS:

8.1.8.A.1: Demonstrate knowledge of a real world problem using digital tools.

8.1.8.D.5 Understand appropriate uses for social media and the negative consequences of misuse.

21st Century Standards

9.1.8.B.7 Construct a budget to save for long-term, short-term, and charitable goals.

9.1.8.C.5 Calculate the cost of borrowing various amounts of money using different types of credit (e.g., credit cards, installment loans, mortgages).

9.2.8.B.3: Evaluate communication, collaboration and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

Career Ready Practices:

CRP2: Apply appropriate academic and technical skills.

CRP4: Communicate clearly and effectively and with reason.

CRP6: Demonstrate creativity and innovation.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11: Use technology to enhance productivity.

History / Social Studies:

RH.6-8.7 Integrate visual information (e.g., in charts, graphs, photographs, videos or maps) with other information in print and digital texts

Major **Supporting** **Additional** (Identified by PARCC Model Content Frameworks)