

# Unit 05: Graphing and Inequalities (Chapter 7)

## Weeks 25-30

Content Area: **Template**  
Course(s):  
Time Period: **Full Year**  
Length: **FY**  
Status: **Published**

### Standards Alignment

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### New Jersey Student Learning Standards

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MA.A-CED	Creating Equations
MA.A-CED.A	Create equations that describe numbers or relationships
MA.A-CED.A.1	Create equations and inequalities in one variable and use them to solve problems.
MA.A-CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
MA.A-CED.A.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.
MA.A-REI	Reasoning with Equations and Inequalities
MA.A-REI.C	Solve systems of equations
MA.A-REI.C.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
MA.A-REI.D	Represent and solve equations and inequalities graphically
MA.A-REI.D.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
MA.A-REI.D.11	Explain why the $x$ -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.
MA.A-REI.D.12	Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

### Integration of Career Readiness, Life Literacies and Key Skills

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CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP3	Attend to personal health and financial well-being.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.

CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP10	Plan education and career paths aligned to personal goals.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

## **Technology / Integration of Computer Science and Design Thinking**

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TECH.8.1.12	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.
TECH.8.1.12.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.12.A.4	Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results.

## **Interdisciplinary Connections: NJSLs for ELA, Social Studies, Science and/or Math Section**

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### **Capacities of the Literate Individual**

#### **Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, & Language**

They demonstrate independence.

They build strong content knowledge.

They comprehend as well as critique.

They value evidence.

They use technology and digital media strategically and capably.

LA.K-12.NJSLSA.W	Writing
LA.K-12.NJSLSA.W6	Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
LA.K-12.NJSLSA.SL	Speaking and Listening
	Presentation of Knowledge and Ideas
LA.K-12.NJSLSA.SL4	Present information, findings, and supporting evidence such that listeners can follow the

	line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
LA.K-12.NJSLSA.SL5	Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
LA.K-12.NJSLSA.L	Language
LA.K-12.NJSLSA.L6	Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.
LA.W.11-12.6	Use technology, including the Internet, to produce, share, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
LA.SL.11-12.4	Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.
LA.SL.11-12.5	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
LA.L.11-12.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

## **Integration of Diversity, Equity and Inclusion; Climate Change; Informational and Media Literacy** **New Section**

see Crosswalks

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## **21st Century Life and Careers**

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### **Stage I: Desired Results**

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### **Transfer/Overview/Rationale**

Transfer / Overview / Rationale
<p>Unit Rationale</p> <p>The purpose of this unit...</p> <p><b>Technology is used to collect data and produce a graph, however, it is necessary to be able to understand or interpret the graph and use it to make predictions in all aspect of the world. A good graph shows clear facts</b></p>

and will be visually accurate, presenting data in a quick way, lifting out the most important facts and will be easily remembered.

## Meaning

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## Essential Questions

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Essential Questions

- How does identifying the x and y intercepts help to graph an equation or inequality?
- When is it beneficial to graph an equation in standard form versus using the point-slope form?
- Why is comparing the slope and y-intercept of two lines so important in determining their relationship?
- Why are linear inequalities useful?

## Enduring Understanding/Indicators of Understanding

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Enduring Understanding/Indicators of Understanding

- The relationship between two lines can be determined by comparing their slopes and y-intercepts.
- Ratios can be used to show a relationship between changing quantities, such as vertical and horizontal

change.

-There are multiple solutions that satisfy a graph of an inequality.

## **Acquisition (Student Learning Objectives)**

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### **Knowledge**

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Knowledge  
Students will know...

--When an inequality is graphed on a coordinate plane, the full range of possible solutions is represented as a shaded area on the plane.

-How to determine if a given point on a graph is a solution of a linear equation.

-Two lines that are parallel will never have the same solution and two lines that are parallel will only have one solution.

### **Skills**

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Skills  
Student will be skilled at ...

-Given the slope and y-intercept, write the equation of a line or inequality

- Use the slope and y intercept to graph a linear equation
- Evaluating the slope of a line parallel or perpendicular to a given line
- Given a point and the slope, generating equation of the line
- Given two points, calculate the equation of the line
- Predicting the equation of a line from given geometric conditions
- Graphing a linear inequality in two variables
- Solving an application using a linear inequality in two variables
- Determining if the boundary line is solid or dotted
- Establishing the shaded region

### **Stage 3: Learning Plan**

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### **Resource and Mentor Texts**

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Resources and Mentor Texts

Beginning Algebra 8th Edition

**Kahoot.com**

**IXL.com**

**YayMath.com**

**Kutasoftware.com**

**Google Classroom**

**Desmos.com**

**Graphing Calculator**

## **Formative Assessment Strategies**

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Formative Assessment Strategies

**-Daily Warm up problems**

**-Exit Tickets**

**-Error Analysis**

**-Chapter section quizzes**

-IXL Quizzes

-Kahoot online review games

-Bellringers

-Homework/Classwork

## **Learning Activities/Unit of Study**

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Learning Activities/Unit of Study

-Lecture

-Stations - (Small group instruction, skills practice, online games, board work)

-Board/White Board Work - (solve problems/practice skills at board (360 degree instruction), or at seat with individual white boards)

-Technology Implementation - (Flipped learning videos to refresh skills, videos to introduce skills, prodigygame.com, Kahoot to reinforce/assess skills, online games to practice skills, utilize internet to research, review and understand skills \*See resources)

-Complete problem of the day - (POD - warm-up from bellringers packet)

-Review/Check Homework - (group check, partner check, whiteboard check)

-Work together to understand and practice the skill - partner work/larger group work to read lesson, and practice skills through "On Your Own" problems incorporated throughout each lesson

-Review and practice skills using a variety of materials - (text, workbook, chromebook, games, activities, discussion)

-Error Analysis

Student led instruction

Thumbs up/down/sideways - quick formative assessment to gauge students level of understanding

Exit Ticket - quick formative assessment to gauge students level of understanding

## **Modifications and/or Accommodations**

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### **Suggested Modifications (ELL, Sp. Ed, Gifted, At-risk of Failure)**

#### **English Language Learners**

Native language support: The teacher provides auditory or written content to students in their native language.

Adjusted Speech: The teacher changes speech patterns to increase student comprehension. This could include facing the students, paraphrasing, clearly indicating the most important ideas, and speaking more slowly.

Visuals: The teacher uses graphics, pictures, visuals, and manipulatives. This helps ELL students better understand and comprehend the subjects at hand.

Front-Loading Vocabulary: The teacher front loads vocabulary. This means providing students with a list of important vocabulary words they will need to know for a book, lesson, etc. prior to the lesson being taught. Including pictures to go with the vocabulary words is also very beneficial for the students.

#### **Special Education Students**

Chunking: The teacher presents information in a way that makes it easy for students to understand and remember. Chunking is based on the presumption that our working memory is easily overloaded by excessive detail. The best way to deliver information is to organize it into meaningful

units. Because students with special needs get overloaded easily, chunking is an effective strategy to use with them.

Checking for Understanding: It is important to constantly check for understanding, especially for students who have accommodations. Teachers want to make sure students understand the concepts being covered in a way that makes sense to them.

Extra time: The teacher provides students with special needs extra time to complete work or answer questions. It is important to give students enough time to process their thoughts.

Oral Reading: The teacher will read work orally to students. Class work such as tests and literature circles may need to be read aloud to the student.

Timers: The teacher will use timers as an instructional tool. The use of timers is beneficial for students who have trouble completing tasks. Timers can be helpful so the student is aware of how much time they have to complete an assignment.

## Students with 504 Plans

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## Gifted & Talented Strategies

Extensions/Enrichments: Teachers will provide gifted and talented students with extension/enrichment projects. Students will be challenged to further their understanding, to apply acquired knowledge, and/or to produce something in reference to acquired knowledge.

Modify/Change Activities: Teachers will monitor and modify activities to accommodate those students who need to be challenged further. Additional reading, problem-solving, writing, or project work is necessary for those students who are ready to move on at a rate more accelerated than their peers. In this way, G & T students are provided the same opportunity for support as special needs students.

## Students at Risk of School Failure

**Directions or Instructions:** Make sure directions and/or instructions are given in limited numbers. Give directions/instructions verbally and in simple written format. Ask students to repeat the instructions or directions to ensure understanding occurs. Check back with the student to ensure he/she hasn't forgotten.

**Peer Support:** Peers can help build confidence in other students by assisting in peer learning. Many teachers use the 'ask 3 before me' approach. This is fine, however, a student at risk may have to have a specific student or two to ask. Set this up for the student so he/she knows who to ask for clarification before going to you.

**Alternate or Modified Assignments:** Always ask yourself, "How can I modify this assignment to ensure the students at risk are able to complete it?" Sometimes you'll simplify the task, reduce the length of the assignment or allow for a different mode of delivery. For instance, many students may hand something in, the at-risk student may jot notes and give you the information verbally. Or, it just may be that you will need to assign an alternate assignment.

**Increase One to One Time:** When other students are working, always touch base with your students at risk and find out if they're on track or needing some additional support. A few minutes here and there will go a long way to intervene as the need presents itself.

**Contracts:** It helps to have a working contract between you and your students at risk. This helps prioritize the tasks that need to be done and ensure completion happens. Each day write down what needs to be completed, as the tasks are done, provide a checkmark or happy face. The goal of using contracts is to eventually have the student come to you for completion sign-offs.

**Hands On:** As much as possible, think in concrete terms and provide hands-on tasks. This means a child doing math may require a calculator or counters. The child may need to tape record comprehension activities instead of writing them. A child may have to listen to a story being read instead of reading it him/herself.

**Tests/Assessments:** Tests can be done orally if need be. Break tests down in smaller increments by having a portion of the test in the morning, another portion after lunch and the final part the next day.

**Seating:** Seat students near a helping peer or with quick access to the teacher. Those with hearing or sight issues need to be close to the instruction which often means near the front.