Bedminster Township School
Subject Area: Mathematics
Grade Level: 7 & Grade 6 - Only for Qualifying Students (Math 6 Accelerated)
CM24-25

# Unit 1: Adding & Subtracting Rational Numbers

**Student Paced Time Frame:** 14 days to 21 days (2-3 weeks)

## Overview

In this unit, students will understand adding and subtracting rational numbers.

## Enduring Understandings

- Represent rational numbers on a number line.
- Explain the rules for adding and subtracting integers using absolute value.
- Apply addition and subtraction with rational numbers to model real-life problems.
- Solve problems involving addition and subtraction of rational numbers.

## Skill and Knowledge Objectives

- Understand absolute values and ordering of rational numbers.
- Find sums of integers.
- Find sums of rational numbers.
- Find differences of integers.
- Find differences of rational numbers and find distances between numbers on a number line.

## Assessments*

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matters
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Modified Mid-Unit Assessment
- Modified Mid-Unit Assessment
- Chapter Tests A and B
- Modified Assessment - Unit 1
- Alternative Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment (Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
  - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
  - Adjustable time
  - Prevent or Allow late submission
  - Release for review by teacher or upon submission
  - Randomize - recalculates the values for each question so students are not given the same assessment
  - Scramble- rearranges questions so students are not given the same assessment

**MLL/ELL (ESL) Support**

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

**Big Ideas Video Tutorials**

**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

**Virtual Manipulatives**

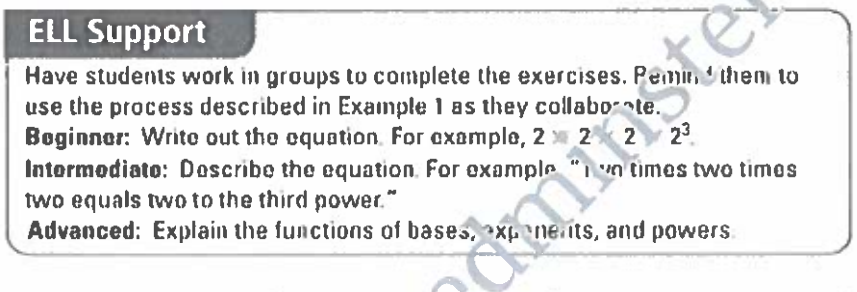
**Digital Examples**

**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.

- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

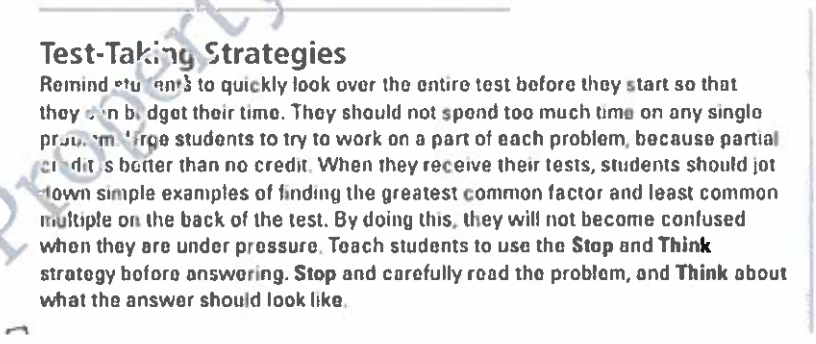


**ELL Support**

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.
**Beginner:** Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.
**Intermediate:** Describe the equation. For example, "Two times two times two equals two to the third power."
**Advanced:** Explain the functions of bases, exponents, and powers.

**- Sample**

- **Test Taking Strategies page T43 - Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.



**Test-Taking Strategies**

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop** and **Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

- Sample

**Social Emotional Well Being Activities - All Units**

**Resources**

- *STEAM Video from www.BigIdeasMath.com*
- *Tutorial Videos*
- *Algebra Tiles*
- *Formula Sheet / Reference Sheet*
- *Graphic Organizers*
- *Differentiation Lessons*

**Standards**

**NJ Student Learning Standards for Mathematics: 7.NS.A.1a, 7.NS.A.1b, 7.NS.A.1c, 7.NS.A.1d, 7.NS.A.3**

- The Number System:
  - Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
    - Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
      - Describe situations in which opposite quantities combine to make 0. For example, in the first round of a game, Maria scored 20 points. In the second round of the same game, she lost 20 points. What is her score at the end of the second round?
      - Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
      - Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
      - Apply properties of operations as strategies to add and subtract rational numbers
    - Solve real-world and mathematical problems involving the four operations with rational numbers.(Clarification: Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)

**New Jersey Student Learning Standards: Science – Grades 6 through 8**

- **MS-PS1-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.**

# Unit 1: Adding & Subtracting Rational Numbers

**Lesson:** Chapter Exploration/Rational Numbers - 2 - 4 Days

**Materials:**
*STEAM video,index cards, whiteboards*

**Activities:**
- Watch a video about the different states of matter and answer questions about the forms of wax at different temperatures.
- Preview the Performance Task on Melting Matters
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss how positive and negative signs help describe relationships between amounts..
- Explore/Discuss - Use a number line to compare integers and rational numbers.
- Graph rational numbers on a number line.
- Find the absolute value of a rational number.
- Use a number line to compare rational numbers.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Adding Integers - 2 - 3 Days

**Materials:**
*Integer counters, whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Determine sums of integers from real life contexts.
- Explore/Discuss - Use integer counters to model addition of integers and derive rules for adding integers.
- Explain how to model addition of integers on a number line.
- Find sums of integers by reasoning about absolute values.
- Explain why the sum of a number and its opposite is 0.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Adding Rational Numbers - 3 - 4 Days

**Materials:**
*whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Determine sums of rational numbers from real life contexts.
- Explore/Discuss - Use a number line to model addition of rational numbers and determine the relationship to integer addition.
- Explain how to model addition of rational numbers on a number line.
- Find sums of rational numbers by reasoning about absolute values.
- Use properties of addition to efficiently add rational numbers.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Subtracting Integers - 2 - 3 Days

**Materials:**
*index cards, paper clips, integer counters, whiteboards, Popsicle Sticks*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Model subtraction of integers using real life objects.
- Explore/Discuss - Use integer counters to find the differences and determine rules for subtracting integers.
- Explain how subtracting integers is related to adding integers.
- Explain how to model subtraction of integers on a number line.

- Find differences of integers by reasoning about absolute values.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Subtracting Rational Numbers - 3 - 4 Days

**Materials:**
*whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Students will find the distance between two numbers on a number line when the numbers are on the same side of 0 and when they are not. .
- Explore/Discuss - Use a number line to model subtraction of rational numbers and determine how it relates to integer subtraction.
- Explain how subtracting integers is related to adding integers.
- Explain how to model subtraction of rational numbers on a number line.
- Find differences of rational numbers by reasoning about absolute values.
- Find distances between numbers on a number line.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts/Unit Review - 2 - 3 Days

**Materials:**
*graphic organizers*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from the current unit and prior learning.
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide.

- Use a word processor to type notes or give responses in class

# Unit 2: Multiplying & Dividing Rational Numbers

**Student Paced Time Frame:** 16 days to 22 days (2-3 weeks)

## Overview

In this unit, students understand multiplying and dividing rational numbers.

## Enduring Understandings

- Explain the rules for multiplying integers.
- Explain the rules for dividing integers.
- Evaluate expressions involving rational numbers.
- Solve real-life problems involving multiplication and division of rational numbers.

## Skill and Knowledge Objectives

- Find products of integers.
- Find quotients of integers.
- Convert between different forms of rational numbers.
- Find products of rational numbers.
- Find quotients of rational numbers.

## Assessments*

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matters
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Modified Mid-Unit Assessment
- Chapter Tests A and B
- Alternative Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
  - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
  - Adjustable time
  - Prevent or Allow late submission
  - Release for review by teacher or upon submission
  - Randomize - recalculates the values for each question so students are not given the same assessment
  - Scramble- rearranges questions so students are not given the same assessment

**MLL/ELL Support**

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

**Big Ideas Video Tutorials**

**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

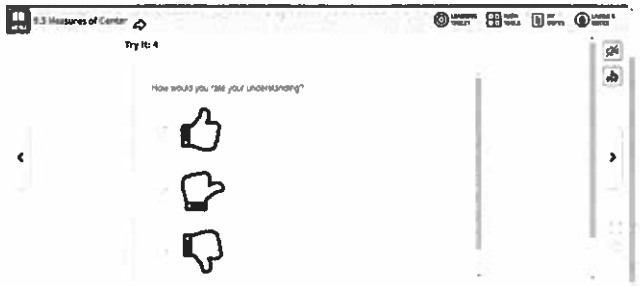
**Virtual Manipulatives**

**Digital Examples**

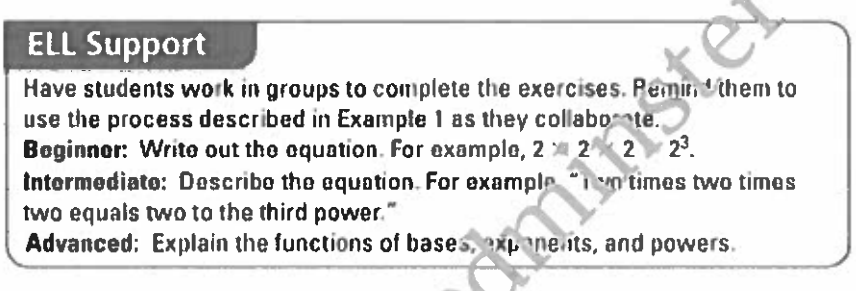
**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.

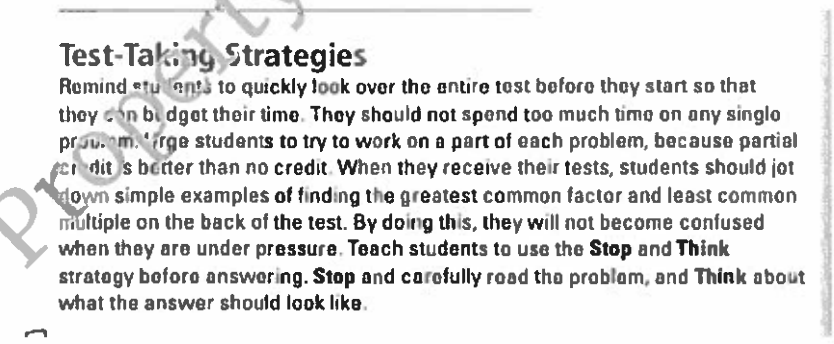


- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition




**- Sample**

- **Test Taking Strategies page T85 - Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.




- Sample

**Social Emotional Well Being Activities - All Units**

**Standards**

**NJ Student Learning Standards for Mathematics: 7.NS.A.2a,7.NS.A.2b, 7.NS.A.2c, 7.NS.A.2d, 7.NJ.A.3**

- The Number System:
  - Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
    - Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
    - Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real world contexts.
    - Apply properties of operations as strategies to multiply and divide rational numbers. d.
    - Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
  - Solve real-world and mathematical problems involving the four operations with rational numbers.(Clarification: Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)

# Unit 2: Multiplying & Dividing Rational Numbers

**Lesson:** Chapter/Multiplying Integers - 3 - 4 Days

**Materials:**
*STEAM Video,white boards, integer counters, index cards*

**Activities:**
- Watch a video about the work of carpenters and joiners and answer questions about how changes in water content affect the size and shape of a piece of wood. .
- Preview the Performance Task on comparing the accuracies of different telescopes..
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use repeated addition to identify patterns while playing *Guess My Rule*.
- Explore/Discuss - Use a number line and integer counters to model finding the products of negative integers. Discuss rules for multiplying integers and the use of the distributive property to justify these rules.
- Explain the rules for multiplying integers.
- Find products of integers with the same sign.
- Find products of integers with different signs.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Dividing Integers - 2 - 3 Days

**Materials:**
*white boards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate -Reason about the width of a football field given its area and length.
- Explore/Discuss - Use the relationship between multiplication and division to find general rules for dividing integers. Discuss dividing integers with the same sign and with different signs.
- Explain the rules for dividing integers.
- Find quotients of integers with the same sign.
- Find quotients of integers with different signs.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Converting Fractions and Decimals - 2 - 3 Days

**Materials:**
*white boards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Form fractions from the number of letters in their names and observe the difference between writing terminating and repeating decimals.
- Explore/Discuss - Write decimals as fractions or mixed numbers and compare. Write fractions as decimals and explore terminating and repeating decimals.
- Explain the difference between terminating and repeating decimals.
- Write fractions and mixed numbers as decimals.
- Write decimals as fractions and mixed numbers.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Multiplying Rational Numbers - 3 - 4 Days

**Materials:**
*white boards*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Review the rules for multiplying integers.
- Explore/Discuss - Find products of rational numbers represented by models and expressions. Discuss that multiplying rational numbers uses the same rules as multiplying integers.
- Explain the rules for multiplying rational numbers.
- Find products of rational numbers with the same sign.
- Find products of rational numbers with different signs.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Dividing Rational Numbers - 3 - 4 Days

**Materials:**
*white boards*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss real-world applications of dividing rational numbers.
- Explore/Discuss - Find quotients of rational numbers represented by models and expressions. Discuss rules for dividing integers.
- Explain the rules for dividing rational numbers.
- Find quotients of rational numbers with the same sign.
- Find quotients of rational numbers with different signs.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts/Unit Review - 3 - 4 Days

**Materials:**
*graphic organizers*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from the current unit and prior learning.
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide

# Unit 3: Expressions

**Student Paced Time Frame:** 12 days to 17 days (2-3 weeks)

## Overview

In this unit, students will understand algebraic expressions.

## Enduring Understandings

- Identify parts of an algebraic expression.
- Write algebraic expressions.
- Solve problems using algebraic expressions.
- Interpret algebraic expressions in real-life problems.

## Skill and Knowledge Objectives

- Simplify algebraic expressions.
- Find sums and differences of linear expressions.
- Apply the Distributive Property to generate equivalent expressions.
- Factor algebraic expressions.

## Assessments:

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matters
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Chapter Tests A and B
- Alternative Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
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- Tests and quizzes
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**MLL/ELL Support**

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**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

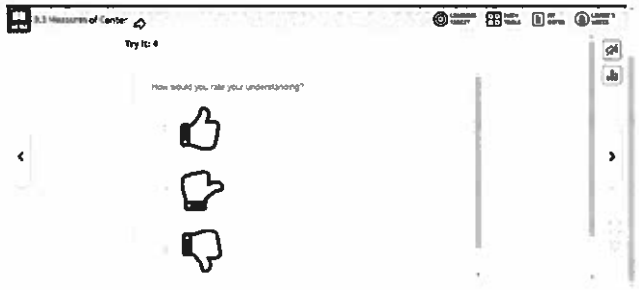
**Virtual Manipulatives**

**Digital Examples**

**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.



- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

**ELL Support**

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.
**Beginner:** Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.
**Intermediate:** Describe the equation. For example, "two times two times two equals two to the third power."
**Advanced:** Explain the functions of bases, exponents, and powers.

**- Sample**

- **Test Taking Strategies page T121 - Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.

**Test-Taking Strategies**

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop** and **Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

- Sample

**Social Emotional Well Being Activities - All Units**

**Standards**

**NJ Student Learning Standards for Mathematics: 7.EE.A.1, 7.EE.A.2**

- Expressions & Equations:
  - Use properties of operations to generate equivalent expressions.
    - Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
    - Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."

**New Jersey Student Learning Standards: Science – Grades 6 through 8**

- **MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.**
- **MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures.**

# Unit 3: Expressions

**Lesson:** Chapter Exploration/Algebraic Expressions - 3 - 4 Days

**Materials:**
*STEAM video, whiteboards*

**Activities:**
- Watch a video about the trophic status of an ecosystem and answer questions about representing energy flow in an ecosystem.
- Preview the Performance Task on molecules involved in photosynthesis.
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Randomly generate numbers to complete an expression with the goal of the value of the completed expression being as close to 24 as possible..
- Explore/Discuss - Simplify algebraic expressions and reason about how the properties of operations apply to algebraic expressions. Discuss like terms and how to identify them.
- Identify terms and like terms of algebraic expressions.
- Combine like terms to simplify algebraic expressions.
- Write and simplify algebraic expressions to solve real-life problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Adding and Subtracting Linear Expressions - 2 - 3 Days

**Materials:**
*algebra tiles*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Play with algebra tiles and show how they can be used to represent algebraic expressions.
- Explore/Discuss - Use algebra tiles to find the sums and differences of algebraic expressions. Use properties of operations to evaluate algebraic expressions.
- Explain the difference between linear and nonlinear expressions.
- Find opposites of terms that include variables.
- Apply properties of operations to add and subtract linear expressions.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** The Distributive Property - 2 - 3 Day.

**Materials:**
*whiteboards, index cards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Explore how the area of a rectangle with a variable dimension can be represented.
- Explore/Discuss - Write expressions to represent the area of shaded regions of a figure. Discuss how the Distributive Property can be used to simplify expressions.
- Explain how to apply to Distributive Property.
- Use the Distributive Property to simplify algebraic expressions.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Factoring Expressions - 2 - 3 Days

**Materials:**
*whiteboards, index cards*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Consider the idea of solving a problem multiple ways and review the greatest common factors.
- Explore/Discuss - Use models to find missing values in expressions and explain how the Distributive Property can be used to factor an expression. Introduce and discuss factoring an expression.
- Identify the greatest common factor of terms, including variable terms.
- Use the Distributive Property to factor algebraic expressions.
- Write a term as a product involving a given factor.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts/Unit Review - 3 - 4 Days

**Materials:**
*graphic organizers*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from the current unit and prior learning.
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide

**Accommodations & Differentiated Instruction, depending on individual student needs** (students with an IEP, MLL Students; Students At Risk; Gifted Students) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Use alternate texts at lower readability level
- Rephrase word problems
- Reduce readability level of materials
- Work with fewer items per page or line and/or materials in a larger print size
- Provide multi-sensory presentation of data
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Provide tutorial video(s)
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use of calculator
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting
- Use noise buffers such as headphones, earphones, or earplugs

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

**Scheduling Accommodations**

- Take more time to complete a project
- Take sections of a test in a different order
- Take a test at a specific time of day

**Organization Skills Accommodations**

- Use an alarm to help with time management
- Mark texts with a highlighter
- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses
- Answer fewer or different questions
- Assign questions aligned to different levels such as emerging, proficient, and/or advanced.
- Create alternate projects or assignments

**Curriculum Modifications**

- Learn different material related to the same mathematical concept (such as continuing to work on one or two step equations while classmates move on to solving multi-step equations, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get assessed using a leveled standard/concept (emerging, proficient, and/or advanced) than the one for classmate

Differentiated Lesson(s)for this Expressions Unit

**Accommodations & Differentiate Instruction, depending on individual student needs** (Please refer to each individual student's **504 Plan**) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Rephrase word problems
- Work with fewer items per page or line and/or materials in a larger print size
- Be given a written list of instructions

- Have another student share class notes with him
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use of calculator
- Use of a math grid
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Take frequent breaks, such as after completing a task

**Organization Skills Accommodations**

- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses

# Unit 4: Equations & Inequalities

**Student Paced Time Frame:** 21 days to 29 days (4 weeks)

## Overview

In this unit, students will understand equations and inequalities.

## Enduring Understandings

- Identify key words and phrases to write equations and inequalities.
- Write word sentences as equations and inequalities.
- Solve equations and inequalities using the properties.
- Use equations and inequalities to model and solve real-life problems.

## Skill and Knowledge Objectives

- Write and solve equations using addition and subtraction.
- Write and solve equations using multiplication and division.
- Write and solve two-step equations.
- Write inequalities and represent solutions of inequalities on number lines.
- Write and solve inequalities using addition and subtraction.
- Write and solve inequalities using multiplication and division.
- Write and solve two-step inequalities.

## Assessments*

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matters
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Chapter Tests A and B
- Alternative Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
  - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
  - Adjustable time
  - Prevent or Allow late submission
  - Release for review by teacher or upon submission
  - Randomize - recalculates the values for each question so students are not given the same assessment
  - Scramble- rearranges questions so students are not given the same assessment

**MLL/ELL Support**

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

**Big Ideas Video Tutorials**

**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

**Virtual Manipulatives**

**Digital Examples**

**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.

- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

**ELL Support**

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.
**Beginner:** Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.
**Intermediate:** Describe the equation. For example, "two times two times two equals two to the third power."
**Advanced:** Explain the functions of bases, exponents, and powers.

**- Sample**

- **Test Taking Strategies page T177 - Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.

**Test-Taking Strategies**

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop** and **Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

- Sample

**Social Emotional Well Being Activities - All Units**

**Standards**

**NJ Student Learning Standards for Mathematics: 7.EE.B.4a, 7.EE.B.4b**

- Expressions & Equations:
  - Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
    - Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
      - Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where $p$, $q$, and $r$ are specific rational numbers. Solve equations of these forms with accuracy and efficiency. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?
      - Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.

**New Jersey Student Learning Standards: Science – Grades 6 through 8**

- **MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system.**

# Unit 4: Equations & Inequalities

**Lesson:** Chapter Exploration/Solving Equations Using Addition or Subtraction - 3 - 4 Days

**Materials:**
*STEAM video, algebra tiles, whiteboards*

**Activities:**
- Watch a video about astronauts and how they train, and answer questions about requirements for applying to be an astronaut
- Preview the Performance Task on distance and brightness of stars.
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss how to simplify a collection of algebra tiles and review solving equations with algebra tiles.
- Explore/Discuss - Explain the Addition and Subtraction Properties of Equality and solve with and without algebra tiles.
- Apply the Addition and Subtraction Properties of Equality to produce equivalent equations.
- Solve equations using addition or subtraction.
- Apply equations involving addition or subtraction to solve real-life problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Solving Equations Using Multiplication or Division - 2 - 3 Days

**Materials:**
*algebra tiles, whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use algebra tiles to represent multiplicative relationships
- Explore/Discuss - Explain the Multiplication and Division Properties of Equality and solve with and without algebra tiles.
- Apply the Multiplication and Division Properties of Equality to produce equivalent equations.
- Solve equations using multiplication or division.
- Apply equations involving multiplication or division to solve real-life problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Solving Two-Step Equations - 3 - 4 Days

**Materials:**
*algebra tiles, whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Investigate how to solve equations with two operations.
- Explore/Discuss - Use algebra tiles to solve two-step equations.
- Apply properties of equality to produce equivalent equations.
- Solve two-step equations using basic operations.
- Apply two-step equations to solve real-life problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment
-

**Lesson:** Writing and Graphing Inequalities - 3 - 4 Days

**Materials:**
*masking tape, index cards, whiteboards, graph paper*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Record their heights in two ways, feet and inches, and just in inches. Determine when their height satisfies an inequality.
- Explore/Discuss - model solutions of inequalities on a number line. Discuss how inequalities can be written.
- Write word sentences as inequalities.
- Determine whether a value is a solution of an inequality.
- Graph the solutions of inequalities.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Solving Inequalities Using Addition or Subtraction - 2 - 3 Days

**Materials:**
*number cubes*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Skill Practice
- Motivate - Discuss and write inequalities to represent the maximum weight of checked bags on an airline.
- Explore/Discuss - Roll number cubes and write inequalities to compare the numbers and observe how the addition of a value to both numbers affects those inequalities. Discuss Addition and Subtraction Properties of Inequality.
- Apply the Addition and Subtraction Properties of Inequality to produce equivalent inequalities.
- Solve inequalities using addition or subtraction.
- Apply inequalities involving addition or subtraction to solve real-life problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Solving Inequalities Using Multiplication or Division - 2 - 3 Days

**Materials:**
*number cubes, whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Skill Practice
- Motivate - Find solutions of pairs of inequalities with opposite variables.
- Explore/Discuss - Roll number cubes and write inequalities based on the numbers rolled on two number cubes. Discuss Multiplication and Division Properties of Inequality when the multiplier or divisor is positive and negative
- Apply the Multiplication and Division Properties of Inequality to produce equivalent inequalities.
- Solve inequalities using multiplication or division.
- Apply inequalities involving multiplication or division to solve real-life problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Solving Two-Step Inequalities - 3 - 4 Days

**Materials:**
*algebra tiles, whiteboards, index cards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Skill Practice
- Motivate - Reason about the scores students need to achieve particular average scores.
- Explore/Discuss - Model solutions to two-step inequalities using algebra tiles. Discuss that two-step inequalities are solved in the same way as two-step equations.
- Apply properties of inequality to generate equivalent inequalities.
- Solve two-step inequalities using the basic operations.
- Apply two-step inequalities to solve real-life problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts/Unit Review - 3 - 4 Days

**Materials:**
*graphic organizers*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from the current unit and prior learning.
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide

**Accommodations & Differentiate Instruction, depending on individual student needs** (students with an IEP, MLL Students; Students At Risk; Gifted Students) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Use alternate texts at lower readability level
- Rephrase word problems
- Reduce readability level of materials
- Work with fewer items per page or line and/or materials in a larger print size
- Provide multi-sensory presentation of data
- Use magnification device, screen reader, or Braille / Nemeth Code
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (which may require teacher use of microphone)
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Provide tutorial video(s)
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments

**Response Accommodations**

- Use sign language, a communication device, Braille, other technology, or native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use of calculator
- Use of a math grid and/or number line
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

**Scheduling Accommodations**

- Take more time to complete a project
- Take sections of a test in a different order
- Take a test at a specific time of day

**Organization Skills Accommodations**

- Use an alarm to help with time management
- Mark texts with a highlighter
- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses
- Answer fewer or different questions
- Assign questions aligned to different levels such as emerging, proficient, and/or advanced.
- Create alternate projects or assignments

**Curriculum Modifications**

- Learn different material related to the same mathematical concept (such as continuing to work on one or two step equations while classmates move on to solving multi-step equations, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get assessed using a leveled standard/concept (emerging, proficient, and/or advanced) than the one for classmate

**Differentiated Lesson(s)for this Equations & Inequalities Unit**

**Accommodations & Differentiate Instruction, depending on individual student needs** (Please refer to each individual student's **504 Plan**) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Rephrase word problems

- Work with fewer items per page or line and/or materials in a larger print size
- Be given a written list of instructions
- Have another student share class notes with him
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use of calculator
- Use of a math grid
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Take frequent breaks, such as after completing a task

**Organization Skills Accommodations**

- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses

# Unit 5: Ratios & Proportions

**Student Paced Time Frame:** 19 days to 26 days (3-4 weeks)

## Overview

In this unit, students will understand ratios and proportions.

## Enduring Understandings

- Write and interpret ratios.
- Describe ratio relationships and proportional relationships.
- Represent equivalent ratios.
- Model ratio relationships and proportional relationships to solve real-life problems.

## Skill and Knowledge Objectives

- Understand ratios of rational numbers and use ratio tables to represent equivalent ratios.
- Understand rates involving fractions and use unit rates to solve problems.
- Determine whether two quantities are in a proportional relationship.
- Use proportions to solve ratio problems.
- Represent proportional relationships using graphs and equations.
- Solve problems involving scale drawings.

## Assessments:

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matters
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Chapter Tests A and B
- Alternative Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
  - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
  - Adjustable time
  - Prevent or Allow late submission
  - Release for review by teacher or upon submission
  - Randomize - recalculates the values for each question so students are not given the same assessment
  - Scramble- rearranges questions so students are not given the same assessment

**MLL/ELL Support**

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

**Big Ideas Video Tutorials**

**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

**Virtual Manipulatives**

**Digital Examples**

**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.

- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

**ELL Support**

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.
**Beginner:** Write out the equation. For example, $2 \times 2 \times 2 \times 2 = 2^3$.
**Intermediate:** Describe the equation. For example, "two times two times two equals two to the third power."
**Advanced:** Explain the functions of bases, exponents, and powers.

**- Sample**

- **Test Taking Strategies page T229 - Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.

**Test-Taking Strategies**

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop** and **Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

- Sample

**Social Emotional Well Being Activities - All Units**

**Standards**

**NJ Student Learning Standards for Mathematics: 7.RP.A.1,7.RP.A.2a,7.RP.A.2b, 7.RP.A.2c, 7.RP.A.2d, 7.RP.A.3, 7.G.A.1**

- Ratios and Proportional Relationships
  - Analyze proportional relationships and use them to solve real-world and mathematical problems.
    - Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $(\frac{1}{2})/(\frac{1}{4})$ miles per hour, equivalently 2 miles per hour.
    - Recognize and represent proportional relationships between quantities.
      - Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
      - Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
      - Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.
      - Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.
    - Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.
  - Draw, construct, and describe geometrical figures and describe the relationships between them.
    - Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

# Unit 5: Ratio & Proportions

**Lesson:** Chapter Exploration/Ratio and Ratio Tables 3 - 4 Days

**Materials:**
*STEAM video, whiteboards*

**Activities:**
- Watch a video about painting a room and answer questions about the amount of paint needed to paint a given space.
- Preview the Performance Task on ratios for mixing paint.
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss real world applications for expressing the values of ratios, such as tripling a recipe.
- Explore/Discuss - Identify ratios between ingredients in a recipe and whether these relationships change when the recipe is halved. Experiment with finding equivalent ratios to complete ratio tables.
- Write and interpret ratios involving rational numbers.
- Use various operations to create tables of equivalent ratios.
- Use ratio tables to solve ratio problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Rates and Unit Rates 2 - 3 Days

**Materials:**
*whiteboards, wind up toy, measuring tape, stop watch, protractor*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Compute the rate at which a wind up toy moves.
- Explore/Discuss - Determine the rate at which the minute hand on a clock moves and use the rate to find the number of degrees the minute hand moves in different periods of time. Discuss rates, unit rates, and equivalent rates.
- Find unit rates for rates involving fractions.
- Use unit rates to solve rate problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Identifying Proportional Relationships 3 - 4 Days

**Materials:**
*whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Explore how two quantities can maintain a ratio relationship as they change.
- Explore/Discuss - Determine the amount of time it will take them to paint a surface and reason about the meaning of proportional.
- Determine whether ratios form a proportion.
- Explain how to determine whether quantities are proportional.
- Distinguish between proportional and nonproportional situations.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Writing and Solving Proportions 3 - 4 Days

**Materials:**
*Whiteboards, string*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice

- Motivate - Estimate the distance around their neck by measuring the distance around their wrist and confirm the relationship by measuring around their neck.
- Explore/Discuss - Use proportions to determine how far a train travels in a given amount of time. Discuss the methods to solving a proportion.
- Solve proportions using various methods.
- Find a missing value that makes two ratios equivalent.
- Use proportions to represent and solve real-life problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Graphs of Proportional Relationships 3 - 4 Days

**Materials:**
*grid paper*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use a graph to represent the amount of money received for returning bottles and reason about why this is useful.
- Explore/Discuss - Represent relationships graphically and determine whether they are proportional. Discuss the constant of proportionality.
- Determine whether quantities are proportional using a graph.
- Find the unit rate of a proportional relationship using a graph.
- Create equations to represent proportional relationships.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Scale Drawings 2 - 3 Days

**Materials:**
*whiteboards, items with scales written on them (maps, model cars, blue prints, floor plans, etc), centimeter rulers*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss where they have encountered scale drawings and scale models in real life.
- Explore/Discuss - Describe the relationship between lengths and areas in a scale drawing of a zoo and the actual soo, and reason about how these are related.
- Find an actual distance in a scale drawing.
- Explain the meaning of scale and scale factor.
- Use a scale drawing to find the actual lengths and areas of real-life objects.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts Unit Review 3 - 4 Days

**Materials:**
*graphic organizers*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from the current unit and prior learning.
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide

**Accommodations & Differentiated Instruction, depending on individual student needs** (students with an IEP, MLL Students; Students At Risk; Gifted Students) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworde
- Rephrase word problems
- Reduce readability level of materials
- Work with fewer items per page or line and/or materials in a larger print size
- Provide multi-sensory presentation of data
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Provide tutorial video(s)
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments

**Response Accommodations**

- Use sign language, a communication device, Braille, other technology, or native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use of calculator
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting
- Use noise buffers such as headphones, earphones, or earplugs

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

**Scheduling Accommodations**

- Take more time to complete a project
- Take sections of a test in a different order
- Take a test at a specific time of day

**Organization Skills Accommodations**

- Use an alarm to help with time management
- Mark texts with a highlighter
- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses
- Answer fewer or different questions
- Assign questions aligned to different levels such as emerging, proficient, and/or advanced.
- Create alternate projects or assignments

**Curriculum Modifications**

- Learn different material related to the same mathematical concept (such as continuing to work on one or two step equations while classmates move on to solving multi-step equations, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get assessed using a leveled standard/concept (emerging, proficient, and/or advanced) than the one for classmate

**Differentiated Lesson(s)for this Ratio & Proportions Unit**

**Accommodations & Differentiate Instruction, depending on individual student needs** (Please refer to each individual student's **504 Plan**) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Rephrase word problems
- Work with fewer items per page or line and/or materials in a larger print size
- Be given a written list of instructions

- Have another student share class notes with him
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use of calculator
- Use of a math grid
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Take frequent breaks, such as after completing a task

**Organization Skills Accommodations**

- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses

# Unit 6: Percents

**Student Paced Time Frame:** 16 days to 23 days (3 weeks)

## Overview

In this unit, students will understand fractions, decimals, and percentages.

## Enduring Understandings

- Rewrite fractions, decimals, and percents.
- Compare and order fractions, decimals, and percents.
- Use the percent proportion or percent equation to find a percent, a part, or a whole.
- Apply percents to solve real-life problems.

## Skill and Knowledge Objectives

- Rewrite fractions, decimals, and percents using different representations.
- Use the percent proportion to find the missing quantities.
- Use the percent equation to find the missing quantities.
- Find the percents of change in quantities.
- Solve percent problems involving discounts and markups.
- Understand and apply the simple interest formula.

## Assessments*

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matter
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Modified Mid-Unit Assessment
- Chapter Tests A and B
- Alternative Assessment
- Modified Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
  - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
  - Adjustable time
  - Prevent or Allow late submission
  - Release for review by teacher or upon submission
  - Randomize - recalculates the values for each question so students are not given the same assessment
  - Scramble- rearranges questions so students are not given the same assessment

**MLL/ELL Support**

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

**Big Ideas Video Tutorials**

**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

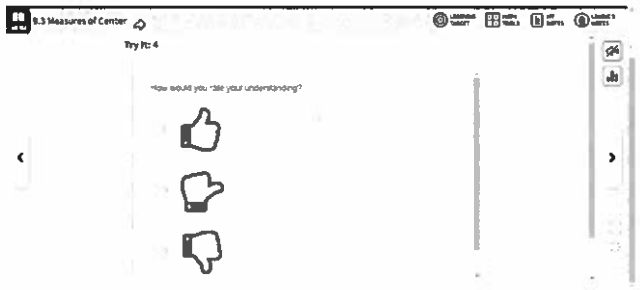
**Virtual Manipulatives**

**Digital Examples**

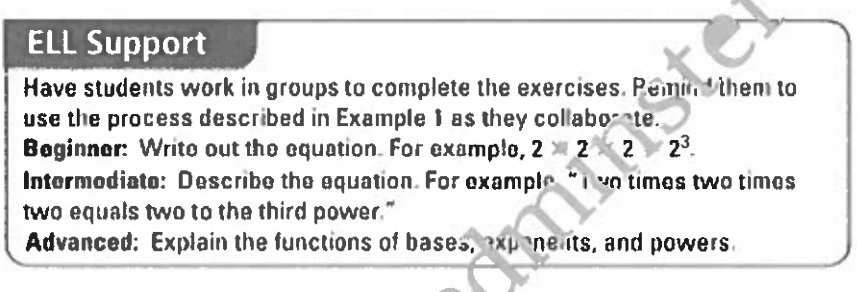
**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.



- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition


ELL Support

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.

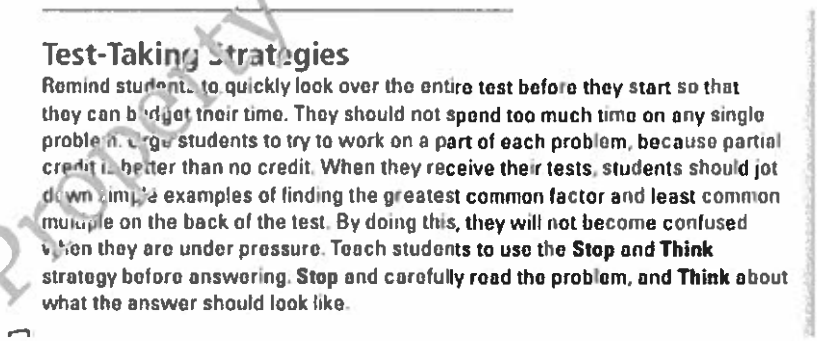
**Beginner:** Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.

**Intermediate:** Describe the equation. For example, "Two times two times two equals two to the third power."

**Advanced:** Explain the functions of bases, exponents, and powers.

**- Sample**

- **Test Taking Strategies** page T277 - **Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.


Test-Taking Strategies

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop** and **Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

- Sample

**Social Emotional Well Being Activities - All Units**

## Standards

**NJ Student Learning Standards for Mathematics:**

- Ratio and Proportional Relationships
  - Analyze proportional relationships and use them to solve real-world and mathematical problems.
    - Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.
- Expressions and Equations
  - Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
    - Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation. .

# Unit 6: Percents

**Lesson:** Chapter Exploration/ Fractions, Decimals, and Percents 3 - 4 Days

**Materials:**
*STEAM video, whiteboards*

**Activities:**
- Watch a video about tornadoes.
- Preview the Performance Task on Annual number of tornadoes in different states.
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Order fractions, decimals, and percents.
- Explore/Discuss - Compare numbers in different forms and determine which is greater.
- Write percents as decimals and decimals as percents.
- Write fractions as decimals and percents.
- Compare and order fractions, decimals, and percentages.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** The Percent Proportion 2 - 3 Days

**Materials:**
*egg carton, index cards, whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use an egg carton to model simple percent problems
- Explore/Discuss - Interpret percent models, use them to answer percent questions, reason about how ratio tables could be used to check their understanding/answers. Discuss how to represent a percent problem as the percent proportion.
- Write proportions to represent percent problems.
- Solve a proportion to find a percent, a part, or a whole.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** The Percent Equation 2 - 3 Days

**Materials:**
*whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Review benchmark percents by matching and ordering equivalent fractions, decimals, and percents.
- Explore/Discuss - Determine percent of votes each candidate had when half the votes had been cast, and the total number of votes each candidate received after all votes had been cast.
- Write equations to represent percent problems.
- Use the percent equation to find a percent, a part, or a whole.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Percents of Increase and Decrease 2 - 3 Days

**Materials:**
*whiteboards, calculators*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Learn about the percentage of change in energy consumption and lifetime of LED bulbs compared to incandescent bulbs.
- Explore/Discuss - Explore the percent of change in the number of salmon after passing through one or more dams.
- Explain the meaning of percent of change.
- Find the percent of increase or decrease in a quantity.
- Find the percent error of a quantity.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Discounts and Markups 2 - 3 Days

**Materials:**
*whiteboards, newspaper circular advertising a discount*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use real life examples of discounts and markups
- Explore/Discuss - Use percent models to determine the best store to buy a pair of earrings from, the original price of the earrings at a different store, and the price you sell the earrings to a friend for.
- Use percent models to solve problems involving discounts and markups.
- Write and solve equations to solve problems involving discounts and markups.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Simple Interest 2 - 3 Days

**Materials:**
*whiteboards*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Introduce the concept of interest by discussing borrowing money for the purchase of a smartphone.
- Explore/Discuss - Analyze an account balance that earns simple interest each year. Discuss interest, principal, and simple/compound interest.
- Explain the meaning of simple interest.
- Use the simple interest formula to solve problems.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts/Unit Review 3 - 4 Days

**Materials:**
*graphic organizers*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from the current unit and prior learning.
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide

**Accommodations & Differentiated Instruction, depending on individual student needs** (students with an IEP, MLL Students; Students At Risk; Gifted Students) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Rephrase word problems
- Reduce readability level of materials
- Work with fewer items per page or line and/or materials in a larger print size
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (which may require teacher use of microphone)
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Provide tutorial video(s)
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments

**Response Accommodations**

- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use of calculator
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting
- Use noise buffers such as headphones, earphones, or earplugs

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

**Scheduling Accommodations**

- Take more time to complete a project
- Take sections of a test in a different order
- Take a test at a specific time of day

**Organization Skills Accommodations**

- Use an alarm to help with time management
- Mark texts with a highlighter
- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white workspace
- Allow for oral rather than written responses
- Answer fewer or different questions
- Assign questions aligned to different levels such as emerging, proficient, and/or advanced.
- Create alternate projects or assignments

**Curriculum Modifications**

- Learn different material related to the same mathematical concept (such as continuing to work on one or two step equations while classmates move on to solving multi-step equations, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get assessed using a leveled standard/concept (emerging, proficient, and/or advanced) than the one for classmate

<u>Differentiated Lesson(s)for this Percents Unit</u>

**Accommodations & Differentiate Instruction, depending on individual student needs** (Please refer to each individual student's **<u>504 Plan</u>**) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Rephrase word problems
- Work with fewer items per page or line and/or materials in a larger print size
- Be given a written list of instructions

- Have another student share class notes with him
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use of calculator
- Use of a math grid
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Take frequent breaks, such as after completing a task

**Organization Skills Accommodations**

- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses

# Unit 7: Probability

**Student Paced Time Frame:** 12 days to 17 days (2-3 weeks)

## Overview

In this unit, students will understand probability.

## Enduring Understandings

- Identify the possible outcomes of a situation.
- Explain the meaning of experimental and theoretical probability.
- Make predictions using probabilities.
- Solve real-life problems using probability.

## Skill and Knowledge Objectives

- Understand how the probability of an event indicates its likelihood.
- Develop probability models using experimental and theoretical probability.
- Find sample spaces and probabilities of compound events.
- Design and use simulations to find probabilities of compound events.

## Assessments:

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matters
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Chapter Tests A and B
- Alternative Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
  - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
  - Adjustable time
  - Prevent or Allow late submission
  - Release for review by teacher or upon submission
  - Randomize - recalculates the values for each question so students are not given the same assessment
  - Scramble- rearranges questions so students are not given the same assessment

**MLL/ELL Support**

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

**Big Ideas Video Tutorials**

**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

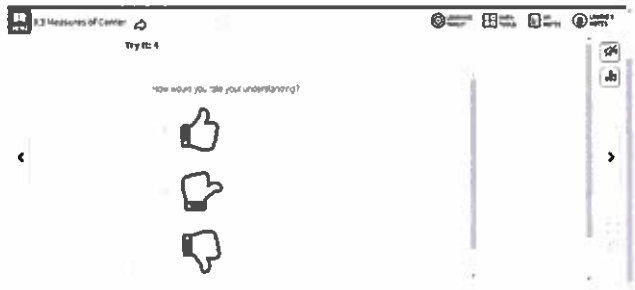
**Virtual Manipulatives**

**Digital Examples**

**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.



- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

**ELL Support**

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.
**Beginner:** Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.
**Intermediate:** Describe the equation. For example, "two times two times two equals two to the third power."
**Advanced:** Explain the functions of bases, exponents, and powers.

**- Sample**

- **Test Taking Strategies page T319 - Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.

**Test-Taking Strategies**

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop** and **Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

- Sample

**Social Emotional Well Being Activities - All Units**

## Standards

**NJ Student Learning Standards for Mathematics: 7.SP.C.5,7.SP.C.6, 7.SP.C.7a, 7.SP.C.7b, 7.SP.C.8a, 7.SP.C.8b, 7.SP.C.8c**

Statistics and Probability

- Investigate chance processes and develop, use, and evaluate probability models.
  - Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1 — 2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
  - Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.
  - Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
    - Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.
    - Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?
    -
  - Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation
    - Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
    - Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.

Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?.

# Unit 7: Probability

**Lesson:** Chapter Exploration/ Probability 3 - 4 Days

**Materials:**
*STEAM video, whiteboards, spinners, paper clip, pencil, pennies*

**Activities:**
- Watch a video about a large game of Rock Paper Scissors and answer questions about the probability of winning games of Rock Paper Scissors.
- Preview the Performance Task on fair and unfair games of chance.
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss the probability of spinning a certain outcome on a spinner.
- Explore/Discuss - Predict the behaviors of two spinners and conduct an experiment to check the predictions.
- Identify possible outcomes of an experiment.
- Use probability and relative frequency to describe the likelihood of an event.
- Use relative frequency to make predictions.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Experimental and Theoretical Probability 2-3 Days

**Materials:**
*paper bag, cubes, quarters, thumbtacks, paper cub, pennies, cards, marbles, whiteboards,*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Play a game in which they collect data about colored cubes in a bag and make predictions based on that data.
- Explore/Discuss - Conduct two experiments and reason about the effect of performing larger numbers of trials on the relative frequencies. Discuss experimental vs theoretical probability.
- Explain the meanings of experimental probability and theoretical probability.
- Find experimental and theoretical probabilities.
- Use probability to make predictions.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Compound Events 2 - 3 Days

**Materials:**
*whiteboards, 3 different kinds of cups, tea bag, hot cocoa mix, number cube, coin, spinner, paper*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Examine a selection of cubs and beverages and determine the number of unique combinations of the two.
- Explore/Discuss - Determine the number of combinations on each of three locks and determine which lock they are least likely to guess the combination for. Discuss sample space, compound events, Fundamental Counting Principle.
- Find the sample space of two or more events.
- Find the total number of possible outcomes of two or more events.
- Find probabilities of compound events.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Simulation 2 - 3 Days

**Materials:**
*Whiteboards, calculators*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss the probability of randomly guessing the correct answer to at least 7 true-false questions.
- Explore/Discuss - Use a simulation to answer questions about the likelihood that a basketball player makes different numbers of free throws. Discuss simulations.
- Design a simulation to model a real-life situation.
- Recognize favorable outcomes in a simulation.
- Use simulations to find experimental probabilities.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts/Unit Review 3 - 4 Days

**Materials:**
*graphic organizers*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from the current unit and prior learning.
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide

**Accommodations & Differentiated Instruction, depending on individual student needs** (students with an IEP, MLL Students; Students At Risk; Gifted Students) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Use alternate texts at lower readability level
- Rephrase word problems
- Reduce readability level of materials
- Work with fewer items per page or line and/or materials in a larger print size
- Provide multi-sensory presentation of data
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Provide tutorial video(s)
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use sign language, a communication device, Braille, other technology, or native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use of calculator
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting
- Use noise buffers such as headphones, earphones, or earplugs

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

**Scheduling Accommodations**

- Take more time to complete a project
- Take sections of a test in a different order
- Take a test at a specific time of day

**Organization Skills Accommodations**

- Use an alarm to help with time management
- Mark texts with a highlighter
- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses
- Answer fewer/or different questions
- Assign questions aligned to different levels such as emerging, proficient, and/or advanced.
- Create alternate projects or assignments

**Curriculum Modifications**

- Learn different material related to the same mathematical concept (such as continuing to work on one or two step equations while classmates move on to solving multi-step equations, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get assessed using a leveled standard/concept (emerging, proficient, and/or advanced) than the one for classmate

**Differentiated Lesson(s)for this Probability Unit**

**Accommodations & Differentiate Instruction, depending on individual student needs** (Please refer to each individual student's **504 Plan**) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Rephrase word problems

- Work with fewer items per page or line and/or materials in a larger print size
- Be given a written list of instructions
- Have another student share class notes with him
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use of calculator
- Use of a math grid
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Take frequent breaks, such as after completing a task

**Organization Skills Accommodations**

- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses

# Unit 8: Statistics

**Student Paced Time Frame:** 12 days to18 days (2-3 weeks)

## Overview

In this unit, students will understand statistics.

## Enduring Understandings

- Determine the validity of a conclusion.
- Explain variability in samples of a population.
- Solve problems using statistics.
- Compare populations.

## Skill and Knowledge Objectives

- Understand how to use random samples to make conclusions about a population.
- Understand variability in samples of a population.
- Compare populations using measures of center and variation.
- Use random samples to compare populations.

## Assessments:

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matters
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Chapter Tests A and B
- Alternative Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
  - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
  - Adjustable time
  - Prevent or Allow late submission
  - Release for review by teacher or upon submission
  - Randomize - recalculates the values for each question so students are not given the same assessment
  - Scramble- rearranges questions so students are not given the same assessment

**MLL/ELL Support**

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

**Big Ideas Video Tutorials**

**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

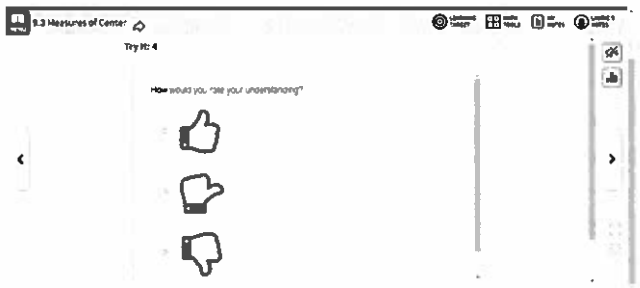
**Virtual Manipulatives**

**Digital Examples**

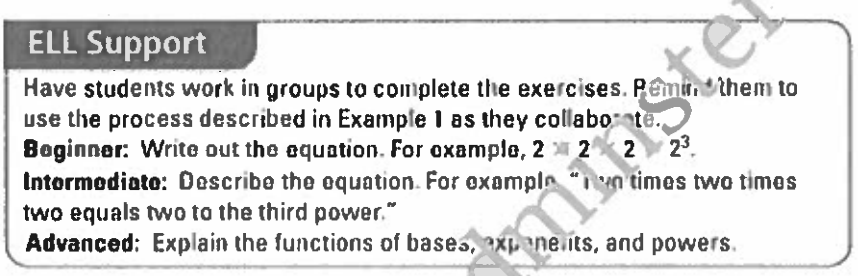
**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.



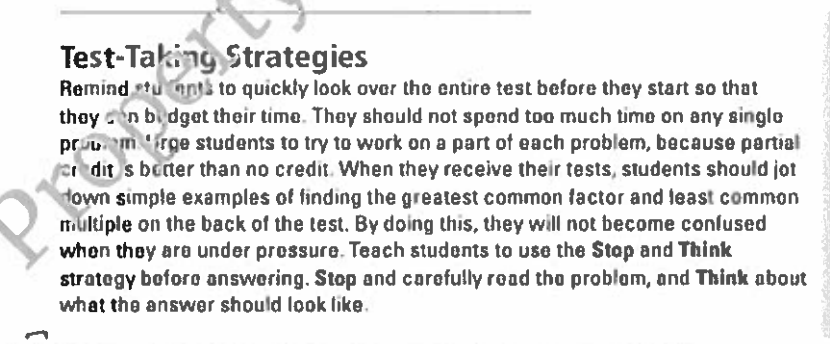
- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition


ELL Support

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.
**Beginner:** Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.
**Intermediate:** Describe the equation. For example, "two times two times two equals two to the third power."
**Advanced:** Explain the functions of bases, exponents, and powers.

**- Sample**

- **Test Taking Strategies page T355 - Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.


Test-Taking Strategies

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop** and **Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

- Sample

**Social Emotional Well Being Activities - All Units**

## Standards

**NJ Student Learning Standards for Mathematics: 7.SP.A.1, 7.SP.A.2, 7.SP.B.3, 7.SP.B.4**

Statistics and Probability

- Use random sampling to draw inferences about a population.
  - Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
  - Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.
- Draw informal comparative inferences about two populations.
  - Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.
  - Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.

# Unit 8: Statistics

**Lesson:** Chapter Exploration/Samples and Populations 2 - 5 Days

**Materials:**
*STEAM video, whiteboards*

**Activities:**
- Watch a video about different breeds of dogs vary and answer questions about populations and samples of dogs
- Preview the Performance Task on estimating animal populations
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Participate in a class survey and respond to questions about populations and samples.
- Explore/Discuss - Identify populations and samples and compare different samples to determine whether they are used to draw valid conclusions.
- Explain why a sample is biased or unbiased.
- Explain why conclusions made from a biased sample may not be valid.
- Use an unbiased sample to make a conclusion about a population.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Using Random Samples to Describe Populations 2 - 3 Days

**Materials:**
*whiteboards, packing peanuts, beans, permanent marker, food dye, colored tiles, marbles, paper bags, calculators*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss prior knowledge of surveys.
- Explore/Discuss - Explore variability in samples by comparing the results of a simulated sample to the population. Discuss that different unbiased samples often give slightly different conclusions due to variability in the data.
- Use multiple random samples to make conclusions about a population.
- Use multiple random samples to examine variation in estimates.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Comparing Populations 2 - 3 Days

**Materials:**
*whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Compare box and whisker plots showing electricity produced from solar panels on two houses.
- Explore/Discuss - Describe overlap in three data displays, and reason about which data display shows two data sets with the most significantly different measures of center. Discuss measures of center and variation for symmetric (mean and mean deviation) and skewed (median and interquartile range) data sets.
- Find the measures of center and variation of a data set.
- Describe the visual overlap of two data distributions numerically.
- Determine whether there is a significant difference in the measures of the center of two data sets.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Using Random Samples to Compare Populations 2 - 3 Days

**Materials:**
*whiteboards*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss TV ratings as an example of random sampling, and discuss other examples of random samples.
- Explore/Discuss - Compare random samples of the numbers of hours males and females in one state spent on homework. Discuss that random samples can be used to make comparisons of two populations.
- Compare random samples using measures of center and variation.
- Recognize whether random samples are likely to be representative of a population.
- Compare populations using multiple random samples.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts/Unit Review 3 - 4 Days

**Materials:**
*graphic organizers*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from the current unit and prior learning.
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide

**Accommodations & Differentiated Instruction, depending on individual student needs** (students with an IEP, MLL Students; Students At Risk; Gifted Students) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Use alternate texts at lower readability level
- Rephrase word problems
- Reduce readability level of materials
- Work with fewer items per page or line and/or materials in a larger print size
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (which may require teacher use of microphone)
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Provide tutorial video(s)
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments

**Response Accommodations**

- Use sign language, a communication device, Braille, other technology, or native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use of calculator
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting
- Use noise buffers such as headphones, earphones, or earplugs

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

**Scheduling Accommodations**

- Take more time to complete a project
- Take sections of a test in a different order
- Take a test at a specific time of day

**Organization Skills Accommodations**

- Use an alarm to help with time management
- Mark texts with a highlighter
- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses
- Answer fewer or different questions
- Assign questions aligned to different levels such as emerging, proficient, and/or advanced.
- Create alternate projects or assignments

**Curriculum Modifications**

- Get assessed using a leveled standard/concept (emerging, proficient, and/or advanced) than the one for classmate

Differentiated Lesson(s)for this Statistics Unit

**Accommodations & Differentiate Instruction, depending on individual student needs** (Please refer to each individual student's **504 Plan**) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Rephrase word problems
- Work with fewer items per page or line and/or materials in a larger print size
- Be given a written list of instructions
- Have another student share class notes with him

- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use of calculator
- Use of a math grid
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Take frequent breaks, such as after completing a task

**Organization Skills Accommodations**

- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses

# Unit 9: Geometric Shapes and Angles

**Student Paced Time Frame:** 13 days to 18 days (2-3 weeks)

## Overview

In this unit, students will understand geometry.

## Enduring Understandings

- Explain how to find the circumference of a circle.
- Find the areas of circles and composite figures.
- Solve problems involving angle measures.
- Construct a polygon.

## Skill and Knowledge Objectives

- Find the circumference of a circle.
- Find the area of a circle.
- Find perimeters and areas of composite figures.
- Construct a polygon with given measures.
- Use facts about angle relationships to find unknown angle measures.

## Assessments

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matters
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Chapter Tests A and B
- Alternative Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
  - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
  - Adjustable time
  - Prevent or Allow late submission
  - Release for review by teacher or upon submission
  - Randomize - recalculates the values for each question so students are not given the same assessment
  - Scramble- rearranges questions so students are not given the same assessment

**MLL/ELL Support**

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

**Big Ideas Video Tutorials**

**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

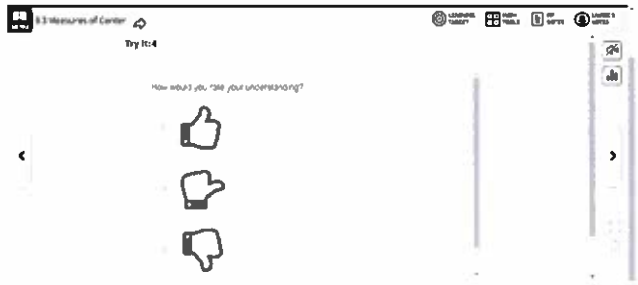
**Virtual Manipulatives**

**Digital Examples**

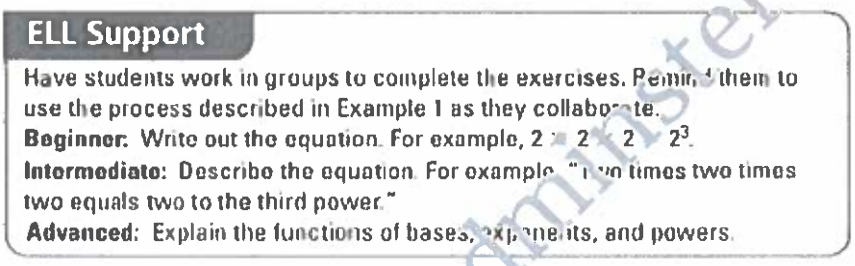
**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.

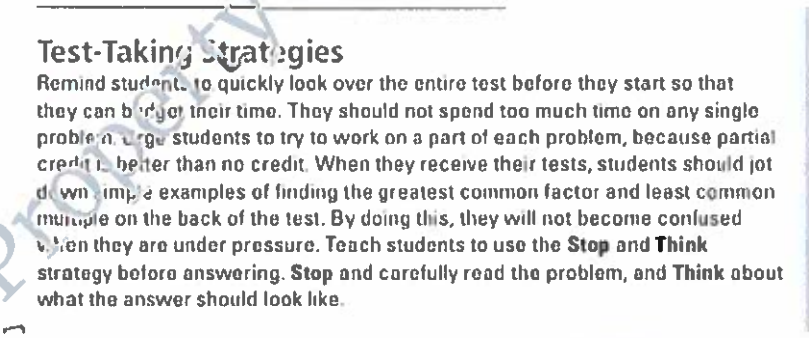


- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition




**- Sample**

- **Test Taking Strategies page T403 - Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.




- Sample

**Social Emotional Well Being Activities - All Units**

**Standards**

**NJ Student Learning Standards for Mathematics: 7.G.A.2, 7.G.B.4, 7.G.B.5, 7.G.B.6,**

Geometry

- Draw, construct, and describe geometrical figures and describe the relationships between them.
  - Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
- Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
  - Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
  - Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
  - Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms..

# Unit 9: Geometric Shapes & Angles

**Lesson:** Chapter Exploration/Circles & Circumference 2 - 3 Days

**Materials:**
*STEAM video, whiteboards,compass, string, ruler, cylindrical objects with different diameters (aluminum can, paper towel roll, toilet paper roll, glass), calculators*

**Activities:**
- Watch a video about track and field racetracks and answer questions about the lengths of different lanes.
- Preview the Performance Task on area and perimeter of a track.
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Draw a circle and estimate the circumference.
- Explore/Discuss - Measure the diameter and circumference of the base of a cylindrical object and determine how they are related.
- Explain the relationship between the diameter and circumference of a circle.
- Use a formula to find the circumference of a circle.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Areas of Circles 1 - 2 Days

**Materials:**
*whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use different size pizzas to model the difference in area between two circles.
- Explore/Discuss - Estimate the area of a circle using a grid and use a diagram to write the formula for the area of a circle.
- Estimate the area of a circle.
- Use a formula to find the area of a circle.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Perimeters and Areas of Composite Figures 2 - 3 Days

**Materials:**
*Tangrams, scissors, whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Observe that rearranging a composite figure(modeled by tangrams) does not change the area of the figure.
- Explore/Discuss - Estimate the total cost for installing tile and adding a custom tarp to a pool and write a bid for how much they would charge to complete the work.
- Use a grid to estimate perimeters and areas.
- Identify the shapes that make up a composite figure.
- Find the perimeters and areas of shapes that make up composite figures.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Constructing Polygons 2 - 3 Days

**Materials:**
*whiteboards,geometry software, lengths of drinking straws, protractors*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Play a game to review vocabulary words about angles and triangles.
- Explore/Discuss - Use geometry software to draw polygons based on lengths and angles listed in a table and determine rules for whether a figure can exist for given side lengths and angle measures.
- Use technology to draw polygons.
- Determine whether given measures result in one triangle, many triangles, or no triangle.
- Draw polygons given angle measures or side lengths.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Finding Unknown Angle Measures 2 - 3 Days

**Materials:**
*whiteboards,protractors*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss the contribution of Euclid, the Greek mathematician credited for the study of geometry. • 9.4.8.CI.4: Explore the role of creativity and innovation in career pathways and industries
- Explore/Discuss - Use a diagram to reason about the relationships between vertical and adjacent angles. Discuss adjacent, complementary, supplementary, and vertical angles.
- Identify adjacent, complementary, supplementary, and vertical angles.
- Use equations to find unknown angle measures.
- Find unknown angle measures in real-life situations.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts/Unit Review 3 - 4 Days

**Materials:**
*graphic organizers*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from the current unit and prior learning. 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2). 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1)
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide

**Accommodations & Differentiated Instruction, depending on individual student needs** (students with an IEP, MLL Students; Students At Risk; Gifted Students) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Use alternate texts at lower readability level
- Rephrase word problems
- Reduce readability level of materials
- Work with fewer items per page or line and/or materials in a larger print size
- Provide multi-sensory presentation of data
- Use magnification device, screen reader, or Braille / Nemeth Code
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (which may require teacher use of microphone)
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Provide tutorial video(s)
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts
- Be given a formula sheet with visuals for each formula

**Response Accommodations**

- Use sign language, a communication device, Braille, other technology, or native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use of calculator
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting
- Use noise buffers such as headphones, earphones, or earplugs

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

**Scheduling Accommodations**

- Take more time to complete a project
- Take sections of a test in a different order
- Take a test at a specific time of day

**Organization Skills Accommodations**

- Use an alarm to help with time management
- Mark texts with a highlighter
- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides/formula sheets

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses
- Answer fewer or different questions
- Assign questions aligned to different levels such as emerging, proficient, and/or advanced.
- Create alternate projects or assignments

**Curriculum Modifications**

- Learn different material related to the same mathematical concept (such as continuing to work on same concept with easier numbers, or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get assessed using a leveled standard/concept (emerging, proficient, and/or advanced) than the one for classmate

**Differentiated Lesson(s)for this Geometric Shapes & Angles Unit**

**Accommodations & Differentiate Instruction, depending on individual student needs** (Please refer to each individual student's **504 Plan**) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded

- Rephrase word problems
- Work with fewer items per page or line and/or materials in a larger print size
- Be given a written list of instructions
- Have another student share class notes with him
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use of calculator
- Use of a math grid
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Take frequent breaks, such as after completing a task

**Organization Skills Accommodations**

- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses

# Unit 10: Surface Area & Volume

**Student Paced Time Frame:** 15 days to 22 days (3 weeks)

## Overview

In this unit, students will understand surface area and volume.

## Enduring Understandings

- Describe the surface area and volume of different shapes.
- Use formulas to find surface areas and volumes of solids.
- Solve real-life problems involving surface area and volume.
- Describe cross sections of solids.

## Skill and Knowledge Objectives

- Find the surface area of a prism.
- Find the surface area of a cylinder.
- Find the surface area of a pyramid.
- Find the volume of a prism.
- Find the volume of a pyramid.
- Describe the cross sections of a solid.

## Assessments:

*Note: Questions may be revised, modified, and/or simplified based on students' needs. Special Education teachers, and English as Second Language teachers will be notified for suggestions to modify/revise/simplify assessments, as needed.*

**Pre-Assessment:**

- Preview Performance Task - Melting Matters
- Unit Exploration - Plotting Points in a Coordinate Plane

**Formative Assessment:**

- Mid-Unit Assessments
- Modified Quiz - Surface Area
- Chapter Tests A and B
- Alternative Assessment
- STEAM Performance Task
- Online Quiz (Big Ideas Website)- Teacher selected (based on students needs and abilities)
- Web based (Big Ideas) lesson presentation followed by web based Self Assessment Concepts and Skills and Self Assessment for Problems Solving
- Online (Big Ideas Website) - classwork and homework problems - providing automatic results on accuracy to students and teacher

**Self-Reflection/Self-Assessment:**

- Student Journal Responses
- Mini-Assessments
- Complete Performance Task after completing this unit of instruction.

**Summative Assessment:**

- Unit Assessment
- Paper tests - Version A, Version B, or Alternative Assessment (based on students needs and abilities)
- Online Test (Big Ideas Website)- Teacher selected problems (based on students needs and abilities)

## Additional Resources:

**Paper based and pdf worksheets** ( Big Ideas)

- Cumulative practice
- Vocabulary practice
- Prerequisite skills practice
- Extra practice
- Reteach
- Enrichment and Extension
- Puzzle time

**Web based practice and assessments**

- Practice problems
  - Adjustable time
  - Calculator - 4 function, scientific, or graphing
  - Stepped out video examples
  - Answer check - 0,1,2,3,4,5, or Unlimited
- Tests and quizzes
  - Adjustable time
  - Prevent or Allow late submission
  - Release for review by teacher or upon submission
  - Randomize - recalculates the values for each question so students are not given the same assessment
  - Scramble- rearranges questions so students are not given the same assessment

**MLL/ELL Support**

- English language learners strategies infused in Big Ideas Teacher Edition
- Online- Big Ideas Multi-Language Glossary
- Dynamic Student eBook and Dynamic Student Edition includes English and Spanish audio

**Big Ideas Video Tutorials**

**Big Ideas Tutor - live audio support with Big Ideas tutor during select practice problems**

**Virtual Manipulatives**

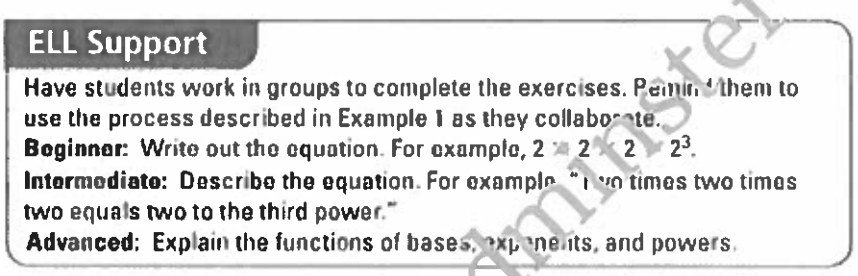
**Digital Examples**

**Skills Trainer - online (Big Ideas) interactive tool for skills practice - used for remediation or enrichment**

**New Jersey Social and Emotional Learning Competencies:**
**Self-Awareness, Self-Management, Social Awareness, Responsible Decision-Making, Relationship Skills**
**Activities:**

- **Thumbs Up:** Infused in every online lesson presentation tool through Big Ideas website Dynamic Classroom. This technique asks students to indicate the extent to which they understand a concept, procedure, or even the direction of activity. This allows students to communicate their feelings with respect to a specific success criterion.

- **MLL Support:** English language learners strategies infused in every lesson of Big Ideas Teaching Edition

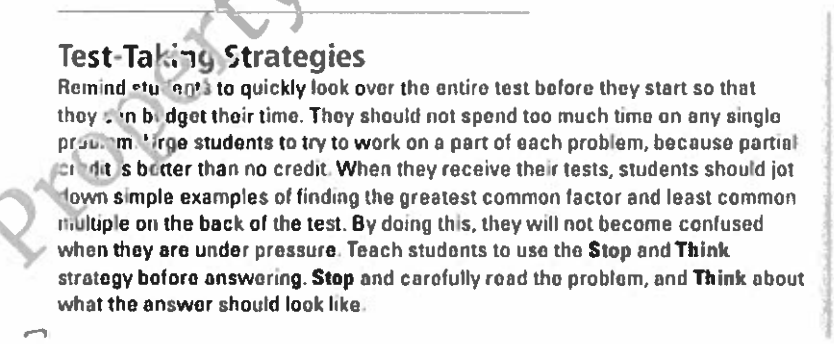


**ELL Support**

Have students work in groups to complete the exercises. Remind them to use the process described in Example 1 as they collaborate.
**Beginner:** Write out the equation. For example, $2 \times 2 \times 2 = 2^3$.
**Intermediate:** Describe the equation. For example, "Two times two times two equals two to the third power."
**Advanced:** Explain the functions of bases, exponents, and powers.

**- Sample**

- **Test Taking Strategies page T451 - Big Ideas -**
  Teacher led discussions prior to each chapter test.
  Designed to reduce student stress and improve test taking abilities.



**Test-Taking Strategies**

Remind students to quickly look over the entire test before they start so that they can budget their time. They should not spend too much time on any single problem. Urge students to try to work on a part of each problem, because partial credit is better than no credit. When they receive their tests, students should jot down simple examples of finding the greatest common factor and least common multiple on the back of the test. By doing this, they will not become confused when they are under pressure. Teach students to use the **Stop** and **Think** strategy before answering. **Stop** and carefully read the problem, and **Think** about what the answer should look like.

- Sample

**Social Emotional Well Being Activities - All Units**

| |
|---|
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| • |

# Unit 10: Surface Area & Volume

**Lesson:** Chapter Exploration/ Surface Area of Prisms - 3 - 4 Days

**Materials:**
*STEAM video, whiteboards, cardboard examples of prisms (e.g. donut, pizza, or tissue boxes), nets, grid paper*

**Activities:**
- Watch a video about methods for measuring the thickness of a piece of paper and answer questions about finding the volume of single pieces and stacks of paper with different shapes and dimensions.
- Preview the Performance Task on volumes and surface areas of small objects.
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Describe the meaning of surface area, the numbers of faces on a prism, the meaning of congruent, and the applications of surface area.
- Explore/Discuss - Write and apply a formula for surface area of a rectangular prism. Identify the solid represented by a net and find the surface area of the solid.
- Use a formula to find the surface area of a prism.
- Find the lateral surface area of a prism.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Surface Areas of Cylinders 1 - 2 Days

**Materials:**
*Whiteboards,cans, scrap paper, tape, scissors, grid paper, plastic bags, sticky notes, calculators*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Reason about how surface area relates to the dimensions of a cylinder, and how volume and surface area relate.
- Explore/Discuss - Find the surface area of a cylindrical can by making a net and finding a formula to represent the can's surface area. Discuss that the surface area of a cylinder is the sum of the areas of the bases and lateral surface.
- Use a formula to find the surface area of a cylinder.
- Find the lateral surface area of a cylinder.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Surface Areas of Pyramids 2 - 3 Days

**Materials:**
*rulers, scissors, tape,whiteboards*

**Activities:**
- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Explore the Great Pyramid of Egypt.
- Explore/Discuss - Draw a net for a scale model of a pyramid with a square base, describe the scale factor, and find the lateral surface area, then repeat for a pyramid with a non-rectangular base. Discuss regular pyramids and slant height.
- Use a net to find the surface area of a regular pyramid.
- Find the lateral surface area of a regular pyramid.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Volumes of Prisms 2 - 3 Days

**Materials:**
*tissue box, models of solids, index cards, whiteboards*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use a story about a large number of pennies to model the volume of prisms.
- Explore/Discuss - The volumes of various prisms and how to find the volume.
- Use a formula to find the volume of a prism.
- Use the formula for the volume of a prism to find a missing dimension.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Volumes of Pyramids 2 - 3 Days

**Materials:**

*rice, popcorn kernels, sand, newspaper, whiteboards, pyramid-shaped lotion or shampoo bottle*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Discuss Transamerica Pyramid building in San Francisco as a real-life example of a pyramid.
- Explore/Discuss - Determine the formula for the volume of a pyramid by assembling cubical and pyramidal nets and filling them to compare their volumes. Discuss that the volume of a pyramid is one-third the volume of a prism (the product of the area of the base and height of the pyramid).
- Use a formula to find the volume of a pyramid.
- Use the volume of a pyramid to solve a real-life problem.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Cross Sections of Three-Dimensional Figures 2 - 3 Days

**Materials:**
*cubes, rubber bands, Styrofoam, clay or playdough, knives or floss for cutting, flashlight, index cards*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Model cross sections of a cube using a rubber band.
- Explore/Discuss - Use zucchini bread to model and describe cross sections of rectangular prisms when it is cut in different ways. Discuss cross sections.
- Explain the meaning of a cross section.
- Describe cross sections of prisms and pyramids.
- Describe cross sections of cylinders and cones.
- Self Assessment for Concepts & Skills
- Self Assessment for Problem Solving
- Closure Activity/Mini Assessment

**Lesson:** Connecting Concepts/Unit Review 3 - 4 Days

**Materials:**
*graphic organizers*

**Activities:**

- Warm Up - Cumulative Practice, Vocabulary Practice, Prerequisite Skill Practice
- Motivate - Use problem solving to solve exercises that combine the concepts from current unit and prior learning.
- Explore/Discuss/Review - Review vocabulary terms, complete graphic organizers for the concepts and complete review exercises.
- Self Assessment for Concepts & Skills

- Self Assessment for Problem Solving
- Closure Activity/Practice Assessment - Study Guide

## Standards

**NJ Student Learning Standards for Mathematics: 7.G.A.3, 7.G.B.4, 7.G.B.6**

Geometry

- Draw, construct, and describe geometrical figures and describe the relationships between them.
  - Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
- Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
  - Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
  - Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

**Accommodations & Differentiated Instruction, depending on individual student needs** (students with an IEP, MLL Students; Students At Risk; Gifted Students) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Rephrase word problems
- Reduce readability level of materials
- Work with fewer items per page or line and/or materials in a larger print size
- Use magnification device, screen reader, or Braille / Nemeth Code
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (which may require teacher use of a microphone)
- Be given a written list of instructions
- Record a lesson, instead of taking notes
- Provide tutorial video(s)
- Have another student share class notes with him
- Be given an outline of a lesson
- Be given a copy of teacher's lecture notes
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use sign language, a communication device, Braille, other technology, or native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use of calculator
- Use a word processor to type notes or give responses in class
- Be given a formula sheet with visuals for each formula

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting
- Use noise buffers such as headphones, earphones, or earplugs

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

**Scheduling Accommodations**

- Take more time to complete a project
- Take sections of a test in a different order
- Take a test at a specific time of day

**Organization Skills Accommodations**

- Use an alarm to help with time management
- Mark texts with a highlighter
- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides/formula sheet

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses
- Answer fewer or different questions
- Assign questions aligned to different levels such as emerging, proficient, and/or advanced.
- Create alternate projects or assignments

**Curriculum Modifications**

- Learn different material related to the same mathematical concept (such as continuing to work on same concept with easier numbers or moving ahead to an extension concept/skill while classmates continue to work on a core skill)
- Get assessed using a leveled standard/concept (emerging, proficient, and/or advanced) than the one for classmate

**Differentiated Lesson(s)for this Surface Area & Volume Unit**

**Accommodations & Differentiate Instruction, depending on individual student needs** (Please refer to each individual student's **504 Plan**) **by:**

**Presentation Accommodations**

- Present information via the visual modality(written material to supplement oral explanation, models, illustrations, assignments written on board)
- Directions repeated, clarified or reworded
- Rephrase word problems
- Work with fewer items per page or line and/or materials in a larger print size

- Be given a written list of instructions
- Have another student share class notes with him
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use of calculator
- Use of a math grid
- Use a word processor to type notes or give responses in class

**Setting Accommodations**

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where student learns best (for example, near the teacher & away from distractions)
- Take an assessment and/or assignment in small group setting

**Timing Accommodations**

- Take more time to complete a task or an assessment
- Take frequent breaks, such as after completing a task

**Organization Skills Accommodations**

- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses

**Accommodations & Differentiate Instruction, depending on individual student needs** (Please refer to each individual student's **504 Plan**) **by:**

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- Rephrase word problems
- Work with fewer items per page or line and/or materials in a larger print size
- Be given a written list of instructions
- Have another student share class notes with him
- Be given a study guide to assist in preparing for assessments
- Use manipulatives to teach or demonstrate concepts

**Response Accommodations**

- Use of calculator
- Use of a math grid
- Use a word processor to type notes or give responses in class

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**Organization Skills Accommodations**

- Break down tasks into manageable units
- Use of checklists
- Provide organizers/study guides

**Assignment Modifications**

- Provide larger white work space
- Allow for oral rather than written responses

**Differentiated Lesson(s)for this Unit**

**FOR ALL UNITS**

**Standard 8 Computer Science & Design Thinking Technology, Standard 9 21st-Century Life & Career Skills and/or Financial Literacy; AND Activities/Lesson(s):**

- 8.1.5.NI.1: Develop models that successfully transmit and receive information using both wired and wireless methods.
- 8.1.5.NI.2: Describe physical and digital security measures for protecting sensitive personal information.
- 8.1.8.CS.1: Recommend improvements to computing devices in order to improve the ways users interact with the devices
- 8.1.8.CS4: Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.
- 8.1.8.DA.4: Transform data to remove errors and improve the accuracy of the data for analysis.
- 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

https://www.state.nj.us/education/aps/cccs/career/

**9.1 21st-Century Life & Career Skills:**

- All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational culture.

**A. Critical Thinking and Problem Solving**

- 9.1.8.A.1 Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.
- 9.1.8.A.2 Implement problem-solving strategies to solve a problem in school or the community.
- 9.1.8.A.3 Summarize strategies used by various organizations and agencies to solve problems that impact communities, and compare them with strategies used by similar organizations in another state or country.
- 9.1.8.A.4 Design and implement a project management plan using one or more problem-solving strategies.

**B. Creativity and Innovation**

- 9.1.8.B.1 Use multiple points of view to create alternative solutions.
- 9.1.8.B.2 Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions.

**C. Collaboration, Teamwork, and Leadership**

- 9.1.8.C.1 Determine an individual's responsibility for personal actions and contributions to group activities.
- 9.1.8.C.2 Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects.
- 9.1.8.C.3 Model leadership skills during classroom and extra-curricular activities.

**9.4 4 Life Literacies and Key Skills**

- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
- 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1).
- • 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.
- • 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).

**Additional Social and Emotional Competencies - Embed within Classroom Instruction**

- Recognize the skills needed to establish and achieve personal and educational goals
- Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals
- Develop, implement, and model effective problem-solving and critical thinking skills
- Connect mathematical problems to student experiences
- Students explain their answers to each other
- Students self assess and/or self reflect on their understanding and level of engagement within the classroom setting and the instruction being provided.