



**SPRINGFIELD PUBLIC SCHOOLS**  
ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY GLOBAL SKILLS

# **Springfield Public Schools Springfield, New Jersey 07081**

## **Grade 7 Math Pre-Algebra**

### **Curriculum Guide**

**2024**

**This curriculum may be modified through varying materials, techniques, and strategies  
as per an individual student's IEP.**

Springfield Board of Education  
Approved on August 26, 2024



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### Unit Overview Template

**Content Area:** Mathematics    **Grade Level:** 7    **Unit 1 Title:** Integers, Expressions and Equations

**Unit Summary:** In this unit, students will be able to compute with integers and extend it to any rational expression. Students will also solve equations and inequalities.

**Primary Interdisciplinary Connections:** *Science and Engineering*

**21<sup>st</sup> Century Themes**    ☐ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ ICT Literacy  
☐ Information Literacy    ☒ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy

**Unit Rationale:** Students will expand on integers, expressions, and equations in further math and science courses.

**Career Readiness (Standard 9):**

9.1.8.CP.1: Compare prices for the same goods or services.

9.4.8.IML.2: Identify specific examples of distortion, exaggeration, or misrepresentation of information.

9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).

9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations.

9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.

9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).

### Learning Targets

**Standards:** 7.NS; 7.EE

**Content Statements:** Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers; Use properties of operations to generate equivalent expressions; Solve real-life and mathematical problems using numerical and algebraic expressions and equations

**CPI#:**

**Cumulative Progress Indicator (CPI):**

7.NS.A.1

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.

a. 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?

b. 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.



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|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <p>c. Understand subtraction of rational numbers as adding the additive inverse, <math>p - q = p + (-q)</math>. 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.</p> <p>d. Apply properties of operations as strategies to add and subtract rational numbers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 7.NS.A.2 | <p>Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>a. 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 <math>(-1)(-1) = 1</math> and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>b. 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 <math>p</math> and <math>q</math> are integers, then <math>-(p/q) = (-p)/q = p/(-q)</math>. Interpret quotients of rational numbers by describing real world contexts.</p> <p>c. Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>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.</p> |
| 7.NS.A.3 | <p>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.)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7.EE.A.1 | <p>Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 7.EE.A.2 | <p>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, <math>a + 0.05a = 1.05a</math> means that “increase by 5%” is the same as “multiply by 1.05.”</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7.EE.B.3 | <p>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 <math>1/10</math> of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar <math>9\frac{3}{4}</math> inches long in the center of a door that is <math>27\frac{1}{2}</math> inches wide, you will need to place the bar about 9 inches</p>                                                                                                                                                                                                                                                                                                                                                                      |



|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | from each edge; this estimate can be used as a check on the exact computation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 7.EE.B.4      | <p>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.</p> <p>a. Solve word problems leading to equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> 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?</p> <p>b. Solve word problems leading to inequalities of the form <math>px + q &gt; r</math> or <math>px + q &lt; r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> 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.</p> |
| SEL.PK-12.3.2 | Demonstrate and awareness of the differences among individuals, groups, and others' cultural backgrounds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| SEL.PK-12.3.3 | Demonstrate an understanding of the need for mutual respect when viewpoints differ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| SEL.PK-12.4.1 | Develop, implement and model effective problem-solving, and critical thinking skills.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| SEL.PK-12.5.2 | Utilize positive communication and social skills to interact effectively with others.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| MS-ETS1-2     | Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

**Unit Essential Questions:**

- How are integers, equations, and inequalities used in everyday living?

**Unit Enduring Understandings:**

- Knowledge of integer computations can be extended to rational numbers.
- Knowledge of solving equations can be extended to solving inequalities.

**Unit Learning Targets:**

Students will....

- compute with integers for all operations.
- compute with rational numbers.
- simplify expressions using order of operations.
- evaluate expressions.
- simplify expressions using distributive property and combining like terms.
- identify equivalent expressions.
- write and solve 1-step and 2-step equations and inequalities.
- factor out a GCF from an expression.



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- Climate Change Example: Students may solve real-world problems involving the four operations with rational numbers related to the relationship between altitude and the temperature above sea level.
- Climate Change Example: Students may solve multi-step real-life problems posed with positive and negative rational numbers in any form related to the relationship between altitude and the temperature above sea level.

### Evidence of Learning

**Summative Assessment:** Integers Quiz, Solving Equations Quiz, Solving Inequalities Quiz

**Equipment Needed:** Laptops, Notebooks, Pencils

**Teacher Resources:** Class Website, Big Ideas Math Textbook, i-Ready

#### **Formative Assessments:**

- Entrance card
- Exit cards
- i-Ready
- Informal observation
- Quizzes



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### Lesson Plans

| Lesson                                             | Time Frame       |
|----------------------------------------------------|------------------|
| Lesson 1 <b>Integer Computations</b>               | <b>4 classes</b> |
| Lesson 2 <b>Writing &amp; Solving Equations</b>    | <b>3 classes</b> |
| Lesson 3 <b>Writing &amp; Solving Inequalities</b> | <b>1 class</b>   |

#### Teacher Notes:

#### Curriculum Development Resources/Technology Resources:

*Click the links below to access additional resources used to design this unit:*

Class Websites

Big Ideas Math Resources

i-Ready

<https://tasks.illustrativemathematics.org/content-standards>

<https://www.desmos.com/>

<https://nj.digitalitemlibrary.com/home>

<https://resources.newmeridiancorp.org/released-items/>

<https://nj.mypearsonsupport.com/practice-tests/math/>



### Lesson Plan 1 Template

Content Area: Mathematics      Lesson Title: Integer Computations      Time Frame: 4 classes

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☐ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy      ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☐ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☒ Life and Career Skills    ☐ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                                                                           | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Formative Assessment Tasks                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>• add, subtract, multiply, and divide integer expressions.</li> <li>• extend knowledge of computing with integers to computing with any rational numbers.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>1. Begin with an adding integers mini lesson. Ask students for representations of finding sums.</li> <li>2. Review the number line.</li> <li>3. Students then work on the Partner Card Game.</li> <li>4. Bring the class together for a subtracting integers mini lesson.</li> <li>5. Ask students to solve problems involving parenthesis.</li> <li>6. Ask students to get in pairs to determine how to represent subtraction on the number line.</li> <li>7. Students will work on the Desmos activity.</li> <li>8. Bring the class back together for a</li> </ol> | <ul style="list-style-type: none"> <li>• Informal Observations</li> <li>• Do Nows</li> <li>• Kahoot</li> <li>• Desmos</li> <li>• Entrance Card</li> <li>• Exit Cards</li> </ul> |



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multiplying and dividing  
integers mini lesson.

9. Play the Kahoot game as a whole group.
10. Use the Desmos Mixed Review activity to assess students. Meet with small groups for any necessary review based on progress.

### **Differentiation:**

- Integer Rules Sheet
- Manipulatives: Colored Counters
- Number Lines
- Multiplication Chart
- Smaller Numbers

### **Resources Provided:**

- Integer Rules Sheet



### Lesson Plan 2 Template

Content Area: Mathematics      Lesson Title: Writing & Solving Equations      Time Frame: 3 classes

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☐ Global Awareness      ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy      ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☐ Creativity and Innovation      ☒ Critical Thinking and Problem Solving      ☐ Information Literacy  
☒ Life and Career Skills      ☒ Communication and Collaboration      ☐ Media Literacy      ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                     | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Formative Assessment Tasks                                                                                                          |
|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>write and solve two step equations.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Begin with a Solving 2-Step Equations Mini Lesson. Students should be able to solve equations without fractions to start.</li> <li>Break students into pairs to work on the Desmos activity. Meet with small groups of students based on progress to work on solving.</li> <li>Next, with the whole class, complete a Solving 2-Step Equations with fractions mini lesson.</li> <li>Review multiplying and dividing in equations. Ask students to share</li> </ol> | <ul style="list-style-type: none"> <li>Informal Observations</li> <li>Do Nows</li> <li>Entrance Card</li> <li>Exit Cards</li> </ul> |



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|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                                                                                                                          | <p>with a partner how to apply operations to both sides of the equation.</p> <ol style="list-style-type: none"><li>5. Break students into groups to solve NJSLA problems on the board. Circulate the room as students work.</li><li>6. While students are still at the board, pose a problem to the whole class asking students to write an equation and solve. Circulate the room as students solve.</li></ol> |  |
| <b>Differentiation:</b> <ul style="list-style-type: none"><li>• Integer Rules Sheet</li><li>• Modeled Problems</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| <b>Resources Provided:</b> <ul style="list-style-type: none"><li>• Integer Rules Sheet</li><li>• Guided Notes</li></ul>  |                                                                                                                                                                                                                                                                                                                                                                                                                 |  |



### Lesson Plan 3 Template

Content Area: Mathematics      Lesson Title: Writing & Solving Inequalities Time Frame: 1 day

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☐ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy      ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☐ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☐ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                               | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Formative Assessment Tasks                                                                               |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>write and solve inequalities.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Break students into pairs. Pose an inequality word problem to the students, asking them to write the inequality.</li> <li>Circulate the room, reviewing the inequalities students came up with.</li> <li>Ask a student volunteer to come up to the board to solve the inequality.</li> <li>Discuss what to do with the inequality sign when dividing by a negative. Show why the sign flips by solving with addition/subtraction rather than division.</li> <li>Break students into groups to solve NJSLA</li> </ol> | <ul style="list-style-type: none"> <li>Informal Observations</li> <li>Desmos</li> <li>i-Ready</li> </ul> |



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- inequality problems.  
Circulate the room.
6. Students then work on the Desmos activity when they complete the problems.

### Differentiation:

- Integer Rules Sheet
- Modeled Problems

### Resources Provided:

- Integer Rules Sheet
- Guided Notes



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**Lesson Reflection**

Reflect on the lesson you have developed and rate the degree to which the lesson *Strongly, Moderately* or *Weakly* meets the criteria below.

| <b>Lesson Activities</b>                                                                                             | <b>Strongly</b>                     | <b>Moderately</b>                   | <b>Weakly</b>                       |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Are challenging <b>Strongly</b> and require higher order thinking and problem solving skills                         | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Allow for student choice                                                                                             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Provide scaffolding for acquiring targeted knowledge/skills                                                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Integrate global perspectives                                                                                        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Integrate 21st century skills                                                                                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Provide opportunities for interdisciplinary connection and transfer of knowledge and skills                          | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Are varied to address different student learning styles and preferences                                              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Are differentiated based on student needs                                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Provide opportunities for student reflection and self- assessment                                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Provide data to inform and adjust instruction to better meet the varying needs of learners                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |

**Curriculum Design Template**

|                                  |                       |                                                        |
|----------------------------------|-----------------------|--------------------------------------------------------|
| <b>Content Area:</b> Mathematics | <b>Grade Level:</b> 7 | <b>Unit Title:</b> Integers, Expressions and Equations |
| <b>Created:</b> May 2024         |                       | <b>Board Approved on:</b>                              |



### Unit Overview Template

**Content Area:** Mathematics

**Grade Level:** 7

**Unit 2 Title:** Percents

**Unit Summary:** In this unit students will calculate percentage application problems. Topics will include: discounts & sales prices, tax, tip, dinner bills, mark ups & selling prices, commission, percent error, percent of change, simple & compound interest.

**Primary Interdisciplinary Connections:** *Financial Literacy, English Language Arts*

**21<sup>st</sup> Century Themes** ☒ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ ICT Literacy  
☐ Information Literacy ☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy

**Unit Rationale:** Students will gain experience applying mathematics to real-world financial situations.

#### **Career Readiness (Standard 9):**

9.1.8.CR.1: Compare and contrast the role of philanthropy, volunteer service, and charities in community development and the quality of life in a variety of cultures.

9.1.8.CR.2: Compare various ways to give back through strengths, passions, goals, and other personal factors.

9.1.8.CR.3: Relate the importance of consumer, business, and government responsibility to the economy and personal finance.

9.1.8.CR.4: Examine the implications of legal and ethical behaviors when making financial decisions.

9.1.8.CDM.1: Compare and contrast the use of credit cards and debit cards for specific purchases and the advantages and disadvantages of using each.

9.1.8.CDM.2: Demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages, lines of credit) and compare and calculate the interest rates associated with each.

9.1.8.CP.1: Compare prices for the same goods or services.

9.1.8.CP.2: Analyze how spending habits affect one's ability to save.

9.1.8.FP.1: Describe the impact of personal values on various financial scenarios.

9.1.8.FP.2: Evaluate the role of emotions, attitudes, and behavior (rational and irrational) in making financial decisions.

9.1.8.FP.3: Explain how self-regulation is important to managing money (e.g., delayed gratification, impulse buying, peer pressure, etc.).

9.1.8.FP.4: Analyze how familial and cultural values influence savings rates, spending, and other financial decisions.

9.1.8.FP.5: Determine how spending, investing, and using credit wisely contributes to financial well-being.

9.1.8.PB.1: Predict future expenses or opportunities that should be included in the budget planning process.

9.1.8.PB.2: Explain how different circumstances can affect one's personal budget.

9.1.8.PB.3: Explain how to create a budget that aligns with financial goals.

9.2.8.CAP.12: Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.



9.4.8.CI.3: Examine challenges that may exist in the adoption of new ideas (e.g., 2.1.8.SSH, 6.1.8.CivicsPD.2).

### Learning Targets

**Standards:** 7.RP; 7.NS; 7.EE

**Content Statements:** Analyze proportional relationships and use them to solve real-world and mathematical problems; Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers; Use properties of operations to generate equivalent expressions

| <b>CPI#:</b>  | <b>Cumulative Progress Indicator (CPI):</b>                                                                                                                                                                                                                                             |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.RP.A.3      | 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.                                                                    |
| 7.NS.A.1.d    | 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.<br>d. Apply properties of operations as strategies to add and subtract rational numbers. |
| 7.NS.A.3      | Solve real-world and mathematical problems involving the four operations with rational numbers.                                                                                                                                                                                         |
| 7.EE.A.2      | 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.”                                 |
| SEL.PK-12.3.2 | Demonstrate and awareness of the differences among individuals, groups, and others’ cultural backgrounds.                                                                                                                                                                               |
| SEL.PK-12.3.3 | Demonstrate an understanding of the need for mutual respect when viewpoints differ.                                                                                                                                                                                                     |
| SEL.PK-12.4.1 | Develop, implement and model effective problem-solving, and critical thinking skills.                                                                                                                                                                                                   |
| SEL.PK-12.5.2 | Utilize positive communication and social skills to interact effectively with others.                                                                                                                                                                                                   |
| W.7.3.        | Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.                                                                                                                        |

**Unit Essential Questions:**

- How are percentages used in everyday living?
- How do we apply a discount to calculate a sale price?
- How do we calculate tax, tips, & totals?
- Why do businesses use markups and how do we calculate a markup and selling price?
- What is commission and how to dwe calculate it?
- How do we calculate percent error and percent of change?



- What is the difference between simple and compound interest and how do we calculate both?

**Unit Enduring Understandings:**

- Percents are used in everyday living for discounts, sales prices, tax, tip, and total.
- Markups are a necessary tool for a business to make a profit.
- Certain professions depend on percentages for their wages (i.e. tips in the hospitality industry and commission in the retail industry).
- Simple and compound interest are different from each other and are important financial literacy tools when borrowing and lending money.

**Unit Learning Targets:**

Students will....

- discounts & sales prices.
- calculate tax, tip, totals, & dinner bills.
- calculate markups and selling prices.
- calculate commission from a sale.
- calculate percent error and percent of change.
- distinguish between simple and compound interest and will be able to calculate both forms of interest.

**Evidence of Learning**

**Summative Assessment:** Unit Assessment, Projects

**Equipment Needed:** Laptops, Promethean Board

**Teacher Resources:** Class website

**Formative Assessments:**

- Entrance card
- Exit cards
- i-Ready
- Informal observation
- Projects
- Unit Assessment

**Lesson Plans**

| Lesson                                              | Time Frame       |
|-----------------------------------------------------|------------------|
| Lesson 1 <b>Discounts &amp; Sales Prices</b>        | <b>3 classes</b> |
| Lesson 2 <b>Tax, Tip, Totals &amp; Dinner Bills</b> | <b>4 classes</b> |
| Lesson 3 <b>Simple versus Compound Interest</b>     | <b>3 classes</b> |

**Teacher Notes:**

**Curriculum Development Resources/Technology Resources:**

*Click the links below to access additional resources used to design this unit:*



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Class Websites

Big Ideas Math Resources

i-Ready

<https://tasks.illustrativemathematics.org/content-standards>

<https://www.desmos.com/>

<https://nj.digitalitemlibrary.com/home>

<https://resources.newmeridiancorp.org/released-items/>

<https://nj.mypearsonsupport.com/practice-tests/math/>



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**Lesson Plan 1 Template**

Content Area: Mathematics      Lesson Title: Discounts & Sales Prices      Time Frame: 3 classes

**Lesson Components**

**21<sup>st</sup> Century Themes**

- ☐ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy      ☐ Health Literacy

**21<sup>st</sup> Century Skills**

- ☒ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☒ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

**Interdisciplinary Connections:**

Financial Literacy, English Language Arts

**Integration of Technology:**

Desmos

**Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                  | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Formative Assessment Tasks                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>calculate discounts and sales prices.</li> <li>determine which coupon is better.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Begin with a mini lesson on discounts and sale prices. Ask student pairs to go to a major retailer's website and find sales.</li> <li>Have students calculate either the reduced price or the sale percentage (based on the given information).</li> <li>Discuss the marketing aspect for each sale and why they think the sale is happening.</li> <li>Students then work out the Desmos activity while the teacher works with small groups to check understanding.</li> <li>Students then work on the Coupon War activity.</li> </ol> | <ul style="list-style-type: none"> <li>Informal observation during practice</li> <li>Desmos activity</li> <li>Project</li> </ul> |



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6. Project - Students will complete a project in which they purchase an item and apply a coupon.

### **Differentiation:**

- Desmos page 1 is chunked into parts. First the students are guided to find the discount in column A. In column B they then find the sale price.
- Students may use their notes to assist them.
- Examples are provided for the project.

### **Resources Provided:**

Calculators, Guided Notes



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**Lesson Plan 2 Template**

Content Area: Mathematics    Lesson Title: Tax, Tip, Total, & Dinner Bills    Time Frame: 4 classes

**Lesson Components**

**21<sup>st</sup> Century Themes**

- ☒ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy    ☐ Health Literacy

**21<sup>st</sup> Century Skills**

- ☒ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☒ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

**Interdisciplinary Connections:**

Financial Literacy, English Language Arts

**Integration of Technology:**

Desmos, Google Suite

**Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                  | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Formative Assessment Tasks                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>calculate tax, tip, and totals.</li> <li>calculate dinner bills.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Begin with a mini lesson on tax and tip. Break students into pairs. Student A gives Student B a bill, then reads aloud a paper that describes how good or bad of a waiter/waitress they were. Student B then determines how much they would like to tip Student A for their service.</li> <li>The pair then determines the tax on the bill.</li> <li>The students report their scenario to a shared Google Slide or Jamboard. The teacher projects the scenarios on</li> </ol> | <ul style="list-style-type: none"> <li>Informal Observations</li> <li>Desmos activity</li> <li>Project</li> </ul> |



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|                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                              |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                                                                                                                                                                         | <p>the board and discusses some commonalities.</p> <ol style="list-style-type: none"><li>4. The students work on the Desmos activity while the teacher meets with small groups.</li><li>5. Project: Students will complete a project in which they go out for a meal with family or friends. They will calculate the subtotal, tax, tip, and total for their bill.</li></ol> |  |
| <b>Differentiation:</b> <ul style="list-style-type: none"><li>• Students may use their notes to assist them.</li><li>• Examples are provided for the project.</li></ul> |                                                                                                                                                                                                                                                                                                                                                                              |  |
| <b>Resources Provided:</b><br>Calculators, Guided Notes                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                              |  |



### Lesson Plan 3 Template

Content Area: Mathematics Lesson Title: Simple versus Compound Interest Time Frame: 3 classes

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☒ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy    ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☒ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☒ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Financial Literacy

#### **Integration of Technology:**

Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                                                                                                                    | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Formative Assessment Tasks                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>be able to calculate simple interest and ending balances.</li> <li>be able to calculate compound interest and ending balances.</li> <li>be able to determine which account provides a better deal.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>The teacher breaks students into small groups to work on a simple interest problem on the board. How much is an account worth after 1 year? 2 years? 10 years?</li> <li>The teacher then asks students to determine a formula that they can use to represent the simple interest. The teacher circulates the room.</li> <li>The teacher brings the group back together and has the students review the activity and final formula.</li> <li>The teacher then poses the Doubling Penny</li> </ol> | <ul style="list-style-type: none"> <li>Informal Observation</li> <li>Best Investment Activity</li> </ul> |



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question, giving student pairs a few minutes to discuss and determine what choice they would rather have (a million dollars, or 1 penny the first day, 2 the second, 4 the third, etc for one month).

5. The teacher then breaks students into groups to discover how to solve compound interest problems. The teacher circulates the room.
6. The class comes back as a whole, and the students discuss what they discovered. The teacher helps lead the class to the final compound interest formula.
7. Students then work on the Best Investment Activity.

### Differentiation:

- Students may use their notes to assist them.

### Resources Provided:

Calculators, Guided Notes



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### Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson *Strongly, Moderately* or *Weakly* meets the criteria below.

| Lesson Activities                                                                                                    | Strongly                            | Moderately                          | Weakly                   |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Are challenging <b>Strongly</b> and require higher order thinking and problem solving skills                         | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Allow for student choice                                                                                             | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Provide scaffolding for acquiring targeted knowledge/skills                                                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Integrate global perspectives                                                                                        | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Integrate 21st century skills                                                                                        | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Provide opportunities for interdisciplinary connection and transfer of knowledge and skills                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Are varied to address different student learning styles and preferences                                              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Are differentiated based on student needs                                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Provide opportunities for student reflection and self- assessment                                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Provide data to inform and adjust instruction to better meet the varying needs of learners                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

### Curriculum Design Template

|                                  |                       |                             |
|----------------------------------|-----------------------|-----------------------------|
| <b>Content Area:</b> Mathematics | <b>Grade Level:</b> 7 | <b>Unit Title:</b> Percents |
| <b>Created:</b> May 2024         |                       | <b>Board Approved on:</b>   |



### Unit Overview Template

**Content Area:** Mathematics      **Grade Level:** 7      **Unit 3 Title:** Proportionality

**Unit Summary:** In this unit, students will be able to calculate the unit rate, determine if a table, graph and equation is proportional or not, and calculate the constant of proportionality and its equation.

**Primary Interdisciplinary Connections:** *Science and Engineering*

**21<sup>st</sup> Century Themes**   ☒ Creativity and Innovation   ☒ Critical Thinking and Problem Solving   ☐ ICT Literacy  
☐ Information Literacy   ☒ Life and Career Skills   ☒ Communication and Collaboration   ☒ Media Literacy

**Unit Rationale:** Proportionality concepts are applied heavily in the sciences.

**Career Readiness (Standard 9):**

9.1.8.CP.1: Compare prices for the same goods or services.

9.4.8.IML.2: Identify specific examples of distortion, exaggeration, or misrepresentation of information.

9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).

9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations.

9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.

9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).

### Learning Targets

**Standards:** 7.RP

**Content Statements:** Analyze proportional relationships and use them to solve real-world and mathematical problems;

| <b>CPI#:</b> | <b>Cumulative Progress Indicator (CPI):</b>                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.RP.A.1     | 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 $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.                                                                                                                   |
| 7.RP.A.2     | Recognize and represent proportional relationships between quantities.<br>a. 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.<br>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. |



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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>c. Represent proportional relationships by equations. For example, if total cost <math>t</math> is proportional to the number <math>n</math> of items purchased at a constant price <math>p</math>, the relationship between the total cost and the number of items can be expressed as <math>t = pn</math>.</p> <p>d. Explain what a point <math>(x, y)</math> on the graph of a proportional relationship means in terms of the situation, with special attention to the points <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</p> |
| 7.RP.A.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 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.                                                                                                                                                                                                                                                                                                                                                        |
| SEL.PK-12.3.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Demonstrate and awareness of the differences among individuals, groups, and others' cultural backgrounds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| SEL.PK-12.3.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Demonstrate an understanding of the need for mutual respect when viewpoints differ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| SEL.PK-12.4.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Develop, implement and model effective problem-solving, and critical thinking skills.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| SEL.PK-12.5.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Utilize positive communication and social skills to interact effectively with others.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| MS-ETS1-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Unit Essential Questions:</b> <ul style="list-style-type: none"> <li>How can we calculate the unit rate?</li> <li>What does it mean for something to be proportional?</li> <li>How can we determine if this table, graph, equation is proportional?</li> <li>How can we solve for <math>y</math>?</li> </ul>                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Unit Enduring Understandings:</b> <ul style="list-style-type: none"> <li>All straight lines that go through <math>(0,0)</math> are proportional. If they do not go through <math>(0,0)</math>, it is not proportional and thus does not have a unit rate.</li> </ul>                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Unit Learning Targets:</b><br><i>Students will....</i> <ul style="list-style-type: none"> <li>be able to calculate unit rates with whole numbers, fractions, and complex fractions.</li> <li>be able to determine if a table has a proportional relationship or not.</li> <li>be able to determine if a graph has a proportional relationship or not.</li> <li>be able to determine if an equation has a proportional relationship or not.</li> <li>be able to determine the constant of proportionality and the equation of the line.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



### Evidence of Learning

**Summative Assessment:** Unit Assessment

**Equipment Needed:** Laptops, projector, document camera, rulers, calculators, student notebook, scissors, glue/tape, pencils/highlighters

**Teacher Resources:** Class Website, Big Ideas Mathematics Resources

**Formative Assessments:**

- Entrance card
- Exit cards
- i-Ready
- Quizzes
- Student participation
- Interactive Notebook Checks
- Big Ideas Mathematics online portal
- Kahoot
- Unit Assessment

### Lesson Plans

| Lesson                                                 | Time Frame      |
|--------------------------------------------------------|-----------------|
| Lesson 1 <b>Unit Rates</b>                             | <b>3 days</b>   |
| Lesson 2 <b>Proportionality in Tables &amp; Graphs</b> | <b>3-4 days</b> |
| Lesson 3 <b>Proportionality in Equations</b>           | <b>2 days</b>   |

**Teacher Notes:** Students will be able to calculate unit rates (whole numbers, fractions, and complex fractions). Students will be able to determine if a table, graph, and equation has a proportional relationship or not. If so, what is the constant of proportionality and the equation of the line?

**Curriculum Development Resources/Technology Resources:**

*Click the links below to access additional resources used to design this unit:*

Class Websites

Big Ideas Math Resources

i-Ready

<https://tasks.illustrativemathematics.org/content-standards>

<https://www.desmos.com/>

<https://nj.digitalitemlibrary.com/home>

<https://resources.newmeridiancorp.org/released-items/>

<https://nj.mypearsonsupport.com/practice-tests/math/>



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**Lesson Plan 1 Template**

Content Area: Mathematics      Lesson Title: Unit Rates      Time Frame: 3 days

**Lesson Components**

**21<sup>st</sup> Century Themes**

- ☒ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy      ☐ Health Literacy

**21<sup>st</sup> Century Skills**

- ☒ Creativity and Innovation    ☐ Critical Thinking and Problem Solving    ☐ Information Literacy  
☒ Life and Career Skills    ☒ Communication and Collaboration    ☒ Media Literacy    ☐ ICT Literacy

**Interdisciplinary Connections:**

Science and Engineering

**Integration of Technology:**

Google slides, Kahoot, Big Ideas online portal, Desmos

**Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                                                                                                                 | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Formative Assessment Tasks                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>calculate the unit rate with whole numbers.</li> <li>calculate the unit rate with fractions.</li> <li>calculate the unit rate with complex fractions.</li> <li>multiply &amp; divide fractions.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Students will be given the guided notes for Unit Rates (with whole numbers). They have to determine what they are trying to find 1 of. For example, if someone travels 360 miles in 6 hours, are they trying to find how many hours per mile or miles per hour?</li> <li>Students will complete their guided notes with the teacher in the classroom. The completed version will be posted on the class website.</li> <li>Students will be given a matching activity to determine the unit rate.</li> </ol> | <ul style="list-style-type: none"> <li>Kahoot</li> <li>Desmos</li> <li>Teacher observations</li> <li>Class discussions</li> <li>Exit Slip</li> <li>Interactive Notebook Check</li> </ul> |



## SPRINGFIELD PUBLIC SCHOOLS

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They may work in their table groupings and we will review as a class.

4. Do Now - review of multiplying and dividing fractions and of unit rates with whole numbers.
5. Students will be given the guided notes for Unit Rates (with fractions). They have to determine what they are trying to find 1 of.
6. Students will complete their guided notes with the teacher in the classroom. The completed version will be posted on the class website.
7. Students will practice this skillset with a set of Desmos problems and can work with a partner of their choice.
8. Do Now - review of unit rates with fractions and review of converting mixed numbers into improper fractions.
9. Students will be given the guided notes for Unit Rates (complex fractions). They have to determine what they are trying to find 1 of.
10. Students will complete their guided notes with the teacher in the classroom. The completed version will be posted on the class website.
11. Students will complete a review of all of the



## SPRINGFIELD PUBLIC SCHOOLS

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|                                                                                                                                                                                                                                                                                                                                                      |                          |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--|
|                                                                                                                                                                                                                                                                                                                                                      | problems mixed together. |  |
| <b>Differentiation:</b> <ul style="list-style-type: none"><li>• Students with specific needs (IEP's, 504's, etc) will have less problems to complete and will be given a worked through example on the homework sheets.</li><li>• Early finishers are going to be provided with enrichment activities such as unit rate puzzles and mazes.</li></ul> |                          |  |
| <b>Resources Provided:</b> <ul style="list-style-type: none"><li>• Laptop &amp; calculator</li><li>• Guided notes</li><li>• Finalized notes</li><li>• Desmos</li></ul>                                                                                                                                                                               |                          |  |



### Lesson Plan 2 Template

Content Area: Mathematics    Lesson Title: Proportionality in Tables/Graphs    Time Frame: 3 days

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☒ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy    ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☒ Creativity and Innovation    ☐ Critical Thinking and Problem Solving    ☐ Information Literacy  
☒ Life and Career Skills    ☒ Communication and Collaboration    ☒ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Google slides, Kahoot, Big Ideas online portal, Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                                                                                                                                                                                                         | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Formative Assessment Tasks                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>be able to determine if a table has a proportional relationship or not.</li> <li>be able to determine if a graph has a proportional relationship or not.</li> <li>determine the constant of proportionality and the equation of the line from the data given in the table and/or graph.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Students will start out class by taking the entrance slip on Unit Rates. Then, we will review the unit rates homework along with the exit slip prior to moving onto the next topic.</li> <li>Students will be given the guided notes for Proportionality in Tables. They will have to calculate the <math>y/x</math> ratio for each point on the table and determine if the ratios are equivalent.</li> <li>Students will complete their guided notes with the teacher in the classroom. The completed version will</li> </ol> | <ul style="list-style-type: none"> <li>Kahoot</li> <li>Desmos</li> <li>Worksheet</li> <li>Teacher observations</li> <li>Class discussions</li> <li>Exit Slip</li> <li>Interactive Notebook Check</li> </ul> |



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be posted on the class website.

4. Students will be given a practice set of tables to work with their table groups to determine if there is a proportional relationship. If so, what is the constant of proportionality and the equation of the line? We will then review as a class.
5. Students will then take the exit slip on Proportionality of Tables. Then, we will review the homework along with the exit slip prior to moving onto the next topic.
6. Students will be given the guided notes for Proportionality in Graphs. They will have to calculate the  $y/x$  ratio for each point on the graph and determine if the ratios are equivalent. If the graph is plotted out, they can also visually see if the line is straight and goes through the origin. If so, what is the constant of proportionality and the equation of the line? If there is not a straight line (quadratic function, cubic function, etc), then there is not a proportional relationship. Likewise, if the line does not go through the origin, then there is not a



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- proportional relationship.
7. Students will complete their guided notes with the teacher in the classroom. The completed version will be posted on the class website.
  8. Students will be given a practice set of tables to work with their table groups to determine if there is a proportional relationship. If so, what is the constant of proportionality and the equation of the line? We will then review as a class.
  9. Students will take the exit slip on Proportionality of Graphs. Then, we will review the homework along with the exit slip prior to moving onto the next topic.
  10. This class will focus on mixed review of proportionality in tables and graphs. Students will have a variety of activities to complete: a Kahoot, practice worksheets, problems from the book, and some selected Desmos assignments. Students can work in pairs or independently and will have the opportunity to review the answer key provided that they complete the assignments.



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11. Students will review the results from the variety of activities completed in the class before. Depending on feedback from the class, more practice will be provided, or we will move onto the next topic- Proportionality in Equations.

### **Differentiation:**

- Students with specific needs (IEP's, 504's, etc) will have less problems to complete and will be given a worked through example on the homework sheets.
- Early finishers are going to be provided with enrichment activities on Desmos.

### **Resources Provided:**

- Laptop & calculator
- Guided notes
- Finalized notes
- Rulers



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**Lesson Plan 3 Template**

Content Area: Mathematics      Lesson Title: Proportionality in Equations      Time Frame: 2 days

**Lesson Components**

**21<sup>st</sup> Century Themes**

- ☐ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy      ☐ Health Literacy

**21<sup>st</sup> Century Skills**

- ☒ Creativity and Innovation      ☒ Critical Thinking and Problem Solving      ☐ Information Literacy  
☐ Life and Career Skills      ☒ Communication and Collaboration      ☐ Media Literacy      ☐ ICT Literacy

**Interdisciplinary Connections:**

Science and Engineering

**Integration of Technology:**

Google slides, Kahoot, Big Ideas online portal, Desmos

**Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                                                                                                                                                  | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Formative Assessment Tasks                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>be able to isolate <math>y</math> in an equation.</li> <li>be able to determine if an equation has a proportional relationship or not.</li> <li>be able to determine the constant of proportionality and the equation of a line.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Do Now- Students will be given a variety of problems to see if they can isolate “<math>y</math>”. They are to work with a partner and draw from their knowledge of solving equations and using the inverse operations.</li> <li>Students will be given the guided notes for Proportionality of Equations. They have to determine the steps to isolate “<math>y</math>” in a variety of formats. IE: If you were given <math>2y = 10x</math>, you would divide both sides by 2 and then be left with <math>y = 5x</math>, which does represent a proportional relationship. The</li> </ol> | <ul style="list-style-type: none"> <li>Kahoot</li> <li>Worksheet</li> <li>Teacher observations</li> <li>Class discussions</li> <li>Exit Slip</li> </ul> |



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equation of this line is  $y=5x$  which passes through the origin and the constant of proportionality is 5.

3. Students will complete their guided notes with the teacher in the classroom. The completed version will be posted on the class website.
4. Students will work on practice problems on their whiteboards with a partner if they would like. Problems will be projected onto the board and then feedback will be given as they raise their boards.
5. Students will then take the exit slip on Proportionality of Equations. Then, we will review the homework along with the exit slip prior to moving onto the next activity.
6. Then, students will work on a couple of activities to practice this skill set further. There will be a class Kahoot, a Treasure Hunt, and a maze for the students to complete. They may work individually or with a partner.

### Differentiation:

- Students with specific needs (IEP's, 504's, etc) will have less problems to complete and will be given a worked through example on the homework sheets.
- Early finishers are going to be provided with enrichment activities on Desmos.

### Resources Provided:



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- Laptop & calculator
- Guided notes
- Finalized notes
- Treasure Hunt



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**Lesson Reflection**

Reflect on the lesson you have developed and rate the degree to which the lesson *Strongly, Moderately* or *Weakly* meets the criteria below.

| <b>Lesson Activities</b>                                                                                             | <b>Strongly</b>                     | <b>Moderately</b>                   | <b>Weakly</b>                       |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Are challenging <b>Strongly</b> and require higher order thinking and problem solving skills                         | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Allow for student choice                                                                                             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Provide scaffolding for acquiring targeted knowledge/skills                                                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Integrate global perspectives                                                                                        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Integrate 21st century skills                                                                                        | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Provide opportunities for interdisciplinary connection and transfer of knowledge and skills                          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Are varied to address different student learning styles and preferences                                              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Are differentiated based on student needs                                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Provide opportunities for student reflection and self- assessment                                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Provide data to inform and adjust instruction to better meet the varying needs of learners                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |

**Curriculum Design Template**

**Content Area:** Mathematics      **Grade Level:** 7      **Unit Title:** Proportionality

**Created:** May 2024

**Board Approved on:**



### Unit Overview Template

**Content Area:** Mathematics      **Grade Level:** 7      **Unit 4 Title:** Geometry

**Unit Summary:** In this unit, the students will be able solve an unknown value in a scale drawing, name & classify an angle, identify vertical/adjacent/complementary/supplementary angles, and solve for the unknown value of an angle with a variable or expression, and construct an angle and triangle with a variety of tools (protractor, ruler, virtual protractor, Geogebra, Desmos).

**Primary Interdisciplinary Connections:** *Science and Engineering*

**21<sup>st</sup> Century Themes**   ☒ Creativity and Innovation   ☒ Critical Thinking and Problem Solving   ☐ ICT Literacy  
☐ Information Literacy   ☒ Life and Career Skills   ☒ Communication and Collaboration   ☒ Media Literacy

**Unit Rationale:** Students will solve real world problems involving two and three dimensional figures.

**Career Readiness (Standard 9):**

9.2.8.CAP.12: Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.

9.1.8.CP.1: Compare prices for the same goods or services.

9.4.8.CI.4: Explore the role of creativity and innovation in career pathways and industries

9.4.8.IML.2: Identify specific examples of distortion, exaggeration, or misrepresentation of information.

9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).

9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations.

9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.

9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).

### Learning Targets

**Standards:** 7.NS; 7.G

**Content Statements:** Solve real-life and mathematical problems using numerical and algebraic expressions and equations; Draw, construct, and describe geometrical figures and describe the relationships between them; Solve real-life and mathematical problems involving angle measure, area, surface area, and volume

**CPI#:**      **Cumulative Progress Indicator (CPI):**

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.EE.4 | 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.<br><br>a. 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 |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <p>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?</p> <p>b. Solve word problems leading to inequalities of the form <math>px + q &gt; r</math> or <math>px + q &lt; r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> 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.</p> |
| 7.G.A.1       | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 7.G.A.2       | Draw (with technology, with a ruler and a protractor, as well as freehand) 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.                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 7.G.A.3       | Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 7.G.B.4       | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 7.G.B.5       | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 7.G.B.6       | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| SEL.PK-12.3.2 | Demonstrate and awareness of the differences among individuals, groups, and others' cultural backgrounds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| SEL.PK-12.3.3 | Demonstrate an understanding of the need for mutual respect when viewpoints differ.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| SEL.PK-12.4.1 | Develop, implement and model effective problem-solving, and critical thinking skills.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| SEL.PK-12.5.2 | Utilize positive communication and social skills to interact effectively with others.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| MS-ETS1-2     | Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 8.2.8.ED.1    | Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and producer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### Unit Essential Questions:

- What do you know about acute/right/obtuse angles?
- What makes angles adjacent/vertical/complementary & supplementary?



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- What information is needed to create an equation?
- Is there a pattern of the sum of all angles in a triangle?
- Can you make a triangle with any 3 lengths of lines? Is there a relationship?

### Unit Enduring Understandings:

- Proportions can be used to determine the actual measurement of an object in scale drawings.
- Proportions can be used to determine a model measurement in scale drawings.
- Proportions can be used to determine a portion of the scale factor in scale drawings.
- Angles can be named in a variety of ways, with the vertex all being in the middle.
- Angles can be classified as: adjacent, vertical, complementary or supplementary.
- Equations can be used to determine an unknown value of an angle.
- Angles can be constructed using a protractor or a compass.
- Triangles have an assortment of angle measurements, but the sum must add up to 180 degrees.
- Triangles have a relationship between the sum of two side lengths and the third side length.

### Unit Learning Targets:

*Students will....*

- be able to set up and solve a proportion.
- be able to solve for the actual/model measurement in scale drawings with a proportion.
- name angles in a variety of ways.
- classify angles (acute, right, obtuse).
- determine vertical, adjacent, complementary and supplementary angles.
- calculate an unknown value by setting up and solving an equation.
- determine the measure of a given angle by using a protractor.
- use class tools to create an angle/triangle with a given measurement.
- explore the relationship between the sum of two side lengths to a third side length in a triangle.
- Climate Change Example: Students may solve real-world problems involving area, surface area, and volume related to deforestation and increasing livestock farming as key contributors to climate change.



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### Evidence of Learning

**Summative Assessment:** Unit Assessment, Scale Drawings Activity

**Equipment Needed:** Laptops, projector, document camera, rulers, calculators, student notebook, scissors, glue/tape, pencils/highlighters, protractors, rulers

**Teacher Resources:** Class Website, Big Ideas Math Resources, Geogebra, Desmos

#### **Formative Assessments:**

- Student participation
- Interactive Notebook Checks
- Exit Slips
- Big Ideas Mathematics online portal
- Kahoot
- Unit Assessment
- Scale Drawings Mini-Project



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**Lesson Plans**

| Lesson                                             | Time Frame             |
|----------------------------------------------------|------------------------|
| Lesson 1 <b>Scale Drawings</b>                     | <b>1 class period</b>  |
| Lesson 2 <b>Classifying Angles and Angle Pairs</b> | <b>3 class periods</b> |
| Lesson 3 <b>Constructing Angles and Triangles</b>  | <b>1 class period</b>  |

**Teacher Notes:** Students will learn how to name & classify angles which is a pre-requisite for the next series of lessons. They will then identify vertical, adjacent, complementary, and supplementary angles. They will also learn how to calculate the value of that angle with a variable or an expression. Lastly, they will construct angles and triangles with class tools: protractor, ruler, online protractor, and technological systems (Desmos, Geogebra).

**Curriculum Development Resources/Technology Resources:**

*Click the links below to access additional resources used to design this unit:*

Class Websites

Big Ideas Math Resources

i-Ready

<https://tasks.illustrativemathematics.org/content-standards>

<https://www.desmos.com/>

<https://nj.digitalitemlibrary.com/home>

<https://resources.newmeridiancorp.org/released-items/>

<https://nj.mypearsonsupport.com/practice-tests/math/>

<https://www.mathsisfun.com/geometry/triangles-interactive.html>

<https://www.geogebra.org/m/JHgTXKrt>

<https://teacher.desmos.com/activitybuilder/custom/5ea1e74990e6de7712b6cf17?collections=5e8c9fcf5975730b11bdcfec>

<https://teacher.desmos.com/activitybuilder/custom/5ea2f6fdef35d20cd65fce9c?collections=5e8c9fcf5975730b11bdcfec>

<https://teacher.desmos.com/activitybuilder/custom/5ea317371c790f6f4c3dae4e?collections=5e8c9fcf5975730b11bdcfec>



### Lesson Plan 1 Template

Content Area: Mathematics      Lesson Title: Scale Drawings      Time Frame: 1 class period

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☐ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy      ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☒ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☒ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Google slides, Kahoot, Big Ideas online portal, Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                                                           | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Formative Assessment Tasks                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>be able to set up and solve a proportion.</li> <li>be able to solve for the actual/model measurement in scale drawings with a proportion.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Students will start out class by completing a Do Now on solving proportions. This is a skill they learned earlier in the year, but is a prerequisite for this lesson. We will review as a class.</li> <li>Students will be given the guided notes for Scale Drawings. It will include definitions for scale drawings/models, scale, and scale factor. Students will have to solve for the unknown value using a variable. Proportions will be set up using the scale on one side and then the model/drawing</li> </ol> | <ul style="list-style-type: none"> <li>Kahoot</li> <li>Teacher observations</li> <li>Class discussions</li> <li>Exit Slip</li> <li>Scale Drawings Mini-Project</li> </ul> |



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measurement over the actual measurement.

3. For example: On a map the scale is 5 inches: 2 miles. How many miles is 11 inches on the map. In this scenario, the student will use a variable for the actual measurement, miles.
4. Students will complete their guided notes with the teacher in the classroom. The completed version will be posted on the class website.
5. Students will work on practice problems from a worksheet in their table groups. We will review them as a class.
6. Students will take the exit slip on Scale Drawings. Then, we will review the homework along with the exit slip prior to moving onto the next activity.
7. We will then review the exit slip and the homework and answer any questions/remediate as necessary.
8. As a class, we will work on reproducing scale drawings at a different scale.
9. Draw a rectangle with the dimensions of 4 units by 6 units. What is the perimeter and area?
10. Recreate this rectangle with a scale factor of  $\frac{1}{2}$ . Calculate and draw the



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figure with the new dimensions. Also, calculate the perimeter and area.

11. Recreate the original figure with a scale factor of 2. Calculate and draw the figure with the new dimensions. Also, calculate the perimeter and area.
12. Lastly, compare the perimeters and area from all of the figures.
13. Students will take the second half of class and work on the Scale Drawings Mini-Project. They will work with a partner (of the teacher's choosing) and calculate the real-life measurements of the scale drawing of the apartment.

### Differentiation:

- Students with specific needs (IEP's, 504's, etc) will have two modeled examples on the Scale Drawings Mini-Project. In terms of the homework, they will be given a worked through example on the homework sheets.
- Early finishers are going to be provided with enrichment activities on Desmos.

### Resources Provided:

- Laptop & calculator
- Guided notes
- Finalized notes
- Big Ideas Mathematics Activities
- Scale Drawings Mini-Project



### Lesson Plan 2 Template

Content Area: Mathematics      Lesson Title: Classifying Angles and Angle Pairs  
 Time Frame: 3 classes

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☐ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy      ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☒ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☒ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Google slides, Kahoot, Big Ideas online portal, Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                                                                                                                                                              | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Formative Assessment Tasks                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>name angles in a variety of ways.</li> <li>classify angles (acute, right, obtuse).</li> <li>determine vertical, adjacent, complementary and supplementary angles.</li> <li>calculate an unknown value by setting up and solving an equation.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Do Now- Students will be given three angles and will be asked to name them and classify them into acute, right and obtuse. They can work with a partner and need to explain their reasoning.</li> <li>Students will be given the guided notes for Naming &amp; Classifying Angles. Classifying Angles includes: Acute Angles, Right Angles, Obtuse Angles, and a Straight Line. It will also include the notation for an angle, ray, line segment, line, and a</li> </ol> | <ul style="list-style-type: none"> <li>Kahoot</li> <li>Teacher observations</li> <li>Class discussions</li> <li>Exit Slip</li> </ul> |



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vertex. Naming Angles will include the variety of ways you can name an angle ie:  $\angle ABC$  or  $\angle CBA$  and sometimes  $\angle B$  if there is only one angle. Students will be given a single angle and then angles that have multiple rays.

3. Students will complete their guided notes with the teacher in the classroom. The completed version will be posted on the class website.
4. Students will work on practice problems from Big Ideas Mathematics through Desmos with a partner of their choice. We will then review as a class.
5. Students will start out class by taking the exit slip on Naming & Classifying Angles (as they do now). Then, we will review the homework along with the exit slip prior to moving onto the next activity.
6. Students will be given the guided notes for Vertical and Adjacent Angles. Vertical angles share a vertex, are opposite of each other and have congruent (equal) measures. Adjacent angles share a vertex and share one side. Students will work through a variety of



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examples including variables/expressions and setting up and solving an equation to solve for the unknown value.

7. Students will complete their guided notes with the teacher in the classroom. The completed version will be posted on the class website.
8. Students will work on practice problems from Big Ideas Mathematics with a partner of their choice. We will then review as a class. If time allows, students will complete a Kahoot on the topic.
9. Students will start out class by taking the exit slip on Vertical & Adjacent Angles (as they do now). Then, we will review the homework along with the exit slip prior to moving onto the next activity.
10. Students will be given the guided notes for Complementary and Supplementary Angles. Complementary Angles add up to 90 degrees and Supplementary Angles add up to 180 degrees. Students will work through a variety of examples including variables/expressions and setting up and solving an equation to



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|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | <p>solve for the unknown value.</p> <ol style="list-style-type: none"><li>11. Students will complete their guided notes with the teacher in the classroom. The completed version will be posted on the class website.</li><li>12. Students will work on practice problems from Big Ideas Mathematics with a partner of their choice. We will then review as a class. If time allows, students will complete a Kahoot on the topic.</li><li>13. Students will start out class by taking the exit slip on Complementary &amp; Supplementary Angles (as they do now). Then, we will review the homework along with the exit slip prior to moving onto the next activity.</li><li>14. Students will work on a variety of activities:<ul style="list-style-type: none"><li>○ Kahoot</li><li>○ Maze</li><li>○ Mixed Practice</li><li>Desmos</li></ul></li></ol> |  |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

### Differentiation:

- Students with specific needs (IEP's, 504's, etc) will have problems with less complex equations to set up compared to expressions within equations.
- Early finishers are going to be provided with enrichment activities: such as the missing angles puzzle where there are (adjacent, vertical, complementary, supplementary angles all mixed up).

### Resources Provided:

- Laptop & calculator
- Guided notes
- Finalized notes



### Lesson Plan 3 Template

Content Area: Mathematics

Lesson Title: Constructing Angles & Triangles

Time Frame: 1 class period

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☐ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy        ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☒ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☒ Information Literacy  
☒ Life and Career Skills ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Google slides, Kahoot, Big Ideas online portal, Desmos, Geogebra, Math Is Fun

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                                                                                                                                                                          | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Formative Assessment Tasks                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>determine the measure of a given angle by using a protractor.</li> <li>use class tools to create an angle/triangle with a given measurement.</li> <li>explore the relationship between the sum of two side lengths to a third side length in a triangle.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Students will start out class by working on the “What’s The Angle” game from Big Ideas Math. They are to draw a variety of 5 angles free-hand (right, obtuse, acute). Then they are to switch their papers with a partner and guess what the angle measurement is. Finally, they are to determine how far off their estimate is by measuring the actual measurement with a protractor. The teacher will model how to do this prior to</li> </ol> | <ul style="list-style-type: none"> <li>“What’s The Angle” game</li> <li>Worksheets</li> <li>Teacher observations</li> <li>class discussions</li> <li>Exit Slip</li> <li>Interactive Notebook Check</li> </ul> |



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students pairing up with a partner of their choice. During this time, the teacher will check-in with student pairs and assist as necessary.

2. Then, some selected pairs will show the class the results of their game using the document camera. We will have a class discussion about the process of estimating and measuring the angles.
3. Then, we will transition to the “Fair Game Review” where students will use a protractor to find the measure of angles provided and classify these angles. They will then use a protractor to draw angles with a given measure. During this time, the teacher will facilitate and answer any questions and the students are allowed to confer with their peers. We will review this as a class.
4. After these activities, we will transition to a guided OnCourse assignment where the students will review/learn how to use a virtual protractor that is utilized on i-Ready and NJSLA. They will draw and measure angles using this virtual protractor.



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5. Lastly, students will work on a graded assignment with a partner of their choice on another OnCourse assignment where they utilize a virtual protractor.
6. During the next class, students will start class by taking an exit slip on Creating and Measuring Angles using a protractor. This will be graded on accuracy.
7. Then, students will work on an activity to construct triangles using angle measures. They are to try the first one with their table groups. This will serve as an exploratory activity prior to reviewing the first example as a class. Then, students will continue working on the next three problems. We will then review the process and have a discussion about further classifications of triangles: Equilateral, Isosceles, Right and Scalene triangles. Lastly, students will determine that all measures in a triangle add up to 180 degrees.
8. We will then transition to using technology to draw triangles when given two given angle measures. Students will use [Math Is Fun](#) as their geometry software.



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9. Lastly, if time allows students will work on an activity in [Geogebra](#) that explores the relationship between any two sides of a triangle and a third. They will record their findings and write a rule that compares that sum of any two side lengths to the third side length.

### Differentiation:

- Students with specific needs (IEP's, 504's, etc) will have prompted instructions and will receive a modeled example prior to completing additional problems independently/with a partner.
- Early finishers are going to be provided with enrichment activity on [Desmos](#).

### Resources Provided:

- Laptop & calculator
- Protractor & ruler
- Guided notes
- Finalized notes
- Worksheets & Activities
- Geogebra & Math Is Fun links



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## Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson *Strongly*, *Moderately* or *Weakly* meets the criteria below.

| Lesson Activities                                                                                                    | Strongly                            | Moderately                          | Weakly                   |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Are challenging <b>Strongly</b> and require higher order thinking and problem solving skills                         | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Allow for student choice                                                                                             | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Provide scaffolding for acquiring targeted knowledge/skills                                                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Integrate global perspectives                                                                                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Integrate 21st century skills                                                                                        | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Provide opportunities for interdisciplinary connection and transfer of knowledge and skills                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Are varied to address different student learning styles and preferences                                              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Are differentiated based on student needs                                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Provide opportunities for student reflection and self- assessment                                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Provide data to inform and adjust instruction to better meet the varying needs of learners                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

## Curriculum Design Template

|                                  |                           |                             |
|----------------------------------|---------------------------|-----------------------------|
| <b>Content Area:</b> Mathematics | <b>Grade Level:</b> 7     | <b>Unit Title:</b> Geometry |
| <b>Created:</b> May 2024         | <b>Board Approved on:</b> |                             |



### Unit Overview Template

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                       |                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------|
| <b>Content Area:</b> Mathematics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Grade Level:</b> 7 | <b>Unit 5 Title:</b> Probability and Statistics |
| <b>Unit Summary:</b> In this unit, students will learn about basic probability and the likelihood of an event occurring. Students will learn the difference between theoretical and experimental probabilities. Students will learn about compound events and use tree diagrams and area models to organize their sample space. Students will learn about independent versus dependent events.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                       |                                                 |
| <b>Primary Interdisciplinary Connections:</b> <i>Science and Engineering</i><br><b>21<sup>st</sup> Century Themes</b> <input checked="" type="checkbox"/> Creativity and Innovation <input checked="" type="checkbox"/> Critical Thinking and Problem Solving <input type="checkbox"/> ICT Literacy<br><input type="checkbox"/> Information Literacy <input checked="" type="checkbox"/> Life and Career Skills <input checked="" type="checkbox"/> Communication and Collaboration <input checked="" type="checkbox"/> Media Literacy                                                                                                                                                                                                                                                                                                                             |                       |                                                 |
| <b>Unit Rationale:</b> Probability and statistics help students analyze and approximate chance events, as well as use data to gain information about a sample population.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                       |                                                 |
| <b>Career Readiness (Standard 9):</b><br>9.1.8.CP.1: Compare prices for the same goods or services.<br>9.4.8.IML.2: Identify specific examples of distortion, exaggeration, or misrepresentation of information.<br>9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).<br>9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations.<br>9.4.8.TL.1: Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.<br>9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4). |                       |                                                 |

### Learning Targets

|                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standards:</b> 7.SP                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                  |
| <b>Content Statements:</b> Use random sampling to draw inferences about a population; Draw informal comparative inferences about two populations; Investigate chance processes and develop, use, and evaluate probability models |                                                                                                                                                                                                                                                                                                                                                  |
| <b>CPI#:</b>                                                                                                                                                                                                                     | <b>Cumulative Progress Indicator (CPI):</b>                                                                                                                                                                                                                                                                                                      |
| 7.SP.A.1                                                                                                                                                                                                                         | 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. |
| 7.SP.A.2                                                                                                                                                                                                                         | 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                            |



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|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7.SP.B.3 | 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.                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7.SP.B.4 | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 7.SP.C.5 | 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 $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 7.SP.C.6 | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 7.SP.C.7 | <p>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.</p> <p>a. 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.</p> <p>b. 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?</p> |
| 7.SP.C.8 | <p>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>a. 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.</p> <p>b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



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|               |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <p>language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.</p> <p>c. 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?</p> |
| SEL.PK-12.3.2 | Demonstrate and awareness of the differences among individuals, groups, and others’ cultural backgrounds.                                                                                                                                                                                                                                                                                                                           |
| SEL.PK-12.3.3 | Demonstrate an understanding of the need for mutual respect when viewpoints differ.                                                                                                                                                                                                                                                                                                                                                 |
| SEL.PK-12.4.1 | Develop, implement and model effective problem-solving, and critical thinking skills.                                                                                                                                                                                                                                                                                                                                               |
| SEL.PK-12.5.2 | Utilize positive communication and social skills to interact effectively with others.                                                                                                                                                                                                                                                                                                                                               |
| MS-ETS1-2     | Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.                                                                                                                                                                                                                                                                                         |

### Unit Essential Questions:

- How is probability used in everyday living?

### Unit Enduring Understandings:

- Probability can be expressed as a fraction, decimal, or percent.
- Probability is the favorable outcomes divided by the total outcomes.
- The likelihood of an event occurring ranges from impossible to certain.
- Theoretical probability and experimental probability can differ.
- Compound probabilities are the probabilities of two or more events occurring.
- Compound probabilities can be organized into tree diagrams or area models.
- Independent events happen with replacement and dependent events happen without replacement.

### Unit Learning Targets:

Students will....

- calculate basic probabilities.
- determine the likelihood of an event occurring.
- calculate and compare theoretical and experimental probabilities.
- made predictions.
- calculate the probability of compound events.
- organize a sample space using tree diagrams and area models.
- calculate independent versus dependent events.



### Evidence of Learning

**Summative Assessment:** Unit Assessment

**Equipment Needed:** Laptops, Notebooks, Pencils

**Teacher Resources:** Class Websites, Big Ideas Math Textbook, i-Ready

**Formative Assessments:**

- Entrance card
- Exit cards
- i-Ready
- Informal observation
- Quizzes

### Lesson Plans

| Lesson                                                  | Time Frame         |
|---------------------------------------------------------|--------------------|
| Lesson 1 <b>Experimental vs Theoretical Probability</b> | <b>1 class</b>     |
| Lesson 2 <b>Compound Events</b>                         | <b>1 class</b>     |
| Lesson 3 <b>Tree Diagrams &amp; Area Models</b>         | <b>2-3 classes</b> |

**Teacher Notes:**

**Curriculum Development Resources/Technology Resources:**

*Click the links below to access additional resources used to design this unit:*

Class Websites

Big Ideas Math Resources

i-Ready

<https://tasks.illustrativemathematics.org/content-standards>

<https://www.desmos.com/>

<https://nj.digitalitemlibrary.com/home>

<https://resources.newmeridiancorp.org/released-items/>

<https://nj.mypearsonsupport.com/practice-tests/math/>



### Lesson Plan 1 Template

Content Area: Mathematics Lesson Title: Experimental vs Theoretical Probability Time Frame: 1 class

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☐ Global Awareness    ☐ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy        ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☐ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☐ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                              | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                            | Formative Assessment Tasks                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>be able to calculate and compare theoretical and experimental probabilities.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Begin the lesson with a mini lesson on probability. Have students break into pairs to flip a coin 10 times. Each student guesses how many times the coin will be heads or tails.</li> <li>The teacher then asks the students to discuss why they made their guesses.</li> <li>The class then discusses what theoretical probability is and what experimental probability is.</li> <li>The teacher asks students for other</li> </ol> | <ul style="list-style-type: none"> <li>Informal Observations</li> <li>Exit Card</li> </ul> |



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examples, then the class discusses.

5. The students then work on the Random Number Generator Activity
  - Probability of an even number
  - Probability of a prime number
  - Probability of a number less than 28
  - Create your own

### Differentiation:

- Guided Notes
- Mini Lesson on prime numbers, if needed.

### Resources Provided:

- Guided Notes
- Activity Sheet



### Lesson Plan 2 Template

Content Area: Mathematics      Lesson Title: Compound Events      Time Frame: 1 class

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☐ Global Awareness    ☐ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy        ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☐ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☐ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                         | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                           | Formative Assessment Tasks                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>calculate the probability of compound events.</li> <li>determine which lock and password is the safest.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>Activity 1: Comparing Combination Locks - Students will work with partners to determine which lock is safest. BIM Textbook page 420</li> <li>Activity 2: Comparing Password Security - Students will work with partners to determine which password is the most secure. BIM Textbook Page 421</li> <li>Discuss the Fundamental Counting Principle. Ask students to determine examples that highlight it.</li> </ol> | <ul style="list-style-type: none"> <li>Informal Observations</li> <li>Desmos</li> </ul> |
| <b>Differentiation:</b> <ul style="list-style-type: none"> <li>Guided Examples</li> <li>Desmos activity to break down compound events</li> </ul>                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                         |



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### **Resources Provided:**

- Guided Notes
- Activity Sheet



### Lesson Plan 3 Template

Content Area: Mathematics    Lesson Title: Tree Diagrams & Area Models    Time Frame: 2-3 classes

### Lesson Components

#### 21<sup>st</sup> Century Themes

- ☐ Global Awareness    ☒ Financial, Economic, Business and Entrepreneurial Literacy  
☐ Civic Literacy    ☐ Health Literacy

#### 21<sup>st</sup> Century Skills

- ☒ Creativity and Innovation    ☒ Critical Thinking and Problem Solving    ☐ Information Literacy  
☒ Life and Career Skills    ☒ Communication and Collaboration    ☐ Media Literacy    ☐ ICT Literacy

#### **Interdisciplinary Connections:**

Science and Engineering

#### **Integration of Technology:**

Desmos

#### **Equipment Needed:**

Laptops, projector, document camera

| Goals/Objectives                                                                                                                                                                                                                                | Learning Activities/<br>Instructional Strategies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Formative Assessment Tasks                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Students will: <ul style="list-style-type: none"> <li>be able to create tree diagrams.</li> <li>be able to create area models.</li> <li>be able to calculate the probability of compound events using tree diagrams and area models.</li> </ul> | Lesson Sequence <ol style="list-style-type: none"> <li>The teacher begins with a Tree Diagrams mini lesson.</li> <li>Students break into pairs to work on the Desmos activity while the teacher meets with small groups for targeted instruction.</li> <li>The teacher then breaks students into groups to work on the Area Models discovery at the board. The teacher circulates the room while students solve the problem set.</li> <li>The class comes back as a whole and discusses the activity.</li> <li>Mixed Review - Students created sample problems for tree diagrams and area models. Problems are posted on the shared</li> </ol> | <ul style="list-style-type: none"> <li>Informal Observations</li> <li>Entrance Cards</li> <li>Exit Cards</li> </ul> |



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|                                                                                                                    |                                                          |  |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|--|
|                                                                                                                    | Google Slide. Students will solve each other's problems. |  |
| <b>Differentiation:</b> <ul style="list-style-type: none"><li>• Guided notes &amp; guided examples</li></ul>       |                                                          |  |
| <b>Resources Provided:</b> <ul style="list-style-type: none"><li>• Guided notes</li><li>• Activity sheet</li></ul> |                                                          |  |



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**Lesson Reflection**

Reflect on the lesson you have developed and rate the degree to which the lesson ***Strongly, Moderately*** or ***Weakly*** meets the criteria below.

| <b>Lesson Activities</b>                                                                                             | <b>Strongly</b>                     | <b>Moderately</b>                   | <b>Weakly</b>                       |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Are challenging <b>Strongly</b> and require higher order thinking and problem solving skills                         | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Allow for student choice                                                                                             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Provide scaffolding for acquiring targeted knowledge/skills                                                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Integrate global perspectives                                                                                        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Integrate 21st century skills                                                                                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Provide opportunities for interdisciplinary connection and transfer of knowledge and skills                          | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Are varied to address different student learning styles and preferences                                              | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Are differentiated based on student needs                                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Provide opportunities for student reflection and self- assessment                                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Provide data to inform and adjust instruction to better meet the varying needs of learners                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |

**Curriculum Design Template**

|                                  |                           |                                               |
|----------------------------------|---------------------------|-----------------------------------------------|
| <b>Content Area:</b> Mathematics | <b>Grade Level:</b> 7     | <b>Unit Title:</b> Probability and Statistics |
| <b>Created:</b> May 2024         | <b>Board Approved on:</b> |                                               |



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GLOBAL SKILLS

### **IEP AND 504 ACCOMMODATIONS AND MODIFICATIONS FOR EARLY CHILDHOOD AND ELEMENTARY SCHOOL STUDENTS:**

Large print textbooks  
Textbooks for at-home use  
Additional time for assignments  
Review of directions  
Use of mnemonics  
Have student restate information  
Concrete examples  
Adaptive writing utensils  
Support auditory presentations with visuals  
Use of a study carrel  
Assistance in maintaining uncluttered space  
Weekly home-school communication tools (notebook, daily log, phone calls or email messages)  
Space for movement or breaks  
Study sheets and teacher outlines  
Extra visual and verbal cues and prompts  
Math sheets with highlighted instructions  
Graph paper to assist in organizing or lining up math problems  
Use of computers and calculators  
Books on tape  
Graphic organizers  
Quiet corner or room to calm down and relax when anxious  
Preferential seating  
Alteration of the classroom arrangement  
Reduction of distractions  
Answers to be dictated  
Hands-on activities  
Use of manipulatives  
No penalty for spelling errors or sloppy handwriting  
Follow a routine/schedule  
Alternate quiet and active time  
Teach time management skills  
Rest breaks  
Verbal and visual cues regarding directions and staying on task  
Agenda book and checklists  
Adjusted assignment timelines  
Visual daily schedule



## **SPRINGFIELD PUBLIC SCHOOLS**

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY  
GLOBAL SKILLS**

Varied reinforcement procedures  
Immediate feedback  
Work-in-progress check  
Personalized examples

### **TESTING AND ASSESSMENT ACCOMMODATIONS AND MODIFICATIONS:**

Answers to be dictated  
Frequent rest breaks  
Additional time  
Oral testing  
Untimed tests  
Choice of test format (multiple-choice, essay, true-false)  
Alternate ways to evaluate (projects or oral presentations instead of written tests)  
Accept short answers  
Open-book tests  
Read test and directions to student  
Provide study outline prior to tests  
Highlight key directions  
Test in alternative site  
Use of calculator  
Extra credit option  
Preview test procedures  
Simplified test wording; rephrased test questions and/or directions

### **GENERAL ACCOMMODATIONS AND MODIFICATIONS:**

Use of alternative books or materials on the topic being studied  
Computerized spell-check support  
Word bank of choices for answers to test questions  
Provision of calculator and/or number line for math tests  
Reworded questions in simpler language  
Projects instead of written reports  
Highlighting important words or phrases in reading assignments  
Modified workload or length of assignments/tests  
Modified time demands  
Modified grades based on IEP

### **BEHAVIOR ACCOMMODATIONS MODIFICATIONS:**



## **SPRINGFIELD PUBLIC SCHOOLS**

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY  
GLOBAL SKILLS**

Breaks between tasks  
Cue expected behavior  
Daily feedback to student  
Have contingency plans  
Use de-escalating strategies  
Use positive reinforcement  
Use proximity/touch control  
Use peer supports and mentoring  
Model expected behavior by adults  
Have parent sign homework  
Have parent sign behavior chart  
Set and post class rules  
Chart progress and maintain data



## SPRINGFIELD PUBLIC SCHOOLS

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY  
GLOBAL SKILLS

### **IEP AND 504 ACCOMODATIONS AND MODIFICATIONS FOR MIDDLE AND HIGH SCHOOL STUDENTS:**

Large print textbooks  
Textbooks for at-home use  
Additional time for assignments  
A locker with adapted lock  
Review of directions  
Review sessions  
Use of mnemonics  
Have student restate information  
Provision of notes or outlines  
Concrete examples  
Adaptive writing utensils  
Support auditory presentations with visuals  
Weekly or bi-weekly home-school communication  
Space for movement or breaks  
Study sheets and teacher outlines  
Extra visual and verbal cues and prompts  
Lab and math sheets with highlighted instructions  
Graph paper to assist in organizing or lining up math problems  
Use of tape recorder for lectures  
Use of Interactive notebook  
Use of a scribe  
Use of computers and calculators  
Books on tape  
Graphic organizers  
Quiet corner or room to calm down and relax when anxious  
Preferential seating  
Alteration of the classroom arrangement  
Reduction of distractions  
Answers to be dictated  
Hands-on activities  
Ability to type all assignments  
Follow a routine/schedule  
Teach time management and organizational skills  
Rest breaks  
Verbal and visual cues regarding directions and staying on task  
Agenda book and checklists  
Daily check-in with case manager or special education teacher  
Adjusted assignment timelines  
Visual daily schedule



## **SPRINGFIELD PUBLIC SCHOOLS**

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY  
GLOBAL SKILLS**

Varied reinforcement procedures  
Immediate feedback  
Work-in-progress check  
Personalized examples

### **TESTING AND ASSESSMENT ACCOMMODATIONS AND MODIFICATIONS:**

Answers to be dictated  
Frequent rest breaks  
Additional time  
Oral testing  
Choice of test format (multiple-choice, essay, true-false)  
Alternate ways to evaluate (projects or oral presentations instead of written tests)  
Accept short answers  
Open-book or open-note tests  
Read test and directions to student  
Provide study guides prior to tests  
Highlight key directions  
Test in alternative site  
Use of calculator  
Extra credit option  
Pace long-term projects  
Preview test procedures  
Simplified test wording; rephrased test questions and/or directions

### **GENERAL ACCOMMODATIONS AND MODIFICATIONS:**

Allow outlining, instead of writing for an essay or major project  
Use of alternative books or materials on the topic being studied  
Computerized spell-check support  
Word bank of choices for answers to test questions  
Provision of calculator for math tests  
Film or video supplements in place of reading text  
Reworded questions in simpler language  
Projects instead of written reports  
Highlighting important words or phrases in reading assignments  
Modified workload or length of assignments/tests  
Modified time demands



## **SPRINGFIELD PUBLIC SCHOOLS**

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY  
GLOBAL SKILLS**

Pass/no pass option  
Modified grades based on IEP

### **BEHAVIOR ACCOMMODATIONS FOR STUDENTS:**

- Breaks between tasks
- Cue expected behavior
- Daily feedback to student
- Have contingency plans
- Use de-escalating strategies
- Use positive reinforcement
- Use proximity/touch control
- Use peer supports and mentoring
- Model expected behavior by adults
- Have parent sign homework
- Set and post class rules
- Chart progress and maintain data



## SPRINGFIELD PUBLIC SCHOOLS

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21<sup>ST</sup> CENTURY  
GLOBAL SKILLS

### Accommodations and Modifications for ESL Students

- Give tests orally
- Give instructions/directions in writing and orally
- Assign a peer tutor, same language or English speaking
- Allow use of bilingual/translation dictionary
- Provide summaries of text or study guides of particular chapters
- Allow errors in speaking
- Allow errors in writing
- Accept writing in first language
- Highlight key vocabulary
- Reduce amount of work required
- Assess comprehension through demonstration or other alternative means (gestures, drawings)
- Rephrase questions, directions, and explanations
- Reduce multiple choices on assessments
- Provide study guides and/ or outlines
- Shorten reading assignments
- Allow extended time for test/project completion
- Use of audio books
- Use of graphic organizers
- Use reduced text, so that print is not dense
- Use visuals/pictures throughout lesson/unit/assignment
- Adapt homework to reflect language proficiency/home support
- Adapt homework to reflect home support
- Provide hands-on activities and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Use of translation dictionaries to locate words in the native language
- Use anecdotal records and portfolio of work as forms of assessment
- Use story retellings to assess comprehension

## **What Does the Gifted and Talented Experience Look Like?** *Springfield Public Schools*

### **Mission Statement**

The Gifted and Talented Program of the Springfield Public Schools aims to provide a meaningful and rigorous education that instills the value of lifelong learning and empowers all students to reach their full potential and become self-fulfilled creative leaders in accordance with the comprehensive standards of our state. We accomplish this by offering challenging, real-world experiences in a student-centered environment.

We recognize that students come from diverse socioeconomic, cultural, and ethnic backgrounds, and the mission of the gifted and talented program is to provide opportunities for students to explore their intellectual, creative, and artistic gifts and talents within the classroom and with beyond-the-classroom experiences. It is essential to provide diverse, appropriate, and ongoing learning experiences and environments that incorporate students' academic, psychological, and social needs. Our responsibility is to provide students with educational alternatives that teach, challenge, and expand their knowledge, while simultaneously stressing the development of independent and self-directed learners who continuously generate questions, analyze, synthesize, and evaluate information and ideas.

New Jersey Administrative Code 6A:8-3.1 defines students who are gifted and talented as those students who possess or demonstrate high levels of ability in one or more content areas when compared to their chronological peers in the local district and who require modification of their educational program if they are to achieve in accordance with their capabilities.

## Goals:

To support our mission, we have established the following goals to guide our work:

- To infuse into the general education program a broad range of activities for high-level learning that will challenge all students to perform at advanced levels, and provide extended opportunities, resources, and support in particular areas where student interest or talent is demonstrated.
- To provide a continuum of gifted education services that will strengthen the total school program, offer enriching and challenging learning opportunities for all students, and provide specialized learning experiences
- To promote achievement of students' best potentials and increased ability.

Through a productive and collaborative relationship among the building principals, classroom teachers, and the Gifted and Talented teacher, our schools can create programming that will enhance the learning experience for every student and serve the unique and specialized needs of students currently demonstrating gifted behaviors.

Elements of the Schoolwide Enrichment Model, W.I.N (What I Need), differentiated instruction, advanced classes, or individual programs into a student's regular instruction program are integral to this overarching framework for gifted education in the Springfield School District.

*Reference Board Policy and Regulation 2464 – Gifted and Talented Pupils (M)*

### **Early Childhood Center** **Edward V. Walton**

#### Schoolwide Virtual Enrichment

All first and second grade students have access to the [Gifted and Talented Virtual Classroom](#). This virtual classroom is a space for students to complete various challenges and enrichment opportunities at their own pace. Students can receive feedback and additional adaptable resources to meet their individual learning needs. The virtual classroom design expands accessibility to enrichment resources and allows students to choose learning activities according to their unique interests and abilities. The purpose of the activities is to encourage problem-solving, develop critical thinking

skills, and expand curiosity and imagination. Activities are aligned to the New Jersey Student Learning Standards.

#### Gifted and Talented Teacher as a Resource

The Gifted and Talented teacher serves as a resource to all teachers within Edward V. Walton School. Teachers seeking resources for their high-ability learners will receive additional support from the Gifted and Talented teacher in various ways. This support may include additional units of study, challenging resources, and student projects.

### **Elementary Schools** **James Caldwell** **Thelma L. Sandmeier**

The goal is to engage small groups of students in intensive learning experiences through standards-based, rigorous, and relevant units of study that supplement, not supplant, the grade-level curriculum and support students' unique learning needs.

#### Enrichment Experience Grade 3

Beginning in third grade, the G&T teacher will cycle through all classrooms to work on problem-solving and enrichment tasks with students. Driven by assessment data, academic performance, student interest, and teacher observation, small groups of students will meet with the G&T teacher during W.I.N. (What I Need) periods throughout the week that the teacher is assigned to their classroom teacher. Groupings will be flexible and monitored to best meet each student's needs throughout the school year. Activities will include brain teasers, puzzles, strategic thinking, problem-solving, and STEM challenges.

#### Targeted Gifted and Talented Programing Grades 4-5

Students may become identified as Gifted and Talented in fourth grade. Students that are identified may receive support from the G&T Teacher for up to five periods (200 minutes) a week during W.I.N. (What I Need) periods. Identified students will meet to explore grade-level content while incorporating depth and complexity in a student-centered, problem-based environment. The Gifted and Talented Program aims to provide students with various advanced and challenging learning experiences across content areas to promote independent thinking skills, refine critical thinking and communication skills, cultivate joy in learning, and expand student interests through problem-solving. The instruction that students receive incorporates 21st Century Skills and advanced content that is challenging, hands-on, and relevant to the real world.

### *Strategies and Practices that Support Gifted and Talented Students*

- Adjusted Pace of Lessons
- Inquiry-Based Instruction
- Higher-Order Thinking Activities
- Interest-Based Content
- Real World Problem Solving/Problem Based Learning
- Independent Study/Passion Projects
- Units of Study with Like-Minded Peers

### Schoolwide Virtual Enrichment

All JCS and TLS students have access to grade level-specific [Gifted and Talented Virtual Classrooms](#). These virtual classrooms are a space for students to complete various challenges and enrichment opportunities at their own pace. Students are able to receive feedback and additional opportunities based on their needs. The virtual classrooms have expanded the accessibility of enrichment resources directly to the students and allows for students to choose opportunities according to their interests and abilities. The purpose of the activities is to encourage problem solving, develop critical thinking skills, and expand curiosity and imagination in conjunction with the New Jersey Student Learning Standards.

### Gifted and Talented Teacher as a Resource

In addition to classroom support, the Gifted and Talented teacher also serves as a resource to all teachers in the building. Teachers that are seeking resources for their high ability learners will receive additional support from the Gifted and Talented teacher in various ways. This may include additional units of study, challenging resources, student projects, and meeting with the G&T teacher as needed.

### Additional Enrichment Opportunities

Across all grade levels 3-5, as recommended by the classroom teacher, students exhibiting a need for additional enrichment may have the opportunity to meet with the G&T teacher as the schedule allows. Groupings will be flexible and monitored to best meet the students' needs throughout the school year. Activities will include, brain teasers, puzzles, strategic thinking activities, problem-solving challenges, and STEM challenges. Students engage in an extended process of asking questions, using resources, and developing answers that lead to thinking about what and how they are learning. Students are held accountable for how they work and use their time by demonstrating their learning through products or presentations.

Students self-select to participate in individual and/or group projects based on interest and commitment. The classroom teacher and/or the enrichment teacher will help guide and monitor student exploration of chosen topics, facilitating their learning with resources and teaching of needed skills.

**Secondary Schools**  
**Florence M. Gaudineer Middle School**  
**Jonathan Dayton High School**

Grades 6-12: Access to specific content programs with higher levels of academic challenges (i.e. Pre-Algebra, Accelerated Communication Arts, and Advanced Placement Classes)

Dual Credit Courses provide students the opportunity to obtain high school credit, and college credit, simultaneously through partnerships with several institutions.

Project Lead the Way (PLTW) students become builders of technology by engaging in real world activities. Students are empowered as design thinkers collaborating on real world projects.

**Gifted and Talented Identification Criteria**

The Springfield Schools Gifted and Talented Program recognizes that students require differentiated learning experiences beyond the core curriculum being taught because of their advanced abilities in one or more content areas. These students may also have other cognitive qualities such as curiosity, creativity, motivation, leadership, and passion that require modifications to their academic experience.

**Multiple Measures of Eligibility**

Kindergarten through grade twelve identification process for gifted and talented students includes multiple measures. Multiple measures may include but are not limited to: achievement test scores; grades; student performance or products; intelligence testing; parent, student, and/or teacher recommendation; and other appropriate measures. The identification methodology is developmentally appropriate, non-discriminatory, and related to the programs and services offered by the Springfield School District. The identification procedures are reviewed annually.

*According to N.J.A.C. 6A:8-3.1, all public school districts must have a board-approved gifted and talented identification process and provide services for identified students enrolled in the grades of that school district. The regulations require that identification and services be made available to students in grades K-12.*

When students are recommended for the Gifted and Talented Program there are multiple measures that are considered to determine if services are necessary and appropriate. The assessments used are as follows:

- Cognitive Abilities Test (CogAT)
- Classroom Performance/Student Portfolios
- DRA2 Level
- iReady Diagnostic Scores
- Gifted Indicators Checklist
- Start Strong/NJSLA Assessment Data

*The N.J.A.C. requires that students be compared to their chronological peers in the local school district. The New Jersey Department of Education has not established state-level criteria for identifying students who are gifted, such as mandated tests or assessments, grade point averages, or IQ scores. Local school districts must use multiple measures to identify students.*

#### Procedures

<https://www.straussesmay.com/seportal/Public/DistrictPolicy.aspx?policyid=2464&id=b8a33a9f505e4998a6db3fb8e1de778b>

### Gifted and Talented Program Identification Matrix

**Minimum Score Required for Consideration: 14 Points**

| <b>1 Point</b>                                              | <b>2 Points</b>                                   | <b>3 Points</b>                                             |
|-------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------|
| Cogat Assessment<br>Overall Stanine Score of a 7            | Cogat Assessment<br>Overall Stanine Score of an 8 | Cogat Assessment<br>Overall Stanine Score of a 9            |
| iReady Math Assessment<br>Just Below Current Grade<br>Level | iReady Math Assessment<br>On Grade Level          | iReady Math Assessment<br>½ Year + Above Current<br>Level   |
| iReady ELA<br>On Grade Level                                | iReady ELA<br>½ Year Above Current Level          | iReady ELA<br>One Full Grade Level +<br>Above Current Level |
| NJSLA Math<br>Approaching Expectations                      | NJSLA Math<br>Met Expectations                    | NJSLA Math<br>Exceed Expectations                           |
| NJSLA ELA<br>Approaching Expectations                       | NJSLA ELA<br>Met Expectations                     | NJSLA ELA<br>Exceed Expectations                            |
| HOPE Teacher Rating Scale<br>Raw Score: 11 - 29             | HOPE Teacher Rating Scale<br>Raw Score: 30 - 49   | HOPE Teacher Rating Scale<br>Raw Score: 50-66               |

Team meetings present the opportunity to review data and assess the educational needs of all students. Teacher provides examples of student work exhibiting above and beyond grade level expectations, creativity, leadership, critical and abstract thinking. Programs for gifted and talented students will be periodically evaluated for their continuing efficacy and adjusted accordingly. The parent of any student identified as gifted or talented shall be consulted regarding any program designed to address the student's particular needs.

#### Resource Links

[https://riversideinsights.com/cognitive\\_abilities\\_test](https://riversideinsights.com/cognitive_abilities_test)

<https://www.curriculumassociates.com/programs/i-ready-learning>

<https://www.nj.gov/education/assessment/resources/>

<https://www.routledge.com/HOPE-Teacher-Rating-Scale-Involving-Teachers-in-Equitable-Identification/Gentry-Pereira-Peters-McIntosh-Fugate/p/book/9781618214522#:~:text=The%20HOPE%20Teacher%20Rating%20Scale,making%20it%20easy%20to%20use.>

Gifted and talented student: The “*[Strengthening Gifted and Talented Education Act](#)*” defines a gifted and talented student as a “student who possesses or demonstrates a high level of ability in one or more content areas when compared to their chronological peers in the school district and who require modifications of their educational program if they are to achieve in accordance with their capabilities.”

Twice-exceptional (2E) students: A twice-exceptional (2E) student is defined as “a student who is both gifted and a student with a disability. These students may also be referred to as having dual exceptionalities or as being gifted with learning disabilities (GT/LD). This also applies to students who are gifted with ADHD or gifted with autism” (New Jersey Association for Gifted Children, [www.nagc.org](http://www.nagc.org)).

Instructional adaptation: An adjustment or modification to instruction enabling a student who is gifted and talented to participate in, benefit from, and demonstrate knowledge and application of the New Jersey Student Learning Standards in one or more content areas at the instructional level of the student, not just the student's grade level.

Identifying gifted and talented students: The focus of identification is to provide programming and services in which students' specific learning needs and potential are appropriately addressed and met. In every New Jersey school district, there are students who require modifications to the general education curriculum if they are to achieve in accordance with their abilities. By identifying a student's general intellectual ability, creativity, or specific academic area aptitudes, we are acknowledging that they need programming and services outside of the general education/grade level curriculum to advance their learning.

NJDOE Fast Facts

<https://www.nj.gov/education/standards/gifted/>

<https://www.nj.gov/education/standards/gifted/legislation.shtml>

## **Supplemental Resources/Programming for Gifted Students**

Edward V. Walton

- PETS Program – Primary Education Thinking Skills
- Group Solutions/Group Solutions 2 – Cooperative Logic Activities
- Lollipop Logic
- Beginning Thinking Skills
- AIMS Education Programming

James Caldwell and Thelma L. Sandmeier

*Math/ELA*

- Project M3: Mentoring Mathematical Minds
- Junior Great Books
- AIMS Education Programming
- Borenson Hands on Equations
- BizWorld
- Perplexors
- Advanced Math Explorations grade 3-5
- Challenging Units for Gifted Learners (ELA and Math)
- Creative Curriculum Extenders
- Differentiated Lessons & Projects
- Challenge Math Grades 4+
- Differentiating Instruction with Menus (All Content Areas)
- Jacob's Ladder
- Genius Hour/Passion Project
- Spatial Reasoning
- Logic Puzzles, Brain Games, Analogies

*STEM*

- Engineering is Elementary
- Engineer Throughout the Year
- PBS Design Squad
- DefinedSTEM
- Project Lead the Way (PLTW)

### Enrichment Events

Experience for all students to be enriched through events related to the curricular or extracurricular activities. Examples include after school clubs, PTA-sponsored events, leadership opportunities, visual and performing arts, and community service opportunities.