

# SUMMER SCHOOL TEACHER GUIDE



## Bridge Math

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## Summer School Teacher Guide

The Summer High School Program will be 20 days for full credit and 10 days for semester / half ( $\frac{1}{2}$ ) credit). First Semester will be days 1-10 and Second Semester will be days 11-20. Breakdown of days will have the following per semester / half ( $\frac{1}{2}$ ) credit:

- Ten (9) days of daily lessons
- One (1) day post-test review and post-test

All Students and staff will use Grade Results for their summer curriculum. Each lesson will open daily, and students will not be able to work ahead; however, students can work on previously opened lessons per semester. Students can retake a daily post-test 3 times before it locks. If a student needs to retake a daily lesson post-test for a 4<sup>th</sup> time, then the teacher will have to open the lesson post-test again. Teachers should not delete any prior lesson post-test. Grade Results will post the highest grade from each students' lesson post-test.

**Classroom Schedule** – Time below is an approximate breakdown of time.

- Attendance in PowerSchool – 5 minutes
- Lesson Introduction (I Do) – 5 minutes
- Lesson Activities/Supplemental (We Do) – 60 minutes
- **Break – 10 Minutes** (*Site Administrator will work with teachers on breaks*)
- Teacher Lesson Review – 5 minutes
- Independent Work – Student Lesson Review\*/Post-test (They Do) – 40 minutes
- Closing/Wrap Up– 5 minutes
- **Total Time: 2 hours 10 minutes**

**\*Lesson Review** – Students will review lessons for essential knowledge/information prior to the daily test.

The following will be used within **Grade Results**:

- Lessons with Content Area, Videos, and Activities
- Supplemental Teacher Resources App– Some lessons will have a Supplemental resource (Example – Flocabulary)
- Post-Test – Each lesson will have a daily post-test.

**Graded Work** – The Posttest will be the daily graded work. Graded work is automatically calculated by the Grade Results Software.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 Part 1

Day: 1

Topic/Lesson Title & Grade Results #: Lesson 1: Scientific Notation

### Objective(s): Students will

- Convert the numbers from standard form to scientific form and vice versa.
- Perform arithmetic operations with numbers and verbal problems involving scientific notation.
- Compare and interpret scientific notation quantities in real-life situations.
- Compare and order numbers expressed as decimals and scientific notation.
- Interpret scientific notation that has been generated by a scientific calculator.

**Guiding Question(s):** How is scientific notation useful in the real-world?

### TN Curriculum Standard(s):

B.A.SSE.A.1-Use properties of multiplication and division to solve problems containing scientific notation.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

### Key Vocabulary/Terms- 5 minutes:

Define and discuss the meaning of vocabulary words relating to scientific notation.

- Base: A number that is used as the repeated factor.
- Decimal notation: A number that contains a decimal point.
- Scientific Notation: A standardized way of writing real numbers. In scientific notation, all real numbers are written in the form  $a \times 10^b$ , where  $1 \leq a < 10$  and  $b$  is an integer.
- Standard form: The usual way of writing a number. For example, 4372, 0.0024, 3.519.

### Lesson Introduction (I Do) – 20 minutes:

**Slides 1-3** Student will state objectives. Tell students that they will be working on a lesson about scientific notation. The teacher will explain that scientific notation is used to easily work with both very large and very small numbers. The teacher gives examples of various large and small numbers like the speed of light, the distance from the sun to the earth, length of cell membranes and the mass of dust.

**Slides 4-7** Teacher will explain that numbers in scientific notation have a real part and a power part. The video on slide 4 may be used to reteach if necessary. Students will roll over the tabs to view the different examples.

**Slide 8** Students will complete the activity on positive and negative powers.

**Slides 9-10** Teacher will demonstrate and/or discuss examples in Grade Results regarding expressing numbers in scientific notation and writing numbers in standard form.

**Slide 11** Students will complete Activity- Standard form to Scientific Notation. Have students practice expressing numbers in scientific notation and converting numbers from standard form to scientific form.

**Slides 12-19** Teacher will discuss and demonstrate performing operations with scientific notation and complete the practice activity on slide 14 and slide 16 as well as a video on slide 17-18, as time permits.

**Slides 20-26** Teacher will discuss problems in scientific notation. The teacher will discuss the short video examples on slides 20 and 21 and complete activities on slides 24 and 26.

**Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. As a whole group, complete the Practice Activities, “Positive or Negative Powers”, “Writing Numbers in Standard Form”, “Standard Form to Scientific Notation”, “Addition of Numbers”, “Subtraction of Numbers”, “Comparing Numbers”, “Lesson Activity”, “Discuss.

**Supplemental – 10 minutes (as time permits):**

Algebra’scool: Module 11 video in Grade Results. (Using Scientific Notations)

Common Core Math: Mite-y Small-Scientific Notation

Khan Academy: Multiplying in Scientific Notation

**Lesson Review – 5 minutes:**

Slide 27 Summarize the lesson, review terms and concepts and address student misconceptions.

**Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

**Closing/Wrap Up – 5 minutes**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 Part 1

Day: 2

Topic/Lesson Title & Grade Results #: Lesson 2: Formalizing Relations & Functions

**Objective(s): Students will**

- Define a relation and how it differs from a function.
- Define and understand functions in terms of domain and range.
- Represent functions in various contexts.
- Determine whether a relation is a function and describe functions.
- Describe functional relationships using graphs.

**Guiding Question(s):** What is the difference between a relation and a function?

**TN Curriculum Standard(s):**

B.F.IF.A.1- Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If  $f$  is a function and  $x$  is an element of its domain, then  $f(x)$  denotes the output of  $f$  corresponding to the input  $x$ . The graph of  $f$  is the graph of the equation  $y = f(x)$ .

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of the vocabulary words relating to functions and relations.

- Function: A relation in which each element in the domain is paired exactly with one element in the range.
- Relation: A set of input and output values, usually represented in ordered pairs.
- Domain: The set of all input values in a relation.
- Range: The set of all output values in a relation.
- Function Rule: An equation that describes the relationship between dependent and independent variables.
- Function Notation: A notation used to represent a function or a relation, such as  $f(x)$ ,  $g(x)$ , etc.
- Vertical Line test: A test used to determine if the given relation is a function or not.
- Mapping Diagram: a representation that associates the values in one set using arrows from one set to another.

**Lesson Introduction (I Do) – 20 minutes:**

**Slides 1-3** Student will state objectives. Tell students that they will be working on a lesson about relations and functions. The teacher will explain that a relation is simply a pairing of input (domain) values and output (range) values.

**Slides 4-6** Teacher will discuss function and that a relation in which each input is mapped to a unique output is called a function. Students will complete the activity on slide 4 and slide 5 and watch the short video on slide 6. Discuss examples of functions with students and how to come up with function rules.

**Slides 7-14** Teacher will describe the differences between functions and relations and explore their rules, properties and representations (mapping diagram, graph, table, set). Students will complete activities examining functions. Students should be able to determine whether a relationship is a function regardless of the representation.

**Slides 15-17** Teacher will discuss the vertical line test and demonstrate how to use it. The teacher will discuss examples as they appear in the lesson and how to determine whether the given graph is a function or not using the vertical line test.

**Slide 18** Students will complete drag and drop activity.

**Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. “Vertical Line Test” and other “quick check” activities. Discuss

**Supplemental – 10 minutes (as time permits):**

Algebra’scool: Module 9 video in Grade Results.

**Lesson Review – 5 minutes:**

Slide 19 Summarize the lesson, review terms and concepts and address student misconceptions.

**Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

**Closing/Wrap Up – 5 minutes**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 Part 1

Day: 3

Topic/Lesson Title & Grade Results #: Lesson 3: Graph Linear & Quadratic Functions – Show Intercepts

### Objective(s): Students will

- Graph a linear function.
- Graph a quadratic function.
- Find intercepts, maxima and minima of the given functions.

**Guiding Question(s):** What is the difference between a linear function and a quadratic function?

### TN Curriculum Standard(s):

B.F.IF.C.4- Graph linear, quadratic, absolute value, and piecewise functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated ones.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

### Attendance in PowerSchool – 5 minutes

### Key Vocabulary/Terms- 5 minutes:

Define and discuss the meaning of vocabulary words relating to linear and quadratic functions.

- Linear Equation: An equation, that when graphed, makes a straight line.
- Standard form of a linear equation: The standard form of a linear equation is  $Ax + By = C$
- Slope-intercept form of a linear equation: The slope-intercept form of a linear equation is  $y = mx + b$
- Quadratic equation: An equation, that when graphed, makes a parabola, which is an arch or u-shaped curve.
- Standard form of a quadratic function: The standard form of a quadratic function is  $y = ax^2 + bx + c$ , where  $a \neq 0$ .
- Parabola: A u-shaped curve of a quadratic function.
- Vertex of a quadratic function: The maximum or minimum point of a quadratic function.
- x-intercept: The point at which a line or curve crosses the x-axis. When a line or curve crosses the x-axis,  $y = 0$ .
- y-intercept: The point at which a line or curve crosses the y-axis. When a line or curve crosses the y-axis,  $x = 0$ .

### Lesson Introduction (I Do) – 20 minutes:

**Slides 1-3** Student will state objectives. Tell students they will be working on a lesson about graphing linear and quadratic functions students and how linear functions are used in the real world. Give examples of real-world structures that model linear graphs. Teacher will explain the different key features of each graph and identify intercepts. Allow students to watch the video on slide 3. Discuss.



**Slides 4-6** Discuss slope-intercept form and applications for intercepts. Students will watch the video for linear functions on slide 4. Students will complete the activity for slope-intercept form on slide 6.

**Slides 7-15** Students will be introduced to quadratic functions and their place in the real-world. Discuss different forms of quadratic functions. Discuss extrema, vertex and explore domain and range. Students will watch the video for linear functions on slide 12. Have students practice identifying different parts of these graphs and complete the activity on slide 15.

**Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

**Supplemental – 10 minutes (as time permits):**

Khan Academy: Applying Quadratic Functions video in Grade Results.

Algebra'scool Module 14: Graphing Simple Quadratic Relations in Grade Results.

**Lesson Review – 5 minutes**

Slide 16 Summarize the lesson, review terms and concepts and address student misconceptions.

**Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

**Closing/Wrap Up – 5 minutes**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

**Subject/Grade:** Bridge Math 9-12 Part 1

**Day:** 4

**Topic/Lesson Title & Grade Results #:** Lesson 4: Solving Linear Equations & Inequalities

**Objective(s):** Students will

Lesson A

- Form linear equations from given situations and solve them.
- Form linear inequalities and solve them.
- Form non-linear equations and solve them.

Lesson B

- Solve multi-step equations and inequalities and justify the steps using properties.
- Solve inequalities with variables on both sides of the inequality symbol.
- Solve inequalities using the properties of inequality to justify the steps and the solution.
- Solve verbal problems on inequalities.

**Guiding Question(s):** How can we write equations and inequalities for real-world situations and solve them?

**TN Curriculum Standard(s):**

B.A.CED.A.1 - Create equations and inequalities in one variable and use them to solve real-world problems.

B.A.REI.D.5- Solve a linear inequality using multiple methods and interpret the solution as it applies to the context.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to linear equations and inequalities.

Lesson A

- Linear Equation- An equation in which the highest power of any variable is one.
- Linear Inequality- An inequality which involves a linear function.
- Quadratic Equation- A polynomial equation in which the highest power of the variable is two.
- Rational Function- A function which can be defined by an algebraic fraction.

Lesson B

- Inequalities: The condition in which two values are not equal.
- Solution of an inequality: A value or range of values which, when plugged in for the variable, makes the inequality a true statement.

## **Lesson Introduction (I Do) – 20 minutes:**

### Lesson A

**Slides 1-6** Student will state objectives. Tell students they will be working on a lesson about equations and inequalities and how they are used in the real world. Give examples of real-world structures that model linear situations. The teacher will explain how key words translate to mathematical sentences and solve the equation. The teacher will go over examples and students will complete the activity on slide 6.

**Slides 7-13** Teacher will review different symbols/terminology used with inequalities. Students will complete the activity on slides 10 & 13. Discuss.

**Slides 14-17** Teacher will demonstrate how to translate phrases and symbols in order to form inequalities. Students may complete the activity on slide 15 and watch the video on slide 17 if time permits.

**Slides 18-21** Teacher will demonstrate solving rational, quadratic and exponential functions as they appear in the lesson and complete the drag and drop activity in slide 21.

### Lesson B

**Slides 1-3** Student will state objectives. Teacher will review the symbols for inequalities and complete the activity on symbols at slide 3.

**Slides 4-7:** The Teacher will review the properties of inequalities, discuss examples and allow the students to view the video on slide 7. The teacher will model the solving of equations.

**Slides 8-10** Teacher will discuss and demonstrate solving different inequalities, students will answer lesson check quiz question on slide 10.

**Slides 11-13** Teacher will discuss strategies for solving verb problems involving inequalities and complete activity on slide 13. Discuss

## **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

## **Supplemental – 10 minutes (as time permits):**

Lesson A, Writing and Solving Equations, Solving Linear Equations, Problem Solving with Linear Inequalities, Solving Linear Equations and Linear Inequalities, Solving Inequalities and Linear Equations

Lesson B, Solving Inequalities, Inequalities

## **Lesson Review – 5 minutes**

Lesson A, slide 22 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 14 Summarize the lesson, review terms and concepts and address student misconceptions.

## **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

## **Closing/Wrap Up – 5 minutes**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

**Subject/Grade:** Bridge Math 9-12 Part 1

**Day:** 5

**Topic/Lesson Title & Grade Results #:** Lesson 5: Solving Systems of Linear Equations

**Objective(s):** Students will

Lesson A

- List the types of solutions of systems of linear equations.
- Solve a system of equations by elimination and substitution method.

Lesson B

- Use graphs and tables to relate the system of linear equations.
- Identify the point of intersection of two lines as the solution to the system.
- Verify by computation that a point of intersection is a solution to the system by graphical method.
- Determine the number of solutions using the slope and y-intercept.
- Write a second equation to create a specified solution.

**Guiding Question(s):** How can we write systems of equations for real-world situations and solve them? What does it mean to be a solution to a system of equations?

**TN Curriculum Standard(s):**

B.A.REI.C.3- Solve and explain the solutions to a system of equations using a variety of representations including combinations of linear and non-linear equations.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of the vocabulary words relating to systems of linear equations.

- Coefficients: The number that appears along with the variable.
- Coordinate plane: a two-dimensional surface on which points are plotted and located by their x- and y-coordinates.
- Linear equations: An algebraic equation in which the highest exponent of the variable or variables is one.
- System of Linear equations: A collection of linear equations involving the same set of variables.

## **Lesson Introduction (I Do) – 20 minutes:**

### Lesson A

**Slides 1-4** Student will state objectives. Tell students they will be working on a lesson about systems of linear equations and how they are used in the real world. Remind students of what constitutes a linear function. Give examples of real-world structures that model these situations. Students will explore the different methods for solving systems of equations.

**Slides 5-10** Students will explore solving systems of equations with the elimination method and the addition elimination method. Students will watch the video on slides 6, 7 & 8 and then complete practice activities on slides 9 and 10.

### Lesson B

**Slides 1-5** Student will state objectives. Tell students they will be working on a lesson about systems of equations and how they are used in the real world. Give examples of real-world structures that model these situations. Students will explore the different methods for solving systems of equations. Students will discuss the different types of solutions...unique, no solution and infinitely many solutions.

**Slides 6-11** Students will be reminded of different methods used to solve and explore solving systems of equations using graphs and tables. Students will complete practice activities on slide 11.

**Slides 12-14** Students will learn how to verify that the point of intersection is a solution and determine the number of solutions using slope and y-intercepts. The teacher will allow students to watch the video on slide 14.

**Slides 15-19.** The teacher will explain some applications for systems of linear equations and complete the activities on slides 18 & 19. The teacher will review how key words translate to mathematical sentences. The teacher will discuss how students can self-select a method to solve these systems.

## **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

## **Supplemental – 10 minutes (as time permits):**

Lesson A & B, Algebra's cool videos Substitution Method, Elimination Method, Application Problems in Grade Results.

## **Lesson Review – 5 minutes**

Lesson A, slide 11 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 20 Summarize the lesson, review terms and concepts and address student misconceptions.

## **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

## **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 Part 1

Day: 6

Topic/Lesson Title & Grade Results #: Lesson 6: Linear and Quadratic Equations

**Objective(s): Students will**

Lesson A

- Solve a system consisting of a linear equation and a quadratic equation in two variables graphically.
- Solve a system consisting of a linear equation and a quadratic equation in two variables algebraically.

Lesson B

- Define the standard form of a quadratic equation.
- Solve quadratic equations of the form  $x^2 - c = 0$  and  $ax^2 - d = 0$
- Discuss how quadratic equations are used in real-life situations.

**Guiding Question(s):** How can we write systems of equations for real-world situations and solve them? How can we solve quadratic equations?

**TN Curriculum Standard(s):**

B.A.REI.C.3- Solve and explain the solutions to a system of equations using a variety of representations including combinations of linear and non-linear equations.

B.A.REI.B.2- Solve quadratic equations in one variable. Solve quadratic equations by inspection (e.g., for  $x^2 = 49$ ), taking square roots, completing the square, knowing and applying the quadratic formula, and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$ .

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to linear and quadratic equations.

Lesson A

- Circle: The locus of all points that are a fixed distance from a given point.
- Linear Equation: An equation that is mixed with a linear polynomial and constants.
- Parabola: A locus of points such that the distance to the focus equals the distance to the directrix
- Point of intersection: A point where two or more curves meet.,
- Solution: A value of a variable that satisfies an equation or system of equations.
- System of Equations: Two or more equations containing common variables.

## Lesson B

- Quadratic equation: A polynomial equation with degree 2.

### Lesson Introduction (I Do) – 20 minutes:

#### Lesson A

**Slides 1-8** Student will state objectives. Tell students they will be working on a lesson about systems of equations that include a linear equation and a quadratic equation and how they are used in the real world. The teacher will explain how many solutions could be present in these types of systems. Students will complete the activity on slide 5 and continue the lesson by finding solutions on the graph and complete the activity on slide 8.

**Slides 9-11** Discuss how students can solve these systems using graphs and allow them to watch a video on slide 10. The teacher will review how the intersection points are the solutions to the systems.

**Slides 12-18** Discuss the steps necessary for solving these systems algebraically. The teacher will model solving a system of linear and quadratic equations algebraically. Students will roll over the tabs to see each method and complete the activity on slide 14.

**Slides 19-22** Discuss real life problems that can be solved using systems of equations after watching the video on slide 19 as time permits. Students will complete the activity on slide 22.

#### Lesson B

**Slides 1-7** Student will state objectives. Discuss quadratic equations. Teacher will demonstrate and discuss how to solve quadratics of the form  $x^2 - c = 0$ . Students will watch a short video on slide 4 and complete the activity on slide 7.

**Slides 8-13** Teacher will demonstrate and discuss how to solve quadratics of the form  $ax^2 - d = 0$ . Students will explore real-world examples and complete the activity on slides 9 & 13. Allow students to view the short video on slide 10 as time permits or for remediation.

### Lesson Activities (We Do) – 30 minutes:

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

### Supplemental – 10 minutes (as time permits):

Lesson A, Mathispower4u video Finding point of intersection of a line and circle in Grade Results.

### Lesson Review – 5 minutes

Lesson A, slide 23 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 14 Summarize the lesson, review terms and concepts and address student misconceptions.

### Independent Work – Posttest (They Do) – 40 minutes:

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

### Closing/Wrap Up – 5 minutes:

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 Part 1

Day: 7

Topic/Lesson Title & Grade Results #: Lesson 7: Solving Quadratic Equations by Different Methods

Objective(s): Students will

Lesson A

- Define quadratic equations and list down the different methods for solving it.
- Describe the steps involved in factorization method.
- Graph quadratic equations.
- Find the roots of a quadratic equation using the quadratic formula.
- List down the steps used in completing the square.

Lesson B

- Find the discriminant and determine the nature of the roots of quadratic equations.
- Solve quadratic equations using quadratic formula with complex solutions.

**Guiding Question(s):** How can we write systems of equations for real-world situations and solve them? How can we solve quadratic equations?

**TN Curriculum Standard(s):**

B.A.REI.B.2- Solve quadratic equations in one variable. Solve quadratic equations by inspection (e.g., for  $x^2 = 49$ ), taking square roots, completing the square, knowing and applying the quadratic formula, and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$ .

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to quadratic equations.

Lesson A

- Quadratic equation A polynomial equation in which the highest power of the variable is two.
- Vertex: The point where the parabola crosses its axis of symmetry.
- Coefficient: A number multiplied with a variable.
- Factoring: The decomposition of a polynomial into a product of factors which when multiplied together gives the original polynomial.

Lesson B

- Complex number: A number of the form  $a + bi$ , where  $a$  and  $b$  are real numbers given by  $i = \sqrt{-1}$ .
- Conjugate of Complex Number: The complex number obtained by changing the sign of the imaginary.



- Discriminant: Sign of the determinant that describes the nature of the roots of the quadratic equation
- Real Part: For a complex number  $a + bi$ , the real part is  $a$ .
- Imaginary Part: The coefficient of  $i$  in a complex number,  $a + bi$ .

### **Lesson Introduction (I Do) – 20 minutes:**

#### Lesson A

**Slides 1-3** Student will state objectives. Tell students they will be working on solving quadratic equations that may involve complex solutions. The teacher will explain complex numbers and different types of solutions for quadratic equations. The teacher will explain how many solutions could be present in these equations and discuss the different methods used for solving quadratic equations. Students will complete the activity on slide 3.

**Slides 4-5** Teacher will demonstrate and discuss how to solve quadratics using factorization.

**Slides 6-7** Teacher will demonstrate and discuss how to solve quadratics using the quadratic formula.

**Slides 8-10** Teacher will demonstrate and discuss how to solve quadratics by graphical method.

**Slides 11-15** Teacher will demonstrate and discuss how to solve quadratics by completing the square. Students will watch videos on slides 12 & 13 as time permits or for remediation. Students will complete the drag and drop activities on slides 14 and 15.

#### Lesson B

**Slides 1-6** Student will state objectives. The teacher will discuss the shape of a parabola in real world situations and explain the complex numbers and different types of solutions for quadratic equations. The teacher will explain how many solutions could be present in these equations and discuss the nature of the roots. Students will watch a short video on slide 4 and complete the quick check on slides 5 & 6.

**Slides 7-14** Teacher will discuss complex numbers and complete the activities throughout the lesson. Students will move on to solve quadratics that have complex solutions/roots by watching the video on slide 9 and activities on slides 12, 13 & 14. Teacher will reiterate terminology relevant to solving and the correlation to finding roots, zeros and x-intercepts.

### **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

### **Supplemental – 10 minutes (as time permits):**

Lesson B, Khan Academy Discriminant for types of solutions for a quadratic video in Grade Results.

### **Lesson Review – 5 minutes**

Lesson A, slide 16 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 15 Summarize the lesson, review terms and concepts and address student misconceptions.

### **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

### **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits.

Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

**Subject/Grade:** Bridge Math 9-12 Part 1

**Day:** 8

**Topic/Lesson Title & Grade Results #:** Lesson 8: Addition, Subtraction & Multiplication of Polynomials

**Objective(s):** Students will

Lesson A

- Recall polynomials and terminologies involved in them.
- Add polynomials.
- Subtract polynomials.

Lesson B

- Multiply monomials.
- Multiply a monomial with a polynomial.
- Multiply binomials.
- Multiply polynomials with two or more terms.

**Guiding Question(s):** How can we perform operations on polynomials?

**TN Curriculum Standard(s):**

B.A.APR.A.1- Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to polynomials.

Lesson A

- Coefficient: Real numbers or variables multiplied with the terms of an expression.
- Degree of a polynomial: The highest exponent in a polynomial.
- Leading coefficient: The coefficient of the term with the highest degree.
- Leading term: The term in a polynomial which contains the highest power of the variable.
- Like terms: Terms that contain the same variables raised to the same power.
- Unlike terms: Terms that contain different variables raised to different powers.
- Polynomial: A mathematical expression consisting of a sum of terms, where each term includes a variable or variables raised to a power and multiplied by a coefficient.
- Term: A part of an expression consisting of a number or one or more variables or their product.

Lesson B

- Binomial: A mathematical expression with two terms.
- Monomial: A mathematical expression with one term.

**Lesson Introduction (I Do) – 20 minutes:**

Lesson A

**Slides 1-3** Student will state objectives. Tell students they will be working with polynomials. Discuss the classifying of polynomials and identify different parts and characteristics of the polynomial using content specific vocabulary.

**Slides 4-5** Teacher will demonstrate how to perform operations with polynomials and simplify them by combining like terms. The teacher will discuss how students can add using the vertical method as an alternative.

**Slides 6-9** Teacher will discuss how students can apply what they learn about addition to subtraction. Students will watch the video on slide for adding and subtracting polynomials. Students may watch the short video on slide 9 as time permits or the need for remediation arises.

Lesson B

**Slides 1-4** Student will state objectives. Tell students they will be working with multiplying polynomials. The teacher will review terminology as it relates multiplying polynomials. The teacher will demonstrate, model and discuss multiplying polynomials.

**Slides 5-6** Teacher will demonstrate and discuss how to apply what we have learned to multiplying a monomial by a binomial and a monomial by a polynomial. The teacher will continue to model how to multiply polynomials.

**Slides 7-9** Teacher will demonstrate and discuss how to apply what we have learned to multiplying a binomial and a trinomial and 2 polynomials and watch a short video on slide 7. Teacher may utilize FOIL, vertical or box method.

**Slides 10-12** Teacher will discuss real-world applications of polynomials and complete the activity on slide 12.

**Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

**Supplemental – 10 minutes (as time permits):**

Lesson A, Khan Academy video on adding polynomials, Addition & Subtraction of Polynomials, Subtracting Polynomials in Grade Results.

Lesson B, Multiplying Polynomials, Multiplying Binomials, Multiplying Monomials by Polynomials, Multiplying Polynomials, Special Products of Polynomials video in Grade Results.

**Lesson Review – 5 minutes**

Lesson A, slide 10 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 13 Summarize the lesson, review terms and concepts and address student misconceptions.

**Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. Students will watch short videos and complete practice activities within grade results.

**Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits.

Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

**Subject/Grade:** Bridge Math 9-12 Part 1

**Day:** 9

**Topic/Lesson Title & Grade Results #:** Lesson 9: Graphing Polynomials, Polynomial Roots & Zeros

**Objective(s):** Students will

Lesson A

- Factorize and find zeros of a given polynomial.
- Use zeros of a polynomial to graph it.

Lesson B

- Explain the process involved in graphing a polynomial function.
- Explain the leading coefficient test used to find the end behavior of a polynomial function.
- Interpret the zeros, extreme values, and symmetry of the graph of a quadratic function.

**Guiding Question(s):** How can we factor graph polynomials?

**TN Curriculum Standard(s):**

B.A.APR.B.2 Identify zeros of polynomials when suitable factorizations are available and use the zeros to construct a rough graph of the function defined by the polynomials.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to polynomials.

Lesson A

- Polynomial: A combination of variables, arithmetic operators, exponents, and numbers.
- x-intercept: A point at which a line or curve crosses the x-axis.
- Zeros of a Polynomial: The values of x which make the polynomial equals to zero.

Lesson B

- Constant: A number whose value does not change.
- Coefficient: The number associated with a variable.
- Degree: The highest power of a polynomial.
- Leading coefficient: The coefficient of a polynomial's leading term in descending order.

**Lesson Introduction (I Do) – 20 minutes:**

Lesson A

**Slides 1-2** Student will state objectives. Tell students they will be continuing their work with polynomials. Discuss the opening activity which connects polynomials with the real world and connects the distributive property to factoring polynomials.

**Slides 3-5** Teacher will demonstrate how to factor polynomials, find the zeros from factors and how those factors can be used to graph polynomials. Students will watch a short video on slide 5 relating zeros to x-intercepts and graphing polynomials.

**Slides 6-8** Teacher will discuss how students can apply what they learn about polynomials to determine the number of zeros (roots, solutions and x-intercepts) with different types of graphs displaying different numbers of roots. Students will roll over graphic to see different examples. Students will complete activity on slide 7.

**Slides 9-11** Teacher will model, demonstrate and discuss how to factor and graph polynomials. Students will complete activity on slide 11.

Lesson B

**Slides 1-3** Student will state objectives. Tell students they will be working with graphing polynomial functions. Teacher will review terminology as it relates polynomials and their characteristics.

**Slides 4-5** Teacher will demonstrate and discuss how to apply the leading coefficient test to determine end behavior in preparation for graphing.

**Slides 6-8** Teacher will demonstrate and discuss how to apply what we have learned to graphing quadratics and polynomials. Students will complete activities on slide 6 and view a short video on slide 8 as time permits or if the need for remediation arises.

**Slides 9-11** Teacher will discuss interpreting zeros and extreme values in the context of real-world situations. Students will complete the activity on slide 10 regarding leading coefficients.

**Slides 12-17** Teacher will complete examples that use different methods for finding the zeros. Students will complete activity on slide 14. The teacher will model finding extreme values and students will complete the activities on slides 16 & 17.

#### **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

#### **Supplemental – 10 minutes (as time permits):**

Lesson A, YouTube Finding the Zeros on calc, find zeros of polynomial, real zeros and solve by factoring videos in Grade Results.

Lesson B, YouTube Several Determining Intercepts and end behavior of a polynomial function videos in Grade Results.

#### **Lesson Review – 5 minutes**

Lesson A, slide 12 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 18 Summarize the lesson, review terms and concepts and address student misconceptions.

#### **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. Students will watch short videos and complete practice activities within grade results.

#### **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

**Subject/Grade:** Bridge Math 9-12 part 1

**Day:** 10

**Topic/Lesson Title & Grade Results #:** Final Post-Test Review & Post-Test

**Objective(s):**

- Students will review lessons to prepare for the final Post-Test.
- Final Post-test will open. All students must complete the final Post-Test.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Lesson Introduction (I Do):**

Identify the purpose of the course.

Connect the course to missing or future coursework and Post-test.

**Lesson Activities and Review (We Do):**

Check Grade Results and have students review activities/lesson that they have not completed or need assistance with. Hold an open Q&A for students to ask questions regarding the activities/lessons they are reviewing.

**Independent Work – Posttest (They Do):**

Students will review and complete any incomplete/missed/failed coursework.

**Closing/Wrap Up:**

The teacher will provide final instructions and reminders for the final post-test.

# **SEMESTER 2**

## Summer School Lesson Plan

**Subject/Grade:** Bridge Math 9-12 part 2

**Day:** 11

**Topic/Lesson Title & Grade Results #:** Lesson 1: Triangle Theorems and Polygons

**Objective(s):** Students will

Lesson A

- Recall the basic terminologies involved in Geometry.
- Prove the angle sum theorem and use it to find the measure of a missing angle in a triangle.
- Explain the base angle theorem involved in finding the measure of missing angles in isosceles triangles.
- Prove the midsegment theorem and the median concurrence theorem and use them to find the length of the missing segments in a triangle.

Lesson B

- Define interior angle and exterior angle of a polygon.
- Find the interior angle and exterior angles of triangles and polygons.
- Find the sum of interior angles of a regular or an irregular polygon.

**Guiding Question(s):** How can we find the measures of unknown angles in polygons?

**TN Curriculum Standard(s):**

B.G.GMD.A.2- Use several angle properties to find an unknown angle measure.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to angles.

Lesson A

- Triangle: A closed polygon with three sides.
- Isosceles triangle: A triangle that has two sides of equal length.
- Median of a triangle: A line segment joining a vertex to the midpoint of opposite side. Every triangle has exactly three medians.
- Transversal: A line that passes through two or more lines in the same plane at distinct points.
- Quadrilateral: A four-sided polygon.

Lesson B

- Interior Angle: The angle formed by two adjacent sides inside a polygon.
- Irregular Polygon: A polygon does not have all sides equal and all angles equal.
- Polygon: A closed two-dimensional figure having three or more sides.



- Regular Polygon: A polygon with all sides equal and all angles equal.
- Triangle: A polygon with three sides and three angles.

### **Lesson Introduction (I Do) – 20 minutes:**

#### Lesson A

**Slides 1-5** Student will state objectives. Tell students they will learn about different types of angles and triangles. The teacher will review vocabulary, properties of angles, angle types, polygon types and complete the activities. The teacher will model how to find the missing angle.

**Slides 6-11** Discuss angle relationships, special triangles, theorems and finding the measures of unknown angles. Students will compete in the activity on slide 6 and 9. Students will watch short video on slide 10.

**Slides 12-18** Teacher will discuss the median and the median concurrence theorem and how to use it to find missing parts of a triangle. Students will complete activities on slides 15 and 16.

#### Lesson B

**Slides 1-10** Student will state objectives. Teacher will examine interior angles and exterior angles in polygons. The teacher will demonstrate, model and discuss theorems and examples. Students will complete an activity on slide 10 and video on slide 11.

**Slides 11-16** Teacher will model, demonstrate and discuss how to find missing interior and exterior angles for triangles and parallelograms. Students will view graphics and discuss.

**Slides 17-23** Teacher will discuss finding the interior angles in pentagons, other polygons and regular polygons. The teacher will model examples and students will complete the activities on slide 19, 22 & 23.

### **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

### **Supplemental – 10 minutes (as time permits):**

Lesson A, Khan Academy videos Equilateral Triangle Sides and Angles and Angles in Grade Results.

Lesson B, Algebra'scool video Solving Geometry Problems and Triangle Angle Example in Grade Results.

### **Lesson Review – 5 minutes**

Lesson A, slide 19 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 24 Summarize the lesson, review terms and concepts and address student misconceptions.

### **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

### **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits.

Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 part 2

Day: 12

Topic/Lesson Title & Grade Results #: Lesson 2: Angles, Perimeter and Area

**Objective(s): Students will**

Lesson A

- Define supplementary, complementary, vertical and adjacent.
- Use the properties of supplementary, complementary, vertical and adjacent angles to solve for unknown angles.
- Write and solve equations based on unknown value in the figures.

Lesson B

- Find the perimeter and area of 2-D shapes.
- Solve word problems involving perimeter and area of a polygon.

**Guiding Question(s):** How can we find the measures of unknown angles in polygons? What is the relationship between perimeter and area?

**TN Curriculum Standard(s):**

B.G.GMD.A.2- Use several angle properties to find an unknown angle measure.

B.G.GMD.A.1- Use relationships involving area, perimeter, and volume of geometric figures to compute another measure.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to angles.

Lesson A

- Vertical Angles: Opposite angles formed by the intersection of two lines.
- Adjacent Angles: Angles that share a common vertex, a common side, and do not overlap.
- Complementary Angles: Angles whose sum is 90.
- Supplementary Angles: Angles whose sum is 180.

Lesson B

- Perimeter of a polygon: The sum of the lengths of the sides of a polygon.
- Area of a polygon: The number of square units that covers a shape.

### **Lesson Introduction (I Do) – 20 minutes:**

Lesson A

**Slides 1-5** Student will state objectives. Tell students they will learn about different types of angles and solving for missing angles in polygons. The teacher will review properties of angles, angle types and complete the activity on slide 5.

**Slides 6-10** Discuss angle relationships such as vertical, adjacent, complementary and supplementary properties of angles within polygons. The teacher will discuss different types of angles and students will complete an activity on slides 7, 9 and 10.

**Slides 11-18** Teacher will demonstrate how to find the missing angles in various problems. Teacher will discuss examples and students may watch a short video on slide 13, as time permits, or the need for remediation arises. Students will complete the activities on slides 17 and 18.

Lesson B

**Slides 1-7** Student will state objectives. The teacher will examine perimeter and area of polygons and how they relate to the real world. Discuss the relationship between perimeter and area of a rectangle. The teacher will model, demonstrate and discuss finding perimeter and area.

**Slides 8-11** Teacher will examine circumference and the area of a circle and the relationship between them. The teacher will discuss how this relates to the real world in the playground problem. Students will complete the activity on slide 11.

### **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

### **Supplemental – 10 minutes (as time permits):**

Lesson A, Mathispower4u video on Angle Relationships, flocabulary and Worksheet in Grade Results.

### **Lesson Review – 5 minutes**

Lesson A, slide 19 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 12 Summarize the lesson, review terms and concepts and address student misconceptions.

### **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

### **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 part 2

Day: 13

Topic/Lesson Title & Grade Results #: Lesson 3: Area and Circumference of a Circle

**Objective(s): Students will**

- Determine the relationship between diameter and circumference of a circle.
- Use formulas for the area and circumference of a circle to solve mathematical problems.
- Determine the relationship between a circle's area and its circumference.

**Guiding Question(s):** What is the area of a circle defined as? What is the circumference of a circle defined as?

**TN Curriculum Standard(s):**

B.G.C.A.1 Apply a variety of strategies to determine the area and circumference of circles after identifying necessary information.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of the vocabulary words relating to circles.

- Circle: The set of all points in a plane that are the same distance from a given point called the center.
- Circumference: The distance around the circle is called the circumference.
- Chord: segment whose endpoints lie on a circle.
- Diameter: The distance across a circle through its center.
- Radius: The distance from the center of a circle to any point on the circle.

**Lesson Introduction (I Do) – 20 minutes:**

**Slides 1-4** Student will state objectives. Tell students they will discuss circles, circumference and area. Students will learn the different parts of a circle and how to determine the circumference and area.

**Slides 5-8** Discuss the relationship between the diameter and circumference of a circle. The teacher will model, demonstrate and discuss circumference examples. Students will watch a short video on slides 5 & 7. Students will complete the activity on slides 6 and 8.

**Slides 9-12** Students will learn how to find the area of a circle, real world applications for the area of circles. The teacher will model, demonstrate and discuss finding the area of circles. Students will watch a video on finding the area on slide 11 followed by an activity on slide 12.

**Slides 13-20** Teacher will discuss the relationship between the circumference and area. Be sure to remind students what information is needed to find the circumference and area as students view the video on slide 14. Students will also look at how to find the circumference from the area of a circle and complete the activities on slides 18, 19 and 20.

**Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

**Supplemental – 10 minutes (as time permits):**

Video montage video on circles in Grade Results and Flocabulary as time permits or the need for remediation arises.

**Lesson Review – 5 minutes**

Slide 21 Summarize the lesson, review terms and concepts and address student misconceptions.

**Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

**Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 part 2

Day: 14

Topic/Lesson Title & Grade Results #: Lesson 4: Formulas of Surface Area and Volume of Combined Shapes

Objective(s): Students will

Lesson A

- Find the relationship between the volume of a cone and volume of a cylinder.
- Find the relationship between the volume of a pyramid and volume of a prism.
- Solve word problems involving volume of cones, cylinders, pyramids and prisms.

Lesson B

- Find the area, surface area and volume of combined shapes.

**Guiding Question(s):** What is the relationship between surface area and volume formulas?

**TN Curriculum Standard(s):**

B.G.GMD.A.1- Use relationships involving area, perimeter, and volume of geometric figures to compute another measure.

B.G.GMD.A.3- Use relationships involving surface area of combined geometric figures.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to angles.

Lesson A

- Volume: The amount of space inside a solid figure and it is measured in cubic units.

Lesson B

- Area: The number of square units that fit into a shape.
- Surface Area: The number of square units needed to cover all surfaces of a three-dimensional figure.
- Combined shapes: Made up of several simple shapes.

**Lesson Introduction (I Do) – 20 minutes:**

Lesson A

**Slides 1-4** Student will state objectives. Tell students they will discuss volume and its applications to the real world. Begin by discussing the 3-D shapes of prism and pyramid, their definition, appearance, parts and characteristics. Students will move on to discussing volume. The teacher will review the concept of volume.

**Slides 5-7** Discuss the relationship between the volume of a prism and pyramid. The teacher will demonstrate how to determine the volume of a rectangular prism and a triangular pyramid.

**Slides 8-12** Discuss the relationship between the volume of a cone and cylinder. The teacher will demonstrate how to determine the volume of cones and cylinders and complete the activities on slide 12.

#### Lesson B

**Slides 1-5** Student will state objectives. Tell students they will continue to discuss 2-D and 3-D figures. The teacher will discuss area, surface area, volume and its applications to the real world. The teacher will show students how to apply what they have learned in the previous lesson to that of combined geometric figures. Students will complete the activity on slide 5.

**Slides 6-9** Teacher will discuss what area is and discuss its' applications. The teacher will model, demonstrate and discuss how to create diagrams as necessary to find what is needed to calculate surface area and volume. Students will complete the activity on slide 9.

**Slide 10** Teacher will discuss the steps for finding the volume of a cone and cylinder.

**Slides 11-15** Demonstrate and discuss finding area, surface area and volume of cones, cylinders, prisms and pyramids and as well as for combined geometric figures. Students will watch a video on slide 14 and complete the activity on slide 15.

#### **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

#### **Supplemental – 10 minutes (as time permits):**

Lesson A, Flocabulary Lessons Prisms, Cone, Cylinder, Sphere and Compound Volumes video in Grade Results.

#### **Lesson Review – 5 minutes**

Lesson A, slide 13 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 16 Summarize the lesson, review terms and concepts and address student misconceptions.

#### **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

#### **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 part 2

Day: 15

Topic/Lesson Title & Grade Results #: Lesson 5: Special Right Triangles and Trigonometric Ratios

**Objective(s): Students will**

Lesson A

- Find the missing side of a right triangle.
- Solve word problems involving right triangles.

Lesson B

- Define trigonometric ratios.
- Define similar right triangles.
- Find the measure of missing sides and angles using trigonometry and similarity.

**Guiding Question(s):** What is triangle similarity? How can we use similar triangles in the real-world?

**TN Curriculum Standard(s):**

B.G.SRT.B.3- Apply properties of  $30^\circ$   $60^\circ$   $90^\circ$ ,  $45^\circ$   $45^\circ$   $90^\circ$ , similar, and congruent triangle.

B.G.SRT.B.2- Apply basic trigonometric ratios to solve right triangle problems.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of the vocabulary words relating to right triangles.

Lesson A

- Right Triangle: A triangle in which one angle is a right angle.
- Hypotenuse: The side opposite to the right angle in a right-angled triangle.
- Legs: In a right triangle, the two sides that form the right angle.
- Shorter leg: The leg opposite to the smallest acute angle.
- Longer Leg: The leg opposite to the largest acute angle.
- Special Right Triangles: Right triangles whose angle measures are 45-45-90 or 30-60-90.

Lesson B

- Acute angle: An angle with a measure between 0 and 90.



- Right angle: A triangle whose one of the interior angles is 90.
- Similar triangles: Triangles whose corresponding angles are equal, and the corresponding sides are in proportion.
- Trigonometric ratios: Ratios which compare the lengths of the sides of a right-angled triangle.

### **Lesson Introduction (I Do) – 20 minutes:**

#### Lesson A

**Slides 1-2** Student will state objectives. Introduce the parts of a right triangle and describe the different types of special right triangles and similarity within the different types. Have students derive formulas that can be used based on the properties of these special right triangles.

**Slides 3-5** Focus on the properties specific to 45-45-90 triangles. Students will discuss how to find the missing side of the triangle using the special triangle properties.

**Slides 6-9** Focus on the properties specific to 30-60-90 triangles. Students will discuss how to find the missing side of the triangle using the special triangle properties. Discuss the real-life example and find the measures of missing sides. Students will complete the activity on slide 9.

#### Lesson B

**Slides 1-4** Student will state objectives. The teacher will introduce similarity and trigonometry. Students will then move on to the trigonometric ratios, how they are formed and how to use them to find the unknown angles and sides of triangles. Students will watch the video on slide 4.

**Slides 5-11** Discuss similarity and its relationship to finding missing sides. Have students practice identifying the parts of triangles. Students will complete activity on slide 6, watch a short video on slide 7 and find missing sides and angles using similarity on slide 11.

**Slides 12-17** Teacher will introduce how to find the side lengths using trigonometry. Have students utilize a mnemonic device or acronym to remember the ratios. Students will discuss real life applications of trigonometry and complete activities on slides 15 and 17.

### **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. (Determining Similar Triangles, Finding Missing Sides in Similar Triangles, Similar Triangles) Discuss.

### **Lesson Review – 5 minutes**

Lesson A, slide 10 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 18 Summarize the lesson, review terms and concepts and address student misconceptions.

### **Independent Work – Posttest (They Do) – 50 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

### **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 part 2

Day: 16

Topic/Lesson Title & Grade Results #: Lesson 6: Counting Principle and Probability of Simple and Compound Events

**Objective(s): Students will**

Lesson A

- Draw a tree diagram for the given problem.
- Find the probability of an event.
- Determine the odds of an event.

Lesson B

- Find the probability of simple and compound events.
- Familiarize yourself with impossible events and odds of an event.

**Guiding Question(s):** What is surface area defined as? What is volume defined as?

**TN Curriculum Standard(s):**

B.S.CP.A.1- Understand and use basic counting techniques in contextual settings.

B.S.CP.A.2- Compute a probability when the event and/or sample space are not given or obvious.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to probability.

Lesson A

- Experiment: A situation involving chance or probability that leads to a result.
- Outcome: The result of an experiment.
- Sample Space. An exhaustive list of all possible outcomes of an experiment, denoted by S.
- Event: A collection of outcomes of an experiment.
- Simple Event: An event which consists of a single outcome.
- Compound Event: An event that includes two or more independent events.
- Unfavorable Outcomes: The outcomes which are not favorable to the desired event.
- Tree Diagram: An organized list that helps to determine the number of possible combinations or outcomes.
- Odds of an Event: The ratio of the number of favorable outcomes of n event to the number of unfavorable outcomes.
- ${}_nC_r$ : It represents the number of combinations of " n objects taken r at a time.

## Lesson B

- Probability: The chance of occurrence of a specific event.
- Probability Scale: A number scale with a rating from 0 to 1 indicating the chance of occurrence of n event.

### **Lesson Introduction (I Do) – 20 minutes:**

#### Lesson A

**Slides 1-3** Student will state objectives. Introduce the concept of tree diagrams. Have students practice drawing a tree diagram and labeling the outcomes in an organized fashion. Have students explore the vocabulary related to this lesson.

**Slides 4-7** Explain the

Fundamental Counting Principle and how to count outcomes. Introduce probability as the possible outcomes of an event over the total outcomes that come from the counting principle. The teacher will model finding probabilities.

**Slides 8-11** Continue discussing probability. Focus on vocabulary and notation for probability and events.

**Slides 12-13** Discuss determining odds of an event. Students will view and discuss real world scenarios and calculate probability.

**Slides 14-19** Discuss the difference between a combination and a permutation and their roles in determining probability. Teachers will discuss formulas used but may use desmos or other online calculators to compute. Students complete the activity on slide 20.

#### Lesson B

**Slides 1-6** Student will state objectives. Discuss how to determine the probability of an event, the definitions and the notation. The teacher will model, demonstrate and discuss examples.

**Slides 7-9** Continue with determining the odds of an event and compound events. Have students practice finding the probabilities of simple and compound events. The teacher will model, demonstrate and discuss examples. Students will complete the activity on slide 9.

### **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. Discuss.

### **Supplemental – 10 minutes (as time permits):**

Lesson A, several Safari montage videos on tree diagrams

Lesson B, Flocabulary Unit: Probability lesson on probability in Grade Results.

### **Lesson Review – 5 minutes**

Lesson A, slide 20 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 10 Summarize the lesson, review terms and concepts and address student misconceptions.

### **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

### **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits.

Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 part 2

Day: 17

Topic/Lesson Title & Grade Results #: Lesson 7: Independent, Dependent and Conditional Events

**Objective(s): Students will**

Lesson A

- Define conditional probability.
- Find the conditional probability of an event.
- Interpret the problems on conditional probability in terms of a model.

Lesson B

- Define probability.
- Explain dependent and independent events with examples.
- Find the probability of dependent and independent events.

**Guiding Question(s):** What is probability?

**TN Curriculum Standard(s):**

B.S.CP.A.3- Recognize the concepts of conditional and joint probability expressed in real-world contexts.

B.S.CP.A.4- Recognize the concept of independence expressed in real-world contexts.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of vocabulary words relating to probability.

Lesson A

- Compound Events: Events which consist of more than one event.
- Dependent Event: An event which is affected by one or more events.
- Event: The subset of a sample space or a single outcome of a trial.
- Independent Event: An event which is not affected by any other events.
- Probability: The chance to get the desired event. collection of outcomes of an experiment.
- Simple Event: An event which consists of a single outcome.

Lesson B

- Experiment: In probability, any activity based on chance.
- Probability: The chance of occurrence of a specific event.
- Outcome: A possible result of a probability experiment.

### **Lesson Introduction (I Do) – 20 minutes:**

#### Lesson A

**Slides 1-5** Student will state objectives. Introduce the concept of basic probability and the definitions. Discuss the differences between simple and compound probability and independent and dependent events. Students will complete the activity on slide 5.

**Slides 6-12** Discuss conditional probability, the notion of independent and dependent events and how the occurrence of one event after another event has occurred. Students will complete the activity on slide 11 and watch the video on slide 12.

**Slides 13-15** Introduce multiplicative or compound events. Have students practice calculating various probabilities and complete examples in grade results.

**Slides 16-22** Introduce how students can use a model for conditional probability. Students will watch a short video on slide 19 and complete activities on slides 20, 21 and 22.

#### Lesson B

**Slides 1-8** Student will state objectives. Discuss how to determine probability, odds of an event and compound events. Discuss the types of compound events. Students will complete the activity on slide 7 and view the video on slide 8.

**Slides 9-14** Teacher will focus on independent events and finding the probability of them by watching videos on slides 12 and 14 and completing activities on slide 13.

**Slides 15-20** Teacher will focus on dependent events and finding the probability of them by watching videos on slides 17 and completing activities on slides 19 and 20.

### **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. (Conditional Probability, Terms, Finding the Probability of Independent Events). Discuss.

### **Supplemental – 10 minutes (as time permits):**

Lesson A, several Mathspower4u videos on conditional probability in Grade Results.

Lesson B, several Algebra'scool videos on independent and dependent events in Grade Results.

### **Lesson Review – 5 minutes**

Lesson A, slide 23 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 21 Summarize the lesson, review terms and concepts and address student misconceptions.

### **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

### **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn?

What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

**Subject/Grade:** Bridge Math 9-12 part 2

**Day:** 18

**Topic/Lesson Title & Grade Results #:** Lesson 8: Measures of Central Tendency (Mean, Median, Mode)

**Objective(s):** Students will

- Define measures of central tendency.
- Define mean and find the mean of a set of data.
- Define the median and find the median for the given data.
- Explain mode and range and find it in the given set of data.

**Guiding Question(s):** What are measures of central tendency and why do we need them?

**TN Curriculum Standard(s):**

B.S.ID.A.1- Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of the vocabulary words relating to central tendency.

- Mean: the ratio between the sum of the values and the total number of values in the data. It is also called the arithmetic mean or average.
- Median: The middle number in a set of data when the data is arranged in numerical order.
- Mode: The number or item that appears most frequently in a data set.
- Range: The difference between the greatest and the least values in the given data.

**Lesson Introduction (I Do) – 20 minutes:**

**Slides 1-9** Student will state objectives. Introduce the concept of central tendency and the definitions. Discuss mean, median, mode and range, as well as, how to calculate the measures. Students will also need to find the missing data value. Allow students to view the video on slide 5. Students will also complete an activity on slide 8 and the video for finding the missing value in the data on slide 9.

**Slides 10-14** Discuss median and its relationship to the data and how changes in the data affect these measures. Have students practice calculating mean, median and mode for examples in grade results. Students will complete the activities on slides 11 & 13 and watch the video on slide 14.

**Slides 15-19** Discuss mode and its relationship to the data how changes in the data affects these measures. Have students practice determining the mode for examples in grade results. Students will complete the activities on slides 17 & 18 and watch the video on slide 19.

**Slides 19-23** Discuss range and complete the activities on slides 21, 22 and 23.

**Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. (Conditional Probability, Terms, Finding the Probability of Independent Events). Discuss.

**Supplemental – 10 minutes (as time permits):**

Khan Academy videos Measure of Center, Finding Median and Finding Mean on data analysis in Grade Results.

**Lesson Review – 5 minutes**

Slide 24 Summarize the lesson, review terms and concepts and address student misconceptions.

**Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

**Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits. Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

Subject/Grade: Bridge Math 9-12 part 2

Day: 19

Topic/Lesson Title & Grade Results #: Lesson 9: Quartiles, Mean, Variance and Standard Deviation

**Objective(s):** Students will

Lesson A

- Determine percentiles and quartiles from a given data set.

Lesson B

- Find the mean of the given data.
- Explain how to find the variance and standard deviation from the given data.
- Explain the process of comparing two different data sets using statistical measures.

**Guiding Question(s):** What are percentiles and quartiles and why do we need them? What are standard deviation and variance and why do we need them?

**TN Curriculum Standard(s):**

B.S.ID.A.1- Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Key Vocabulary/Terms- 5 minutes:**

Define and discuss the meaning of the vocabulary words relating to percentiles and quartiles.

Lesson A

- Box and whisker plot: A graphic which uses a number line to display the median, quartiles, and extremes of a data set.
- Median: The middle number in a set of data when the data is arranged in numerical order.
- Percentiles: Each of the 100 equal groups into which data can be divided according to the value of a particular variable.
- Quartiles: Each of the 4 equal groups into which data can be divided according to the value of a particular variable.



## Lesson B

- Mean: The average value is obtained by dividing the sum of the values by the total number of items in the data.
- Standard Deviation: A measure of how the values in a data set vary, or deviate, from the mean.
- Variance: Indicates whether the data points tend to be very close to the mean.

### **Lesson Introduction (I Do) – 20 minutes:**

#### Lesson A

**Slides 1-2** Student will state objectives. Introduce the concept of percentiles and quartiles.

**Slides 3-4** Demonstrate how to determine the quartiles and construct a box and whisker plot. Students will complete the quick check on slide 4.

**Slides 5-6** Introduce percentiles and review the steps shown for how to calculate percentiles. Students will complete the activity on slide 6.

#### Lesson B

**Slides 1-3** Student will state objectives. The teacher will review how to calculate the mean of a data set. Teachers can also use online statistics calculators at [deltamath.com](http://deltamath.com) to assist with these calculations.

**Slides 4-7** Introduce how to find the variance and what they are used for. Demonstrate how to determine the variance. Students may want to use the statistics calculator at [deltamath.com](http://deltamath.com) to simplify the process. Students will complete the activities on slides 6 & 7.

**Slides 8-11** Introduce how to find the standard deviation and what it is used for. Demonstrate how to determine the standard deviation. Students may want to use the statistics calculator at [deltamath.com](http://deltamath.com) to simplify the process. Students will watch the video on slide 11.

**Slides 12-15** Students will complete activities on slides 13 and 15 to complete the lesson. Demonstrate the properties of standard deviation and compare data using the standard deviation.

### **Lesson Activities (We Do) – 30 minutes:**

All activities are within the grade results lesson and should be completed as they appear in the lesson. (Variance, Finding Standard Deviation, Comparison of data) Discuss.

### **Supplemental – 10 minutes (as time permits):**

Lesson A, Flocabulary: Box and Whisker Plots video and activities in Grade Results.

### **Lesson Review – 5 minutes**

Lesson A, slide 7 Summarize the lesson, review terms and concepts and address student misconceptions.

Lesson B, slide 16 Summarize the lesson, review terms and concepts and address student misconceptions.

### **Independent Work – Posttest (They Do) – 40 minutes:**

Explain that students will work independently to complete the post-test. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson. All students are required to complete student activities as part of their class assignments.

### **Closing/Wrap Up – 5 minutes:**

Take a moment to reflect on the lesson of the day and pick one of the following closure activities as time permits.

Examples: (1) Repeat the Lesson Review, (2) Use an exit ticket: Ask students: What did you learn? What surprised you? What is unclear? (3) Ask: I Care Why? Students explain the relevancy of the concept to their life or how they might use it.

## Summer School Lesson Plan

**Subject/Grade:** Bridge Math 9-12 part 2

**Day:** 20

**Topic/Lesson Title & Grade Results #:** Final Post-Test Review & Post-Test

**Objective(s):**

- Students will review lessons to prepare for the final Post-Test.
- Final Post-test will open. All students must complete the final Post-Test.

**Materials/Resources Needed:** Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

**Technology:** Computer, Whiteboard, TEAMS meeting (if applicable)

**Attendance in PowerSchool – 5 minutes**

**Lesson Introduction (I Do):**

Identify the purpose of the course.

Connect the course to missing or future coursework and Post-test.

**Lesson Activities and Review (We Do):**

Check Grade Results and have students review activities/lesson that they have not completed or need assistance with. Hold an open Q&A for students to ask questions regarding the activities/lessons they are reviewing.

**Independent Work – Posttest (They Do):**

Students will review and complete any incomplete/missed/failed coursework.

**Closing/Wrap Up:**

The teacher will provide final instructions and reminders for the final post-test.