

## SWALLOW SCHOOL DISTRICT CURRICULUM GUIDE

**Curriculum Area:** 8th Grade Math

**Course Length:** Full Year

**Grade:** 8th

**Date Last Approved:** September 2023

### Stage 1: Desired Results

#### **Course Description and Purpose:**

In Grade 8, instructional time focuses on three critical areas: formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation and solving linear equations and systems of linear equations; grasping the concept of a function and using functions to describe quantitative relationships; analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

#### **Enduring Understanding(s):**

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision in mathematics
7. Look for and make use of mathematical structure.
8. Look for and express regularity in repeated reasoning

#### **Essential Question(s):**

1. Why is it important to evaluate and describe equations using variables and represent these equations with graphs?
2. How can we use algebra to explain the properties of mathematics and relate it to other fields of mathematics?
3. How can we use algebra to solve linear equations and show relationships in table form, graph form and equations?
4. How can we describe relationships between linear graphs and slope? How can we use these relationships to analyze real world applications?
5. When should we use linear systems and how do they work?
6. How can the structure of the Pythagorean Theorem be used in everyday life and the world around us?
7. How can functions model relationships between quantities?
8. How can we use algebra to understand the properties of 3D objects?

#### **Learning Targets:**

- 1: The Number System
- 2: Expressions and Equations
- 3: Functions
- 4: Geometry
- 5: Data Analysis, Statistics and Probability
- 6: Problem Solving - student uses the mathematical practices in solving problems.

### Stage 2: Learning Plan

#### **I. Equations**

- A. Understand the Distributive Property and when to use it
- B. Use mathematical properties to solve algebraic equations
- C. Solving equations with one variable
- D. Solving literal equations

#### **Standards:**

#### **Learning Targets Addressed:**

- Target 1
- Target 2
- Target 6

#### **Key Unit Resources**

- Big Ideas

- E. Adding and subtracting like terms
- F. Multiplying and Dividing like terms

- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	Daily classwork and homework.
Formative	Skill	Worksheet packets.
Summative	Product	Unit Test and Quiz

**II. Geometry**

- A. Use Properties of Transformation
- B. Size change of 2D and 3D objects
- C. Relationships of angles formed by lines and polygons

**Standards:**

- M.8.G.A.1
- M.8.G.A.2
- M.8.G.A.3
- M.8.G.A.4
- M.8.G.A.5
- M.8.G.B.6
- M.8.G.B.7
- M.8.G.B.8
- M.8.G.C.9

**Learning Targets Addressed:**

Target 4

**Key Unit Resources**

- Big Ideas
- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	Daily classwork and homework.
Formative	Skill	Worksheet packets.
Summative	Product	Unit Test and Quiz

**IV. Graphing and Writing Linear Equations**

- A. Find slope of a line from graphs and equations

**Standards:**

- M.8.EE.B.5
- M.8.EE.B.6
- M.8.EE.C.7

- B. Find equation for a line given 2 points or slope and one point on the line
- C. Write equations in standard form, y-intercept form and point slope form
- D. Solve and create equations from graphs and tables
- E. Relationship between rate of change and slope

**Learning Targets Addressed:**

Target 2  
Target 3

**Key Unit Resources**

- Big Ideas
- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	Daily classwork and homework.
Formative	Skill	Worksheet packets.
Summative	Product	Unit Test and Quiz

**V. Systems of Equations**

- A. Solve systems of equations by elimination, substitution, or graphing
- B. Represent and solve equations graphically

**Standards:**

M.8.EE.C.8

**Learning Targets Addressed:**

Target 2  
Target 3

**Key Unit Resources**

- Big Ideas
- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	Daily classwork and homework.
Formative	Skill	Worksheet packets.
Summative	Product	Unit Test and Quiz

**VI. Functions**

- A. Graphing linear patterns
- B. Solve and create equations from graphs and tables
- C. Properties of slope to write and solve equations

**Standards:**

M.8.F.A.1  
M.8.F.A.2  
M.8.F.A.4  
M.8.F.A.5

**Learning Targets Addressed:**

Target 2  
Target 3

- D. Relationship between rate of change and slope
- E. Write and evaluation function notation
- F. Understand Lines of Fit
- G. Read and interpret scatter plots

**Key Unit Resources**

- Big Ideas
- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	Daily classwork and homework.
Formative	Skill	Worksheet packets.
Summative	Product	Unit Test and Quiz

**VII. Data Analysis**

- A. Construct and interpret scatter plots
- B. Identify and write lines of fit
- C. Compare data sets
- D. Represent situations with appropriate data displays

**Standards:**

- M.8.SP.A.1
- M.8.SP.A.2
- M.8.SP.A.3
- M.8.SP.A.4

**Learning Targets Addressed:**

Target 5

**Key Unit Resources**

- Big Ideas
- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	Knowledge	Daily classwork and homework.
Formative	Skill	Worksheet packets.
Summative	Product	Unit Test and Quiz

**VII. Real Numbers**

- A. Using powers to determine the number of possible choices
- B. Product and quotient power properties
- C. Negative Exponents
- D. Square and cubic roots
- E. Approximate irrational numbers
- F. Write decimals as fractions
- G. Write fractions as decimals

**Standards:**

- M.8.NS.A.1
- M.8.NS.A.2
- M.8.EE.A.1
- M.8.EE.A.2
- M.8.EE.A.3
- M.8.EE.A.4

**Learning Targets Addressed:**

Target 1

**Key Unit Resources**

- Big Ideas
- IXL

H. Write repeating decimals as fractions

**Assessment Map:**

<b>Type</b>	<b>Level</b>	<b>Assessment Detail</b>
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Summative	Product	Unit Test and Quiz