

## SWALLOW SCHOOL DISTRICT CURRICULUM GUIDE

**Curriculum Area:** Math

**Course Length:** Full Year

**Grade:** 5th

**Date Last Approved:** March 15, 2018; **Reviewed** Spring 2021

### Stage 1: Desired Results

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

5th grade offers a broad, rich and balanced experience in mathematics. It emphasizes the following content strands, skill, and concepts:

**Number and Numeration:** Reading, writing and comparing negative numbers, fractions, whole numbers through billions, and decimals through thousandths; reading, writing, and interpreting whole-number powers of 10; translating between exponential and standard notations; understanding and identifying prime, composite, and square numbers.

**Operations and Computation:** Using paper-and-pencil algorithms to add, subtract, multiply, and divide multi-digit whole numbers and decimals; using mental arithmetic to compute and to estimate; translating among fractions and mixed numbers; adding and subtracting fractions and mixed numbers with unlike denominators; finding least common multiples and greatest common factors; multiplying and dividing fractions.

**Data and Chance:** Comparing probabilities for different outcomes; comparing theoretical and experimental probabilities; expressing probabilities as fractions, decimals, and percents; drawing justifiable conclusions from data,; displaying data in more than one way; formulating a question, carrying out a survey or experiment, recording data, and communicating results; drawing and interpreting stem-and-leaf plots, bar, line, and circle graphs; understanding mean, median, and mode.

**Measurement and Reference Frames:** Measuring and estimating length, area, volume, weight, and capacity; converting and computing with common units of measure.

**Geometry:** Constructing a circle with a given radius or diameter; defining and creating tessellations; measuring and drawing angles; identifying and defining triangles; plotting points in four quadrants; using translations, reflections, and rotations; solving perimeter, area, and volume problems; understanding the relationship between volumes of cones/ pyramids and cylinders/ prisms; finding the surface areas of prisms and cylinders, and the areas of circles; identifying angle relationships in triangles and in quadrilaterals.

**Patterns, Functions, and Algebra:** Evaluating simple algebraic expressions; finding rules for patterns; finding the  $n$ th term in a sequence; solving simple open number sentences and simple rate problems' working with equations by doing the same thing on both sides; understanding simple direct proportion; using variables and equations to represent situations; graphing ordered pairs.

#### **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.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

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

1. How can the collection, organization, interpretation, and display of data be used to answer questions?
2. How are multi-digit operations performed with whole numbers and decimals?
3. How are the numbers between 0 and 1 represented?
4. What methods, other than standard algorithms can be used to add, subtract, and multiply whole numbers and fractions?
5. How are geometric properties used in everyday life?
6. Why do we use measurement?
7. How and why do we organize information?
8. How do geometric relationships help in solving problems?
9. How can spatial relationships be described by careful use of geometric language?

#### **Learning Targets:**

1. Students can analyze proportional relationships. (skill)

2. Students can solve and support their knowledge of operations with rational numbers to demonstrate number sense. (skill)
3. Students can develop problem solving strategies to persevere in solving real-world mathematical problems. (skill)
4. Students can distinguish between geometric figures and apply appropriate formulas to solve geometric problems (skill)
5. Students can solve problems involving measurement and can produce graphs that represent and interpret data. (skill / product)

### Stage 2: Learning Plan

#### I. Number Theory

- A. Draw arrays showing multiplication.
- B. Identify all factors of number.
- C. Identify even and odd numbers.
- D. Use divisibility rules.
- E. Identify prime and composite numbers and describe why a number is either prime or composite.
- F. Read numbers and identify place value in those numbers From the 100,000,000 place to the hundredths place.

**Standards:** CCSS: 5.OA.1-2, 5.NBT.2, 5.NF.5a

**Learning Targets Addressed:**

- Target 2
- Target 3

**Key Unit Resources**

- Everyday Math 4th Edition
- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Quiz factors, divisibility rules, place value</li> <li>• Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>• Unit assessments</li> <li>• Written open response</li> </ul>

## II. Estimation and Computation

- A. Add multi-digit numbers and decimals.
- B. Subtract multi-digit numbers and decimals.
- C. Convert between US customary units of length.
- D. Solve addition and subtraction number stories by writing an open number sentence.
- E. Describe given numerical probabilities using words or phrases.
- F. Make magnitude estimates and solve whole number Multiplication problems.
- G. Make magnitude estimates and solve decimal multiplication problems.
- H. Identify place value of digits to the billions place.
- I. Define, find, and use statistical landmarks.

**Standards:** CCSS: 5.OA.1-2, 5.NBT.1-4 & 7, 5.NF1, 5.MD.1-2, 5.NBT.1-4 5.NBT.7

### Learning Targets Addressed:

- Target 2
- Target 3
- Target 5

### Key Unit Resources

- Everyday Math 4th Edition
- IXL

### Assessment Map:

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Quiz adding and subtracting with decimals, rounding, conversions</li> <li>• Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>• Unit assessments</li> <li>• Written open response</li> </ul>

## III. Geometry Explorations

- A. Measure an angle within 2 degrees using a protractor and label its type.
- B. Draw an angle using a protractor within 2 degrees and label its type.
- C. Describe a reflex angle.
- D. Draw, identify, compare, and describe types of triangles.
- E. Describe and compare properties of polygons.
- F. Round numbers to the indicated place value (tens, whole number, and tenths place).
- G. Identify place value in numbers to the billions place.
- H. Compare decimals using  $<$ ,  $>$ , or  $=$ .

**Standards:** CCSS: 5.OA.2, 5.NBT.2-4, 5.NF.5, 5.G.3-4

### Learning Targets Addressed:

- Target 1
- Target 3
- Target 4
- Target 5

### Key Unit Resources

- Everyday Math 4th Edition
- IXL

### Assessment Map:

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Measuring and identifying angles</li> <li>• Identify polygon properties</li> <li>• Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>• Unit assessments</li> </ul>

- Written open response

#### IV. Division

- A. Divide a 2 or 3 digit number by a single digit divisor.
- B. Make magnitude estimates of division problems with a decimal in a dividend.
- C. Solve a number sentence for a given variable or substitute a Value for a variable and solve.
- D. Write an open number sentence (using a variable) that models a number story.
- E. Use basic facts knowledge to solve extended multiplication facts or open number sentences.

**Standards:** CCSS: 5.OA.1-2, 5.NBT.2,6-7, 5.NF.5, 5. G.3-4

**Learning Targets Addressed:**

- Target 2  
Target 3  
Target 5

**Key Unit Resources**

- Everyday Math 4th Edition
- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Division skills</li> <li>• Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>• Unit assessments</li> <li>• Written open response</li> </ul>

#### V. Field trips and Fundraisers/ Fractions, Decimals, Percents/ Benny the Baker Simulation

- A. Name equivalent fractions.
- B. Convert between fractions and mixed numbers.
- C. Convert between mixed numbers and improper fractions.
- D. Find the value of a region based on a defined unit fraction.
- E. Find a unit fraction and add fractions using either the standard algorithm or pictures.
- F. Order and compare fractions with common denominators or common numerators.
- G. Rename fractions as decimals and percents.

**Standards:** CCSS: 5.OA.1, 5.NBT.3a, 4, 7, 5.NF.1-3

**Learning Targets Addressed:**

- Target 1  
Target 3  
Target 5

**Key Unit Resources**

- Everyday Math 4th Edition
- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Identifying equivalent fractions</li> <li>• Converting between mixed and improper, adding fractions, fractions, decimals, and percents</li> <li>• Math boxes</li> </ul>

		<ul style="list-style-type: none"> <li>• Cathy Fosnot-Field trips and Fundraisers</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>• Unit assessments</li> <li>• Written open response</li> </ul>

**VI. Using Data, Addition and Subtraction of Fractions**

- A. Define, find, use and organize statistical landmarks.
- B. Add and subtract fractions with like denominators and simplify to lowest terms.
- C. Find a common denominator and create equivalent fractions.
- D. I can add and subtract fractions with unlike denominators and simplify to lowest terms.
- E. Measure a line segment to the nearest 1/8th of an inch or nearest millimeter.

**Standards:** CCSS: 5.NBT.3-4 & 7, 5.NF.1-3, 5b, 5.MD.2

**Learning Targets Addressed:**

- Target 1
- Target 3
- Target 5

<b>Key Unit Resources</b>
<ul style="list-style-type: none"> <li>• Everyday Math 4th Edition</li> <li>• IXL</li> </ul>

**Assessment Map:**

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Quiz adding and subtracting fractions, statistical landmarks</li> <li>• Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>• Unit assessments</li> <li>• Written open response</li> </ul>

**VII. Exponents and Negative Numbers**

- A. Use parentheses and order of operations to identify a number Sentence that matches a number story or situations.
- B. Apply the order of operations to evaluate expressions, solve number sentences or insert parentheses to make a true number sentence.
- C. Compare positive and negative numbers.
- D. Add and subtract positive and negative numbers using counters or number line.
- E. Compare decimals.

**Standards:** CCSS: 5.OA.1-2, 5.NBT.1-3, 5-7, 5. NF.1-3

**Learning Targets Addressed:**

- Target 2
- Target 3
- Target 5

<b>Key Unit Resources</b>
<ul style="list-style-type: none"> <li>• Everyday Math 4th Edition</li> <li>• IXL</li> </ul>

**Assessment Map:**

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Quiz number sentences, order of</li> </ul>

		operation, comparing positive and negative decimal numbers <ul style="list-style-type: none"> <li>• Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>• Unit assessments</li> <li>• Written open response</li> </ul>

**VIII. Fractions and Ratios, Shopping Spree Simulation**

A. Order and compare fractions with unlike denominators.

B. Add mixed numbers with like and unlike denominators.

C. Regroup a mixed number into an equivalent fraction in Preparation for subtracting.

D. Subtract mixed numbers with like denominators.

**Standards:** CCSS: 5.OA.1, 5.NF.1-2, 4-7

**Learning Targets Addressed:**  
 Target 1  
 Target 3

<b>Key Unit Resources</b>
<ul style="list-style-type: none"> <li>• Everyday Math 4th Edition</li> <li>• IXL</li> </ul>

**Assessment Map:**

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Comparing fractions with unlike denominators,</li> <li>• Adding and subtracting mixed numbers,</li> <li>• Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>• Unit assessments</li> <li>• Written open response</li> </ul>

**IX. Coordinates, Area, Volume & Capacity**

- A. Identify and plot ordered pairs on a 1 or 4 quadrant grid.
- B. Describe and calculate the perimeter of a parallelogram.
- C. Use a formula to find the area of triangles and parallelograms.
- D. Calculate the area of the base and the volume of a rectangular prism from a sketch showing the dimensions.

**Standards:** CCSS: 5.NBT.2, 4-5, 7, 5.NF.2, 4, 6, & 7, 5.MD.1, 3, 4, 5, 5.G.1-2,

**Learning Targets Addressed:**

- Target 3  
Target 4  
Target 5

**Key Unit Resources**

- Everyday Math 4th Edition
- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Plotting points on an axis</li> <li>• Calculate area, perimeter and volume</li> <li>• Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>• Unit assessments</li> <li>• Written open response</li> </ul>

**X. Using Data, Algebra Concepts and Skills**

- A. Solve one step pan balance problems.
- B. Write an algebraic expression to represent a situation.
- C. Make and interpret line plots and line graphs.
- D. Distinguish between circumference and area of a circle and perimeter and area of a polygon.

**Standards:** CCSS: 5.OA.1-3, 5.NB.2, 4, 5, 7, 5.NF.2, 5a, 5.MD.1- 6, 5.G.1-2

**Learning Targets Addressed:**

- Target 3  
Target 4  
Target 5

**Key Unit Resources**

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- IXL

**Assessment Map:**

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>• Journal pages</li> <li>• Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>• Demonstrate pan balance equations</li> <li>• Write algebraic expressions</li> <li>• Create line plots and graphs</li> <li>• Distinguish between the</li> </ul>

		<ul style="list-style-type: none"> <li>characteristics of polygons</li> <li>Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>Unit assessments</li> <li>Written open response</li> </ul>

**XI. Volume**

- A. Describe properties of geometric solids.
- B. Identify the radius and diameter of a circle and use a formula to calculate the circumference and area of a circle.
- C. Use a formula to calculate the volume or height of a cylinder.
- D. Identify the length, width, height of a rectangular prism. Calculate the area of its base and find its volume.
- E. Solve "fraction of" problems.

**Standards:** CCSS: 5.OA.1, 5.NBT.2, 4, 5.NF.1-3, 4b, 7, 5.MD.1-5,

**Learning Targets Addressed:**

- Target 1
- Target 3
- Target 5

<b>Key Unit Resources</b>
<ul style="list-style-type: none"> <li>Everyday Math 4th Edition</li> <li>IXL</li> </ul>

**Assessment Map:**

Type	Level	Assessment Detail
Practice	knowledge	<ul style="list-style-type: none"> <li>Journal pages</li> <li>Study Links</li> </ul>
Formative	skill	<ul style="list-style-type: none"> <li>Calculate radius, circumference, volume of solids</li> <li>Describe the properties of solids</li> <li>Math boxes</li> </ul>
Summative	product	<ul style="list-style-type: none"> <li>Unit assessments</li> <li>Written open response</li> </ul>