

Mathematics Planning – Grade Four

Content Preparation – Prerequisite Planning for September 2020

The purpose of this overview is to identify the concepts and strategies students may not have covered fully in preparation for the 2020-2021 school year. Although teachers, students and parents transitioned into online learning, we must consider both summer attrition and possible inconsistencies in student engagement at home. To meet student needs and to bring all students to an equal entry level, plan lessons for September to support your incoming students with strategies and concepts relating to the review of the previous grade work. Review **Grade Three Next Generation Standards including Domains of Operations & Algebraic Thinking and Number & Operations in Base Ten** to support planning.

- These are concepts and strategies that students entering your class will need to understand to fully engage in grade four lessons. It is recommended that this prerequisite planning consider concepts taught in Chapters 1 and 2 as these chapters are already designed as review.
- Content for September is connected to Number Concepts. It is recommended that as teachers begin different Domains (i.e., **Measurement & Data, Number & Operations Fractions and Geometry**) that previous grade level standards are reviewed.

What concepts will students build on in chapter 1?

In Chapter 1 Place Value, Addition, and Subtraction to One Million, students will use place value concepts:

- Use Base-Ten materials to model four digit numbers (thousands, hundreds, tens and ones)
- Read and write 4-digit numbers in standard form, word form, using base ten language and expanded form (3.NBT.A.4)
- **All Problem Types for addition and subtraction** (see problems types for kindergarten, grade one and grade two; 2.OA.A.1). In grade 3, students also used the multiplication and division problem types (3.OA.A.3).
- Solve multi-step word problems
- Compare 3-digit numbers based on meanings of the hundreds, tens and ones and write comparisons using symbols $>$, $<$, $=$ (2.NBT.A.4)
- Round and rename numbers to the nearest 10 or 100
- Add and subtract whole numbers using an open number line (this will support using a number line for rounding)
- Renaming a number in different ways based on place value (i.e., 423 can be represented by 4 one-hundreds 2 tens 3 ones or 3 one-hundreds 110 ten 13 ones, among others)
- Add and subtract 4-digit numbers using properties of operations, place value Understanding and the standard algorithm

In Chapter 2 Multiply by 1-Digit Numbers, students will:

- Use area models of multiplication and number bonds to model and solve problems with distributive property
- Understand division as an unknown factor problem
- Navigate the addition table and multiplication table to find patterns
- Understand partitive division and multiplicative comparisons

What strategies will they need to be familiar with? (i.e., quick pictures, bar models, number complements, etc.)

- Compare numbers using place value
- Quick pictures as models to represent large numbers
- Place value charts (in grades 2 and 3, charts were setup to support addition and subtraction with renaming).
- Understand how to use bar models for problem solving with all addition, subtraction and multiplication
- Understand comparison bar models

- Use number lines for connections to algebraic operations
- Rename with addition, subtraction and multiplication and represent using base-tens
- ***Read, write and identify equations and expressions with variables (unknown in all positions)***

Identify fluency concepts students will need to have mastered in order to successfully engage in Chapter 1.

- Fluency with multiplication facts through 12×12
- Understand how division can be represented as an unknown factor problem
- Addition and subtraction facts (fluency through 20 strategies including place value strategies)
- Addition and subtraction up to 4-digit numbers based on place value understanding
- Fluency in estimation and rounding
- Writing equations to match problems, models, etc.

Identify routines and activities that will support students with essential practice for full engagement in mathematics instruction.

- Numbers in Many Ways including Expanded Form (3 tens 4 ones; $30 + 4$) Use a Frayer Model to show multiple ways to name a 4-digit number
- Repeated addition using skip counting for fluency. Connect skip counting to a multiplication table.
- Base-Ten Blocks (model as quick pictures using thousands, hundreds, ten, and ones)
- Using a place Value Chart to model, read, write and compare 4-digit numbers

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- These are concepts and strategies that students entering your class will need to understand to fully engage in grade five lessons.
- Content for September is connected to Number Concepts. It is recommended that as teachers begin different Domains (i.e., **Measurement & Data, Number & Operations Fractions and Geometry**) that previous grade level standards are reviewed.

What concepts will students build on in chapter 1?

In Chapter 1; Place Value, Multiplications and Expressions students will use:

- Use Base-Ten materials to model four digit numbers (thousands, hundreds, tens and ones) and connect the model to a place value chart
- Read and write multi-digit whole numbers in standard form, word form, using base ten language and expanded form (4.NBT.A.2)
- Recognize that in a multi-digit whole number, the relationship between digits (within 1,000,000). Model understanding using a place value chart (4.NBT.A.1)
- Compare multi-digit numbers based on meanings of the hundreds, tens and ones and write comparisons using symbols $>$, $<$, $=$ (4.NBT.A.2)
- Use place value understanding to round multi-digit whole numbers to any place (4.NBT.3)
- Perform all operations with whole numbers using the standard algorithm
- **All Problem Types for addition and subtraction** (see problems types for kindergarten, grade one and grade two; 2.OA.A.1). In grade 3, students also used the multiplication and division problem types (3.OA.A.3).
- Solve multi-step word problems
- ***Read, write and identify equations and expressions with variables (unknown in all positions)***

What strategies will they need to be familiar with? (i.e., quick pictures, bar models, number complements, etc.)

- Compare whole numbers through 1,000,000 using place value strategies
- Place value charts to represent whole numbers through 1,000,000
- Understand how to use bar models for problem solving with all operations of whole numbers
- Understand comparison bar models
- Rename with addition, subtraction and multiplication and represent using base-tens
- Perform long division with four-digit dividends and one-digit divisors.
- Interpret remainders in division problems.
- ***Read, write and identify equations and expressions with variables (unknown in all positions)***
- Use and interpret area model (for multiplication and division)
- Estimate solutions to addition, subtraction, multiplication and division problems involving whole numbers to determine reasonableness of a solution

Identify fluency concepts students will need to have mastered in order to successfully engage in Chapter 1.

- Fluency with multiplication facts through 12×12
- Fluently divide 2-digit numbers by 1-digit numbers
- Names of place value positions (whole numbers)
- Correctly read multi-digit whole numbers using appropriate mathematical language
- Patterns of multiplication and division with using 10s, 100s, and 1000s

Identify routines and activities that will support students with essential practice for full engagement in mathematics instruction.

- Numbers in Many Ways including Expanded Form (3 tens 4 ones; $30 + 4$) Use a Frayer Model to show multiple ways to name a multi-digit whole number

- Base-Ten Blocks (model as quick pictures using thousands, hundreds, ten, and ones)
- Use a place Value Chart to model, read, write and compare multi-digit whole numbers through millions

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