



Grade 6 Summer Learning

For students who have just completed Grade 6

Because negative integers, decimal thousandths, the addition and subtraction of fractions, work with percent, the concept of a prime number, and the notion of a pattern rule as related to the position of a term in a pattern are introduced in Grade 6 and built on in Grade 7, it is important to focus on them in this review. Because algebra becomes increasingly important in higher grades, it also makes sense to focus some summer learning on algebraic ideas.

Therefore, the Grade 6 topics I decided to focus on to ready students for Grade 7 are the following:

- Work with primes and factoring
- Representing decimal thousandths
- Representing integers
- What percent is
- Addition and subtraction of fractions
- Pattern rules
- Evaluating algebraic expressions and solving equations

Essential Understandings that are the focus of the support:

- WN-1** Every whole number can be represented in many ways. Each way highlights something different about that whole number.
- WN-4** Classifying whole numbers provides information about those numbers.
- DE-1** Every terminating decimal can be thought of as a whole number of tenths, hundredths, thousandths, and so on. That means every decimal can be thought of as a fraction.
- DE-3** Decimals are useful for describing numbers between whole numbers.
- DE-5** Every decimal number can be represented in many ways. Each way highlights something different about that decimal number.
- DE-6** Benchmark numbers can be used to compare and give meaning to decimal numbers.
- I-1** Because every integer is either a whole number or its opposite from 0 on a number line, integers are counted like whole numbers.
- I-3** The size of an integer is based on both its distance and direction from 0.
- O-1** Any addition situation involves parts and a whole. The parts are known, but the whole is not known.
- O-2** Any subtraction situation involves parts and a whole. One or more parts and the whole are known, but not all of the parts are known.
- O-7** Performing operations with numbers is often made easier by decomposing and recomposing numbers and/or by thinking of numbers in other units.
- O-9** Estimating is an essential part of any computation to catch errors or to give a feel for how to proceed with a calculation.
- O-10** There are always multiple strategies for determining the result of a computation, whether it is an estimated or an exact result.
- PR-1** Sometimes it is useful to compare two numbers in terms of how far apart they are, but other times it is useful to compare them in terms of how many units of one number it would take to fit into the other.
- PR-2** Any comparison involving a ratio can be thought of as a fraction and vice versa.
- PR-5** Any rate or ratio relationship can be represented in different ways. Different representations might be useful in different situations.
- PA-1** Every pattern involves some kind of repetition.
- PA-3** There is no way to be certain how a pattern continues without a pattern rule.



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- PA-4** A pattern rule can be represented in a variety of ways; some pattern rules make it easier than others to determine values that are farther on in the pattern.
- PA-5** Many ideas about number, geometry, measurement, and data can be revealed by exploring underlying patterns.
- A-1** Many of the properties that underlie operations are useful in certain circumstances to simplify calculations or to predict how specific values of expressions will change with a change in the value of a variable.
- A-2** Equality is an expression of balance. The two sides of an equation describe the same quantity.
- A-3** Any equation can represent many different situations.
- A-6** Solving an equation uses relationships between numbers and relationships between operations to determine an equivalent, simpler form of the equation.
- M-2** There is always a choice of unit when measuring an item. An item can be measured using many smaller units or fewer larger units.



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This has been set up for 20 sessions of about 1.5 to 2 hours each:

- Each day includes at least one Number Talk.
- Each day also includes either a Diagnostic Task, which may be followed up with an additional Number Talk or some practice activities, or a MathUP lesson, which is followed up with practice activities.

Number Talks that are particularly recommended are the following:

Grade 6: 2, 9, 14, 15, 16, 27, 36, 39, 42, 48, 53

Grade 7: 3, 13, 15, 26, 28, 32, 38, 45, 46

Grade 7 Diagnostic Tasks to check on prerequisites from Grade 6 come from these topics:

- Factors and Multiples
- Adding and Subtracting Integers
- Decimal Operations
- Fractions
- Percent
- Patterns
- Algebra

On a day that a Diagnostic Task is used (based on the seven focus topics), there is a Number Talk followed by the Diagnostic Task. The task should be described as an activity, not a test, to reduce any anxiety students might feel.

It might be appropriate to review some of the vocabulary in the Diagnostic Task before administering it.

If students struggle with the Diagnostic Task, it might be a good idea to go back to the related Grade 6 Diagnostic Tasks and treat them as additional activities. These tasks come from the following topics:

- Classifying Whole Numbers
- Percent
- Representing Decimal Numbers
- Adding and Subtracting Fractions
- Integers
- Patterns
- Algebra

If there are no problems with the Diagnostic Task and you have more time to work with students, you might choose to work on additional Number Talks, or you might choose to use one or more of these Minds On activities from the following topics:

- Representing Whole Numbers
- Estimating and Comparing Whole Numbers
- Rates and Ratios
- Estimating and Comparing Decimal Numbers
- Whole Number Operations
- Adding and Subtracting Decimal Numbers
- Multiplying and Dividing Decimal Numbers



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- Operations With Fractions and Whole Numbers
- Area
- Surface Area

The suggested MathUP lessons that follow assume that students are working at the Grade 6 level and that it is not necessary to return to lessons from an earlier grade.

Before beginning a lesson, it would be valuable for the teacher to read the Sum It UP section to review the content being covered and then move on to the three parts of the lesson — Minds On, Action, and Consolidate — followed by the Your Turn Questions and additional suggested practice activities.



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Strand	Topic	Lesson	* Prerequisite Topics
N	Classifying Whole Numbers	Lesson 1 Identifying Prime and Composite Numbers	None
N	Percent	Lesson 1 Relating Fractions, Decimals, and Percents Lesson 3 Determining Percents	None
N	Representing Decimal Numbers	Lesson 3 Using Decimal Thousandths Lesson 4 Representing Decimal Thousandths	None
N	Adding and Subtracting Fractions *	Lesson 1 Representing the Addition of Fractions Lesson 2 Representing the Subtraction of Fractions	Representing, Comparing, and Ordering Fractions
N	Integers	Lesson 1 Representing Integers Lesson 2 Comparing Integers	None
A	Patterns	Lesson 2 Pattern Rules Lesson 3 Using Pattern Rules	None
A	Algebra *	Lesson 1 Evaluating Expressions Lesson 2 Solving Equations	Multiplying and Dividing Decimal Numbers