



# STANDARDS ALIGNMENT GUIDE

## Minnesota State Standards Mathematics Grade 5

### INTRODUCTION

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Minecraft: Education Edition is an open-world game that promotes creativity, collaboration, and problem-solving in an immersive environment where the only limit is your imagination. As a game-based learning platform, Minecraft offers educators a transformative way to engage students and ignite their passion for learning. Teachers from around the world are using Minecraft in their classroom to successfully:

- Increase Student Engagement,
- Facilitate Classroom Collaboration
- Provide opportunities for Creative Exploration
- Connect Learning to Tangible Outcomes

This alignment guide will provide you with links to activities you can use in your classroom. These activities take full advantage of Minecraft's capabilities to complement and enhance classroom teaching. In this guide, you will find a list of applicable standards along with links and descriptions of Minecraft activities that focus on each objective.



For more information on using Minecraft in your classroom or to find additional education resources and training materials, visit us online.

[education.minecraft.net](http://education.minecraft.net)

## NUMBER & OPERATION

STANDARD	DESCRIPTION	ACTIVITY
Divide multi-digit numbers; solve real-world and mathematical problems using arithmetic.		
5.1.1.1	Divide multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms. Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal.	<a href="#">Long Division in Minecraft</a> Students will build long division math models in Minecraft and solve division problems on paper using the algorithm. <a href="#">Decimal Dungeon – Part 5</a> Explore the Decimal Dungeon in a five-part unit on Numbers & Operations in Base Ten where students observe and build math models to solve problems.
5.1.1.2	Consider the context in which a problem is situated to select the most useful form of the quotient for the solution and use the context to interpret the quotient appropriately.	N/A
5.1.1.3	Estimate solutions to arithmetic problems in order to assess the reasonableness of results.	N/A
5.1.1.4	Solve real-world and mathematical problems requiring addition, subtraction, multiplication and division of multidigit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.	<a href="#">Build a Two-Step Word Problem</a> Design and solve a two-step word problem by building it as scene in Minecraft. <a href="#">Two Step Word Problems</a> Design and solve a two-step word problem by building it as scene in Minecraft. <a href="#">Build a Word Problem</a> Students will use blocks in the game to solve multiplication or division world problems and then create a video to show understanding. <a href="#">Building Word Problems</a> Build a scene in Minecraft that tells a story involving multiplication or division. <a href="#">Long Division in Minecraft</a> Students will build long division math models in Minecraft and solve division problems on paper using the algorithm. <a href="#">Minecraft Math Gladiators (MMG): Regrouping Obstacle Course</a> Inside Minecraft Math Gladiators students will watch videos that will help them find strategies for regrouping. <a href="#">Multi Digit Multiplication</a> Students will solve and build area models of multi digit multiplication problems. <a href="#">Regrouping Video</a> Students will be able to produce a video of them solving a three-digit addition and subtraction problem. <a href="#">Subtraction + Regrouping CTF</a> Students will view and build math models of base 10 subtraction problems. <a href="#">Decimal Dungeon – Part 3</a>

		<a href="#">Decimal Dungeon – Part 5</a> Explore the Decimal Dungeon in a five-part unit on Numbers & Operations in Base Ten where students observe and build math models to solve problems.
<b>Read, write, represent and compare fractions and decimals; recognize and write equivalent fractions; convert between fractions and decimals; use fractions and decimals in real-world and mathematical situations.</b>		
5.1.2.1	Read and write decimals using place value to describe decimals in terms of groups from millionths to millions.	<a href="#">Maths Decimal Garden</a> Expanded upon world credit to <a href="https://education.minecraft.net/lessons/decimalfraction-garden/">https://education.minecraft.net/lessons/decimalfraction-garden/</a> for original lesson and world. <a href="#">Decimal Dungeon – Part 1</a> <a href="#">Decimal Dungeon – Part 2</a> Explore the Decimal Dungeon in a five-part unit on Numbers & Operations in Base Ten where students observe and build math models to solve problems.
5.1.2.2	Find 0.1 more than a number and 0.1 less than a number. Find 0.01 more than a number and 0.01 less than a number. Find 0.001 more than a number and 0.001 less than a number.	N/A
5.1.2.3	Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line.	<a href="#">Capture the Flag!</a> Students will be able to build and explain Minecraft math models that show the relationship between equivalent fractions. Then add design purpose to their models by using them strategically in a mini-game. <a href="#">Fraction Pixel Art</a> Using a pixel art editor (or graph paper) students design an artwork, then break down the colors into fractions, discuss number patterns and unit fractions, then build their designs in Minecraft. <a href="#">Fractions Steeplechase</a> Students will build and explain Minecraft math models that show fractions, improper fractions, and mixed numbers on number lines, then use number lines to create jumps for a horse race. <a href="#">Javelin Line Plots</a> Students will throw 10 tridents and track their distance on a line plot graph. <a href="#">Fractions in Minecraft</a> Students will build math models that correspond to fraction operations and solve four to six problems per standard. <a href="#">Decimal Dungeon – Part 2</a> Explore the Decimal Dungeon in a five-part unit on Numbers & Operations in Base Ten where students observe and build math models to solve problems.
5.1.2.4	Recognize and generate equivalent decimals, fractions, mixed numbers and improper fractions in various contexts.	<a href="#">Maths Decimal Garden</a> Expanded upon world credit to <a href="https://education.minecraft.net/lessons/decimalfraction-garden/">https://education.minecraft.net/lessons/decimalfraction-garden/</a> for original lesson and world.

5.1.2.5	Round numbers to the nearest 0.1, 0.01 and 0.001.	<a href="#">Decimal Dungeon – Part 2</a> Explore the Decimal Dungeon in a five-part unit on Numbers & Operations in Base Ten where students observe and build math models to solve problems.
<b>Add and subtract fractions, mixed numbers and decimals to solve real-world and mathematical problems.</b>		
5.1.3.1	Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms.	<a href="#">Fractions in Minecraft</a> Students will build math models that correspond to fraction operations and solve four to six problems per standard. <a href="#">Fraction Farm</a> Explore math models of addition and subtraction problems with fractions then create a plan for a farm in Minecraft using what you've learned. <a href="#">Javelin Line Plots-3</a> Students engage in a javelin throwing competition in Minecraft, plotting the distances and scores on line plot graphs in the game. <a href="#">Decimal Dungeon – Part 4</a> Explore the Decimal Dungeon in a five-part unit on Numbers & Operations in Base Ten where students observe and build math models to solve problems.
5.1.3.2	Model addition and subtraction of fractions and decimals using a variety of representations.	<a href="#">Decimal Dungeon – Part 4</a> Explore the Decimal Dungeon in a five-part unit on Numbers & Operations in Base Ten where students observe and build math models to solve problems.
5.1.3.3	Estimate sums and differences of decimals and fractions to assess the reasonableness of results.	N/A
5.1.3.4	Solve real-world and mathematical problems requiring addition and subtraction of decimals, fractions and mixed numbers, including those involving measurement, geometry and data.	<a href="#">Decimal Dungeon – Part 4</a> Explore the Decimal Dungeon in a five-part unit on Numbers & Operations in Base Ten where students observe and build math models to solve problems.

## Algebra

STANDARD	DESCRIPTION	ACTIVITY
<b>Recognize and represent patterns of change; use patterns, tables, graphs and rules to solve real-world and mathematical problems.</b>		
5.2.1.1	Create and use rules, tables, spreadsheets and graphs to describe patterns of change and solve problems.	<a href="#">Dream Scream Machines</a> This lesson plan was the finishing point for a brief introduction to quadratic functions.
5.2.1.2	Use a rule or table to represent ordered pairs of positive integers and graph these ordered pairs on a coordinate system.	<a href="#">Dream Scream Machines</a> This lesson plan was the finishing point for a brief introduction to quadratic functions.
<b>Use properties of arithmetic to generate equivalent numerical expressions and evaluate expressions involving whole numbers.</b>		
5.2.2.1	Apply the commutative, associative and distributive properties and order of operations to	<a href="#">Two Step Word Problems</a> Design and solve a two-step word problem by building it as scene in Minecraft.

	generate equivalent numerical expressions and to solve problems involving whole numbers.	<a href="#">City Planning - Survival Roads</a> Students will build roads that are 0.2 kilometers long and write equations to figure out how many blocks they will need. <a href="#">Commutative Property Bed Wars</a> Build Minecraft math models that represent the commutative property of multiplication and use them in a mini-game. <a href="#">Survival City Making homes Part 2</a> <a href="#">Survival City Making homes Part 3</a> Design a prototype of a home and find the area and perimeter. <a href="#">Survival City Part 2</a> <a href="#">Survival City Part 3</a> Students will design a prototype of a home. Then they use their knowledge of area and perimeter to find out how much and what kind of materials they will need to build it in survival.
<b>Understand and interpret equations and inequalities involving variables and whole numbers, and use them to represent and solve real-world and mathematical problems.</b>		
5.2.3.1	Determine whether an equation or inequality involving a variable is true or false for a given value of the variable.	N/A
5.2.3.2	Represent real-world situations using equations and inequalities involving variables. Create real-world situations corresponding to equations and inequalities.	N/A
5.2.3.3	Evaluate expressions and solve equations involving variables when values for the variables are given.	<a href="#">Dream Scream Machines</a> This lesson plan was the finishing point for a brief introduction to quadratic functions.

## GEOMETRY & MEASUREMENT

STANDARD	DESCRIPTION	ACTIVITY
<b>Describe, classify and draw representations of three-dimensional figures.</b>		
5.3.1.1	Describe and classify three-dimensional figures including cubes, prisms and pyramids by the number of edges, faces or vertices as well as the types of faces.	N/A
5.3.1.2	Recognize and draw a net for a three-dimensional figure.	N/A
<b>Determine the area of triangles and quadrilaterals; determine the surface area and volume of rectangular prisms in various contexts.</b>		
5.3.2.1	Develop and use formulas to determine the area of triangles, parallelograms and figures that can be decomposed into triangles.	<a href="#">Area and Volume</a> This project aims to enhance understanding in the concepts of area and volume in Grade 5 students.

		<a href="#">Survival City Making homes Part 1</a> <a href="#">Survival City Making homes Part 2</a> <a href="#">Survival City Making homes Part 3</a> Design a prototype of a home and find the area and perimeter.
5.3.2.2	Use various tools and strategies to measure the volume and surface area of objects that are shaped like rectangular prisms.	<a href="#">Area and Volume</a> This project aims to enhance understanding in the concepts of area and volume in Grade 5 students. <a href="#">Volume World</a> Students will learn about volume by filling sandboxes, creating equations, and finding the total amount of block in rectangular prisms.
5.3.2.3	Understand that the volume of a three-dimensional figure can be found by counting the total number of same-sized cubic units that fill a shape without gaps or overlaps. Use cubic units to label volume measurements.	<a href="#">Area and Volume</a> This project aims to enhance understanding in the concepts of area and volume in Grade 5 students. <a href="#">Volume World</a> Students will learn about volume by filling sandboxes, creating equations, and finding the total amount of block in rectangular prisms.
5.3.2.4	Develop and use the formulas $V = \ell wh$ and $V = Bh$ to determine the volume of rectangular prisms. Justify why base area $B$ and height $h$ are multiplied to find the volume of a rectangular prism by breaking the prism into layers of unit cubes.	<a href="#">Area and Volume</a> This project aims to enhance understanding in the concepts of area and volume in Grade 5 students.

## DATA ANALYSIS

STANDARD	DESCRIPTION	ACTIVITY
<b>Display and interpret data; determine mean, median and range.</b>		
5.4.1.1	Know and use the definitions of the mean, median and range of a set of data. Know how to use a spreadsheet to find the mean, median and range of a data set. Understand that the mean is a "leveling out" of data.	N/A
5.4.1.2	Create and analyze double-bar graphs and line graphs by applying understanding of whole numbers, fractions and decimals. Know how to create spreadsheet tables and graphs to display data.	N/A