



# STANDARDS ALIGNMENT GUIDE

## Oklahoma 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 & Operations

STANDARD	DESCRIPTION	ACTIVITY
<b>5.N.1 Divide multi-digit numbers and solve real-world and mathematical problems using arithmetic.</b>		
5.N.1.1	Estimate solutions to division problems in order to assess the reasonableness of results.	N/A
5.N.1.2	Divide multi-digit numbers, by one- and two-digit divisors, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.	<p><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.</p> <p><a href="#">Decimal Dungeon – Part 5</a> Explore the Decimal Dungeon in a five-part unit on Numbers &amp; Operations in Base Ten where students observe and build math models to solve problems.</p>
5.N.1.3	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 and consider the context in which a problem is situated to select and interpret the most useful form of the quotient for the solution.	<p><a href="#">Breaking Numbers</a> Break down arrays and rebuild them in groups of equal numbers to understand how number families are the key to the multiplication and division.</p> <p><a href="#">Finding the Unknown</a> Students construct math models in Minecraft to determine missing variables.</p>
5.N.1.4	Solve real-world and mathematical problems requiring addition, subtraction, multiplication, and division of multi-digit 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.	<p><a href="#">Angler Arithmetic – Cool math!</a> Gamify Math Class or use Game-Based Learning and Project-Based Learning with a healthy dose of competition to engage students of all ages with FISHING</p> <p><a href="#">Build a Two-Step Word Problem</a> Design and solve a two-step word problem by building it as scene in Minecraft.</p> <p><a href="#">Two Step Word Problems</a> Design and solve a two-step word problem by building it as scene in Minecraft.</p> <p><a href="#">Build a Word Problem</a> Students will use blocks in the game to solve multiplication or division word problems and then create a video to show understanding.</p> <p><a href="#">Building Word Problems</a> Build a scene in Minecraft that tells a story involving multiplication or division.</p> <p><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.</p> <p><a href="#">Make a Regrouping Video</a> Students will use the blocks in the game to solve problems with regrouping and then make a video about it.</p> <p><a href="#">Minecraft Math Gladiators (MMG): Regrouping Obstacle Course</a></p>

		<p>Inside Minecraft Math Gladiators students will watch videos that will help them find strategies for regrouping. <a href="#">Multi Digit Multiplication</a></p> <p>Students will solve and build area models of multi digit multiplication problems.</p> <p><a href="#">Decimal Dungeon – Part 3</a> <a href="#">Decimal Dungeon – Part 5</a></p> <p>Explore the Decimal Dungeon in a five-part unit on Numbers &amp; Operations in Base Ten where students observe and build math models to solve problems. <a href="#">Subtraction + Regrouping CTF</a></p> <p>Students will view and build math models of base 10 subtraction problems.</p>
<b>5.N.2 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.N.2.1	<p>Represent decimal fractions (e.g., <math>\frac{1}{10}</math>, <math>\frac{1}{100}</math>) using a variety of models (e.g., 10 by 10 grids, rational number wheel, base-ten blocks, meter stick) and make connections between fractions and decimals .</p>	<p><a href="#">Fraction World</a></p> <p>Based on a lesson plan submitted by another user, wold download available.</p> <p><a href="#">Math all Around Us</a></p> <p>See around where you can find something about math.</p> <p><a href="#">Maths Decimal Garden</a></p> <p>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.</p> <p><a href="#">Fractions in Minecraft</a></p> <p>Students will build math models that correspond to fraction operations and solve four to six problems per standard.</p> <p><a href="#">Shapes From Shapes</a></p> <p>Enter the Math Model Exhibition World, examine math models, and find the fraction for each piece. Next they will be asked to make a shape made out of smaller equal size pieces. Last they will recreate their partners work using different size pieces.</p>
5.N.2.2	<p>Represent, read and write decimals using place value to describe decimal numbers including fractional numbers as small as thousandths and whole numbers as large as millions.</p>	<p><a href="#">Maths Decimal Garden</a></p> <p>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.</p> <p><a href="#">Decimal Dungeon – Part 1</a> <a href="#">Decimal Dungeon – Part 2</a></p> <p>Explore the Decimal Dungeon in a five-part unit on Numbers &amp; Operations in Base Ten where students observe and build math models to solve problems.</p>
5.N.2.3	<p>Compare and order fractions and decimals, including mixed numbers and fractions less than one, and locate on a number line.</p>	N/A
5.N.2.4	<p>Recognize and generate equivalent decimals, fractions, mixed numbers, and fractions less than one in various contexts.</p>	<p><a href="#">Maths Decimal Garden</a></p> <p>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.</p>

		<p><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.</p> <p><a href="#">Fractions in Minecraft</a> Students will build math models that correspond to fraction operations and solve four to six problems per standard.</p> <p><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.</p> <p><a href="#">Measuring Landforms</a> Students will choose and name their own length of measurement. Then they will get into a world and measure different kinds land features.</p>
<p><b>5.N.3 Add and subtract fractions with like and unlike denominators, mixed numbers and decimals to solve realworld and mathematical problems.</b></p>		
5.N.3.1	Estimate sums and differences of fractions with like and unlike denominators, mixed numbers, and decimals to assess the reasonableness of the results.	N/A
5.N.3.2	Illustrate addition and subtraction of fractions with like and unlike denominators, mixed numbers, and decimals using a variety of representations (e.g., fraction strips, area models, number lines, fraction rods).	<p><a href="#">Fractions in Minecraft</a> Students will build math models that correspond to fraction operations and solve four to six problems per standard.</p> <p><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.</p> <p><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.</p> <p><a href="#">Decimal Dungeon – Part 4</a> Explore the Decimal Dungeon in a five-part unit on Numbers &amp; Operations in Base Ten where students observe and build math models to solve problems.</p> <p><a href="#">Shapes From Shapes</a> Enter the Math Model Exhibition World, examine math models, and find the fraction for each piece. Next they will be asked to make a shape made out of smaller equal size pieces. Last they will recreate their partners work using different size pieces.</p> <p><a href="#">Fraction World</a> Based on a lesson plan submitted by another user, wold download available.</p>

		<a href="#">Math all Around Us</a> See around where you can find something about math. <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.N.3.3	Add and subtract fractions with like and unlike denominators, mixed numbers, and decimals, using efficient and generalizable procedures, including but not limited to standard algorithms in order to solve real-world and mathematical problems including those involving money, measurement, geometry, and data.	<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. <a href="#">Fraction World</a> Based on a lesson plan submitted by another user, wold download available.
5.N.3.4	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.	<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.

## Algebraic Reasoning & Algebra

STANDARD	DESCRIPTION	ACTIVITY
5.A.1 Describe and graph patterns of change created through numerical patterns.		
5.A.1.1	Use tables and rules of up to two operations to describe patterns of change and make predictions and generalizations about real-world and mathematical problems.	<a href="#">Dream Scream Machines</a> This lesson plan was the finishing point for a brief introduction to quadratic functions. <a href="#">Number Pattern Architecture</a> Students explore math models to learn about arithmetic patterns and create towers in architectural designs.
5.A.1.2	Use a rule or table to represent ordered pairs of whole numbers and graph these ordered pairs on a coordinate plane, identifying the origin and axes in relation to the coordinates.	<a href="#">Dream Scream Machines</a> This lesson plan was the finishing point for a brief introduction to quadratic functions.  <a href="#">Coordinate Planes in Minecraft</a> Students will use coordinate planes to plot points and draw lines with basic functions within Minecraft.

5.A.2 Understand and interpret expressions, equations, and inequalities involving variables and whole numbers, and use them to represent and evaluate real-world and mathematical problems.		
5.A.2.1	Generate equivalent numerical expressions and solve problems involving whole numbers by applying the commutative, associative, and distributive properties and order of operations (no exponents).	<p><a href="#">Two Step Word Problems</a> Design and solve a two-step word problem by building it as scene in Minecraft.</p> <p><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.</p> <p><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.</p> <p><a href="#">Math Bed Wars 2!</a> Students build and explain Minecraft math models that show the inverse relationship between multiplication and division and add design purpose to their models by using them strategically in a mini-game.</p> <p><a href="#">Survival City Making homes Part 1</a> <a href="#">Survival City Making homes Part 2</a> Design a prototype of a home and find the area and perimeter.</p> <p><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.</p>
5.A.2.2	Determine whether an equation or inequality involving a variable is true or false for a given value of the variable.	<p><a href="#">Dream Scream Machines</a> This lesson plan was the finishing point for a brief introduction to quadratic functions.</p>
5.A.2.3	Evaluate expressions involving variables when values for the variables are given.	<p><a href="#">Dream Scream Machines</a> This lesson plan was the finishing point for a brief introduction to quadratic functions.</p>

## Geometry & Measurement

STANDARD	DESCRIPTION	ACTIVITY
5.GM.1 Describe, classify, and draw representations of two- and three-dimensional figures.		
5.GM.1.1	Describe, classify and construct triangles, including equilateral, right, scalene, and isosceles triangles. Recognize triangles in various contexts.	<p><a href="#">Math all Around Us</a> See around where you can find something about math.</p> <p><a href="#">Virtual Worksheet (Triangles)</a> In this virtual world one can acquire a great range of knowledge.</p>
5.GM.1.2	Describe and classify three-dimensional figures including cubes, rectangular prisms, and pyramids by the number of edges, faces or vertices as well as the shapes of faces.	N/A

5.GM.1.3	Recognize and draw a net for a three-dimensional figure (e.g., cubes, rectangular prisms, pyramids).	N/A
<b>5.GM.2 Understand how the volume of rectangular prisms and surface area of shapes with polygonal faces are determined by the dimensions of the object and that shapes with varying dimensions can have equivalent values of surface area or volume.</b>		
5.GM.2.1	Recognize that the volume of rectangular prisms can be determined by the number of cubes (n) and by the product of the dimensions of the prism ( $a \times b \times c = n$ ). Know that rectangular prisms of different dimensions (p, q, and r) can have the same volume if $a \times b \times c = p \times q \times r = n$ .	<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.GM.2.2	Recognize that the surface area of a three-dimensional figure with rectangular faces with whole numbered edges can be found by finding the area of each component of the net of that figure. Know that three-dimensional shapes of different dimensions can have the same surface area.	N/A
5.GM.2.3	Find the perimeter of polygons and create arguments for reasonable values for the perimeter of shapes that include curves.	N/A
<b>5.GM.3 Understand angle and length as measurable attributes of real-world and mathematical objects. Use various tools to measure angles and lengths.</b>		
5.GM.3.1	Measure and compare angles according to size.	<a href="#">Lines, Angles, and Architecture</a> Students study lines and angles and use them to design a facade of a building. <a href="#">Measuring Angles and Building Bridges</a> Students will explore parallel lines, perpendicular lines, acute angles, and obtuse angles and use this knowledge to design facades for buildings.
5.GM.3.2	Choose an appropriate instrument and measure the length of an object to the nearest whole centimeter or 1/16-inch.	<a href="#">How Fast Can you Go?</a> Students will understand how challenging it was to walk for thousands of miles. <a href="#">Measuring Landforms</a> Students will choose and name their own length of measurement. Then they will get into a world and measure different kinds land features.
5.GM.3.3	Recognize and use the relationship between inches, feet, and yards to measure and compare objects.	<a href="#">How Fast Can you Go?</a> Students will understand how challenging it was to walk for thousands of miles.
5.GM.3.4	Recognize and use the relationship between millimeters, centimeters, and meters to measure and compare objects.	<a href="#">How Fast Can you Go?</a> Students will understand how challenging it was to walk for thousands of miles.

## Data & Probability

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STANDARD	DESCRIPTION	ACTIVITY
5.D.1 Display and analyze data to find the range and measures of central tendency (mean, median, and mode)		
5.D.1.1	Find the measures of central tendency (mean, median, or mode) and range of a set of data. Understand that the mean is a “leveling out” or central balance point of the data.	N/A
5.D.1.2	Create and analyze line and double-bar graphs with whole numbers, fractions, and decimals increments.	N/A