



STANDARDS ALIGNMENT GUIDE

Virginia State Standards Mathematics Grade 4

INTRODUCTION

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

NUMBER AND NUMBER SENSE

STANDARD	DESCRIPTION	ACTIVITY
4.1.a	The student will read, write, and identify the place and value of each digit in a nine-digit whole number.	<p>Minecraft Math Gladiators (MMG): Elytra Flight Rounding Solve Base 10 rounding math problems by playing the Minecraft Math Gladiators: Elytra Flight and Rounding mini-game.</p> <p>Minecraft Math Gladiators (MMG): Wither Battle Regrouping Students take part in a gameshow mini game. Inside they will regroup numbers in Minecraft and work together to fight the Wither Boss.</p> <p>Decimal Dungeon – Part 1 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.</p>
4.1.b	The student will compare and order whole numbers expressed through millions.	<p>Minecraft Math Gladiators (MMG): Base Ten Puzzles Students take part in a game show mini game. Inside they will learn how to solve problems using base-ten numerals.</p>
4.1.c	The student will round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand.	<p>Minecraft Math Gladiators (MMG): Elytra Flight Rounding Solve Base 10 rounding math problems by playing the Minecraft Math Gladiators: Elytra Flight and Rounding mini-game.</p>
4.2.a	The student will compare and order fractions and mixed numbers, with and without models.	<p>American Flag Three-Act Math Welcome to the world of Three-Act Mathematics in Minecraft! Ask Questions, Work Collaboratively, and Build Understanding.</p> <p>Decimal/Fraction Garden Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden.</p> <p>Fraction Stories Have students discover fractions in real life settings and have them communicate their findings through fraction stories.</p> <p>Fraction World Based on a lesson plan submitted by another user, wold download available.</p> <p>Capture the Flag! 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>Fractions in Minecraft Students will build math models that correspond to fraction operations and solve four to six problems per standard.</p> <p>Fraction Pixel Art Using a pixel art editor (or graph paper) students design an artwork, then break down the colors into fractions,</p>

		<p>discuss number patterns and unit fractions, then build their designs in Minecraft.</p> <p>Fractions Steeplechase</p> <p>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>Javelin Line Plots</p> <p>Students will throw 10 tridents and track their distance on a line plot graph.</p> <p>Shapes From Shapes</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>
4.2.b	The student will represent equivalent fractions.	<p>Decimal/Fraction Garden</p> <p>Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden.</p> <p>Capture the Flag!</p> <p>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>Fractions in Minecraft</p> <p>Students will build math models that correspond to fraction operations and solve four to six problems per standard.</p> <p>Fractions Steeplechase</p> <p>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>Measuring Landforms</p> <p>Students will choose and name their own length of measurement. Then they will get into a world and measure different kinds land features.</p>
4.2.c	The student will identify the division statement that represents a fraction, with models and in context.	<p>American Flag Three-Act Math</p> <p>Welcome to the world of Three-Act Mathematics in Minecraft! Ask Questions, Work Collaboratively, and Build Understanding.</p> <p>Decimal/Fraction Garden</p> <p>Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden.</p> <p>Fraction Stories</p> <p>Have students discover fractions in real life settings and have them communicate their findings through fraction stories.</p>

		<p>Fraction World Based on a lesson plan submitted by another user, wold download available.</p> <p>Capture the Flag! 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>Crafting Fractions Students will observe crafting recipes, write them as fractions, and then use that knowledge to make an escape!</p> <p>Fractions in Minecraft Students will build math models that correspond to fraction operations and solve four to six problems per standard.</p> <p>Fraction Pixel Art 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.</p> <p>Fractions and Multiplication Video Observe and build math models that show patterns when multiplying numbers greater than, less than, or equal to 1. Create a video to show knowledge.</p> <p>Fractions Steeplechase 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>Measuring Landforms Students will choose and name their own length of measurement. Then they will get into a world and measure different kinds land features.</p>
4.3.a	The student will read, write, represent, and identify decimals expressed through thousandths.	<p>Decimal/Fraction Garden Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden.</p> <p>Decimal Dungeon – Part 2 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.</p>
4.3.b	The student will round decimals to the nearest whole number.	<p>Decimal Dungeon – Part 2 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.</p>
4.3.c	The student will compare and order decimals.	<p>Fractions in Minecraft Students will build math models that correspond to fraction operations and solve four to six problems per standard.</p> <p>Decimal Dungeon – Part 2</p>

		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.
4.3.d	The student will, given a model, write the decimal and fraction equivalents.	Decimal/Fraction Garden Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden.

COMPUTATION AND ESTIMATION

STANDARD	DESCRIPTION	ACTIVITY
4.4.a	The student will demonstrate fluency with multiplication facts through 12 x 12, and the corresponding division facts.	Long Division in Minecraft Students will build long division math models in Minecraft and solve division problems on paper using the algorithm. Math Bed Wars 2! 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.
4.4.b	The student will estimate and determine sums, differences, and products of whole numbers.	Angler Arithmetic – Cool math! 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. Steve's New Home Steve has just arrived in a new land and has no-where to live. All he has with him is £300 to buy resources and build a new home. Commutative Property Bed Wars Build Minecraft math models that represent the commutative property of multiplication and use them in a mini-game. Finding Factors Students will use a 100 chart on paper as a map to build rectangles that show the factors for each number between 1 and 100. Math Bed Wars 2! 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. Repeated Addition with Parkour Students analyze math models and build their own parkour course in Minecraft to demonstrate understanding.
4.4.c	The student will estimate and determine quotients of whole numbers, with and without remainders.	Steve's New Home Steve has just arrived in a new land and has no-where to live. All he has with him is £300 to buy resources and build a new home. Long Division in Minecraft

		<p>Students will build long division math models in Minecraft and solve division problems on paper using the algorithm.</p> <p>Math Bed Wars 2!</p> <p>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>Decimal Dungeon – Part 5</p> <p>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.</p>
4.4.d	The student will create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication, and single-step practical problems involving division with whole numbers.	N/A
4.5.a	The student will determine common multiples and factors, including least common multiple and greatest common factor.	N/A
4.5.b	The student will add and subtract fractions and mixed numbers having like and unlike denominators.	<p>Fractions in Minecraft</p> <p>Students will build math models that correspond to fraction operations and solve four to six problems per standard.</p> <p>Fraction Farm</p> <p>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>Javelin Line Plots-3</p> <p>Students engage in a javelin throwing competition in Minecraft, plotting the distances and scores on line plot graphs in the game.</p>
4.5.c	The student will solve single-step practical problems involving addition and subtraction with fractions and mixed numbers.	<p>Exploring Systems of Measurement</p> <p>Students will use Minecraft to reimagine system of measurement in ancient China. Can you use the materials available in Minecraft to create a system of measurement similar to those used by people living in ancient China.</p> <p>Fraction Stories</p> <p>Have students discover fractions in real life settings and have them communicate their findings through fraction stories.</p> <p>Fraction World</p> <p>Based on a lesson plan submitted by another user, wold download available.</p> <p>Fraction Farm</p> <p>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>

4.6.a	The student will add and subtract with decimals.	Decimal Dungeon – Part 4 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.
4.6.b	The student will solve single-step and multistep practical problems involving addition and subtraction with decimals.	Exploring Systems of Measurement Students will use Minecraft to reimagine system of measurement in ancient China. Can you use the materials available in Minecraft to create a system of measurement similar to those used by people living in ancient China.

MEASUREMENT AND GEOMETRY

STANDARD	DESCRIPTION	ACTIVITY
4.7	The student will solve practical problems that involve determining perimeter and area in U.S. Customary and metric units.	N/A
4.8.a	The student will estimate and measure length and describe the result in U.S. Customary and metric units.	How Fast Can you Go? Students will understand how challenging it was to walk for thousands of miles. Measuring Landforms Students will choose and name their own length of measurement. Then they will get into a world and measure different kinds land features.
4.8.b	The student will estimate and measure weight/mass and describe the result in U.S. Customary and metric units.	Take it or Leave it? Discerning what to take and leave behind is an important skills for students to gain.
4.8.c	The student will, given the equivalent measure of one unit, identify equivalent measures of length, weight/mass, and liquid volume between units within the U.S. Customary system.	Exploring Systems of Measurement Students will use Minecraft to reimagine system of measurement in ancient China. Can you use the materials available in Minecraft to create a system of measurement similar to those used by people living in ancient China. Take it or Leave it? Discerning what to take and leave behind is an important skills for students to gain.
4.8.d	The student will solve practical problems that involve length, weight/mass, and liquid volume in U.S. Customary units.	Exploring Systems of Measurement Students will use Minecraft to reimagine system of measurement in ancient China. Can you use the materials available in Minecraft to create a system of measurement similar to those used by people living in ancient China. Take it or Leave it? Discerning what to take and leave behind is an important skills for students to gain.
4.9	The student will solve practical problems related to elapsed time in hours and minutes within a 12-hour period.	Exploring Systems of Measurement Students will use Minecraft to reimagine system of measurement in ancient China. Can you use the materials available in Minecraft to create a system of measurement similar to those used by people living in ancient China. How Fast Can you Go?

		<p>Students will understand how challenging it was to walk for thousands of miles.</p> <p>Build a Clock!</p> <p>Student will learn about how to read time by building a clock in Minecraft. They will do this by using command blocks with the testforblock and setblock commands. Then they will build a minecart ticker to start the clock and keep time.</p>
4.10.a	The student will identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices,	<p>Lines, Angles, and Architecture</p> <p>Students study lines and angles and use them to design a facade of a building.</p> <p>Measuring Angles and Building Bridges</p> <p>Students will explore parallel lines, perpendicular lines, acute angles, and obtuse angles and use this knowledge to design facades for buildings.</p> <p>Points, Lines, Rays, Segments, and Droppers</p> <p>Students will learn about 2D geometric figures by creating dropper games in Minecraft.</p>
4.10.b	The student will identify and describe intersecting, parallel, and perpendicular lines.	<p>Lines, Angles, and Architecture</p> <p>Students study lines and angles and use them to design a facade of a building.</p>
4.11	The student will identify, describe, compare, and contrast plane and solid figures according to their characteristics (number of angles, vertices, edges, and the number and shape of faces) using concrete models and pictorial representations.	<p>Area Functions</p> <p>In this lesson, you will be challenged to write code to make quadrilaterals that you have made by hand in Minecraft.</p> <p>Cubic Units</p> <p>In this lesson, students will create shapes using code and then determine the number of cubic units that combined shapes would make.</p> <p>Patterns and Motifs</p> <p>Students will understand patterns in history to identify information about how people lived, their beliefs, their surroundings and culture.</p> <p>Capture the Flag (Quadrilateral Capture the Flag)</p> <p>Compare, contrast and define different quadrilaterals. Build them on the map to play the capture the flag mini-game.</p> <p>Classifying Quadrilaterals</p> <p>Define, build, and classify quadrilaterals then will peer review classmates' structures by labeling shapes with signs and documentation.</p>
4.12	The student will classify quadrilaterals as parallelograms, rectangles, squares, rhombi, and/or trapezoids.	<p>Capture the Flag (Quadrilateral Capture the Flag)</p> <p>Compare, contrast and define different quadrilaterals. Build them on the map to play the capture the flag mini-game.</p> <p>Classifying Quadrilaterals</p> <p>Define, build, and classify quadrilaterals then will peer review classmates' structures by labeling shapes with signs and documentation.</p>

		Lines, Angles, and Architecture Students study lines and angles and use them to design a facade of a building.
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PROBABILITY AND STATISTICS

STANDARD	DESCRIPTION	ACTIVITY
4.13.a	The student will determine the likelihood of an outcome of a simple event.	N/A
4.13.b	The student will represent probability as a number between 0 and 1, inclusive.	N/A
4.13.c	The student will create a model or practical problem to represent a given probability.	N/A
4.14.a	The student will collect, organize, and represent data in bar graphs and line graphs.	Survival Olympics Students will fish, mine ores, and fight monsters. Then they will make and compare their activities to create bar graphs.
4.14.b	The student will interpret data represented in bar graphs and line graphs.	Survival Olympics Students will fish, mine ores, and fight monsters. Then they will make and compare their activities to create bar graphs.
4.14.c	The student will compare two different representations of the same data (e.g., a set of data displayed on a chart and a bar graph, a chart and a line graph, or a pictograph and a bar graph).	N/A

PATTERNS, FUNCTIONS, AND ALGEBRA

STANDARD	DESCRIPTION	ACTIVITY
4.15	The student will identify, describe, create, and extend patterns found in objects, pictures, numbers, and tables.	American Flag Three-Act Math Welcome to the world of Three-Act Mathematics in Minecraft! Ask Questions, Work Collaboratively, and Build Understanding. Patterns and Motifs Students will understand patterns in history to identify information about how people lived, their beliefs, their surroundings and culture. Number Pattern Architecture Students explore math models to learn about arithmetic patterns and create towers in architectural designs.
4.16	The student will recognize and demonstrate the meaning of equality in an equation.	N/A