STANDARDS ALIGNMENT GUIDE

Virginia State Standards
Mathematics Grade 5

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. Teacher 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
5.1	The student, given a decimal through thousandths, will round to the nearest whole number, tenth, or hundredth.	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.
5.2.a	The student will represent and identify equivalencies among fractions and decimals, with and without models.	Maths Decimal Garden Expanded upon world credit to https://education.minecraft.net/lessons/decimalfraction-garden/ for original lesson and world.
5.2.b	The student will compare and order fractions, mixed numbers, and/or decimals in a given set, from least to greatest and greatest to least.	Fractions in Minecraft Students will build math models that correspond to fraction operations and solve four to six problems per standard. 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. 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. Javelin Line Plots Students will throw 10 tridents and track their distance on a line plot graph. 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.
5.3.a	The student will identify and describe the characteristics of prime and composite numbers.	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.
5.3.b	The student will identify and describe the characteristics of even and odd numbers.	N/A

COMPUTATION AND ESTIMATION

STANDARD	DESCRIPTION	ACTIVITY
5.4	The student will create and solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division 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. Build a Two-Step Word Problem Design and solve a two-step word problem by building it as scene in Minecraft. Two Step Word Problems Design and solve a two-step word problem by building it as scene in Minecraft. Build a Word Problem Students will use blocks in the game to solve multiplication or division world problems and then create a video to show understanding. Building Word Problems Build a scene in Minecraft that tells a story involving multiplication or division. 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.
5.5.a	The student will estimate and determine the product and quotient of two numbers involving decimals.	Decimal Dungeon – Part 5 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.
5.5.b	The student will create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication of decimals, and create and solve single-step practical problems involving division of decimals.	N/A

5.6.a	The student will solve single-step and multistep practical problems involving addition and subtraction with fractions and mixed numbers.	Fraction World Based on a lesson plan submitted by another user, wold download available. Fraction Farm Explore math models of addition and subtraction problems with fractions then create a plan for a farm in Minecraft using what you've learned.
5.6.b	The student will solve single-step practical problems involving multiplication of a whole number, limited to 12 or less, and a proper fraction, with models.	Fraction World Based on a lesson plan submitted by another user, wold download available. Math all Around Us See around where you can find something about math. Maths Decimal Garden Expanded upon world credit to https://education.minecraft.net/lessons/decimalfraction-garden/ for original lesson and world. Fraction Farm Explore math models of addition and subtraction problems with fractions then create a plan for a farm in Minecraft using what you've learned. Shapes From Shapes 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.
5.7	The student will simplify whole number numerical expressions using the order of operations.	City Planning - Survival Roads Students will build roads that are 0.2 kilometers long and write equations to figure out how many blocks they will need.

MEASUREMENT AND GEOMETRY

STANDARD	DESCRIPTION	ACTIVITY
5.8.a	The student will solve practical problems that involve perimeter, area, and volume in standard units of measure.	Area and Volume This project aims to enhance understanding in the concepts of area and volume in Grade 5 students. Survival City Part 2 Survival City Part 3 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. Volume World Students will learn about volume by filling sandboxes, creating equations, and finding the total amount of block in rectangular prisms.

5.8.b	The student will differentiate among perimeter, area, and volume and identify whether the application of the concept of perimeter, area, or volume is appropriate for a given situation.	Area and Volume This project aims to enhance understanding in the concepts of area and volume in Grade 5 students. Liquid Measurements Students will use the fill command to fill up a liter measuring cup. Then they will design an aquarium that is 1000 blocks or 1,000,000 liters. They will build the aquarium with the fill command and make a coral reef. Survival City Making homes Part 1 Survival City Making homes Part 2 Survival City Making homes Part 3 Design a prototype of a home and find the area and perimeter. Survival City Part 2 Survival City Part 3 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. Volume World Students will learn about volume by filling sandboxes, creating equations, and finding the total amount of block in rectangular prisms.
5.9.a	The student will, given the equivalent measure of one unit, identify equivalent measurements within the metric system.	City Planning - Survival Roads Students will build roads that are 0.2 kilometers long and write equations to figure out how many blocks they will need. Liquid Measurements Students will use the fill command to fill up a liter measuring cup. Then they will design an aquarium that is 1000 blocks or 1,000,000 liters. They will build the aquarium with the fill command and make a coral reef. Measurement Mini Game Students will play, examine, and create plans for a mini game that is 120 meters long and document their work.
5.9.b	The student will solve practical problems involving length, mass, and liquid volume using metric units.	Measurement Mini Game Students will play, examine, and create plans for a mini game that is 120 meters long and document their work.
5.10	The student will identify and describe the diameter, radius, chord, and circumference of a circle.	N/A
5.11	The student will solve practical problems related to elapsed time in hours and minutes within a 24-hour period.	How Fast Can you Go? Students will understand how challenging it was to walk for thousands of miles. Build a Clock! 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.
5.12	The student will classify and measure right, acute, obtuse, and straight angles.	Lines, Angles, and Architecture Students study lines and angles and use them to design a facade of a building. Measuring Angles and Building Bridges Students will explore parallel lines, perpendicular lines, acute angles, and obtuse angles and use this knowledge to design facades for buildings.
5.13.a	The student will classify triangles as right, acute, or obtuse and equilateral, scalene, or isosceles.	Virtual Worksheet (Triangles) In this virtual world one can acquire a great range of knowledge.
5.13.b	The student will investigate the sum of the interior angles in a triangle and determine an unknown angle measure.	Virtual Worksheet (Triangles) In this virtual world one can acquire a great range of knowledge.
5.14.a	The student will recognize and apply transformations, such as translation, reflection, and rotation.	N/A
5.14.b	The student will investigate and describe the results of combining and subdividing polygons.	N/A

PROBABILITY AND STATISTICS

STANDARD	DESCRIPTION	ACTIVITY
5.15	The student will determine the probability of an outcome by constructing a sample space or using the Fundamental (Basic) Counting Principle.	N/A
5.16.a	The student, given a practical problem, will represent data in line plots and stem-and-leaf plots.	Javelin Line Plots Students will throw 10 tridents and track their distance on a line plot graph. Javelin Line Plots-3 Students engage in a javelin throwing competition in Minecraft, plotting the distances and scores on line plot graphs in the game.
5.16.b	The student, given a practical problem, will interpret data represented in line plots and stem-and-leaf plots.	Javelin Line Plots Students will throw 10 tridents and track their distance on a line plot graph. Javelin Line Plots-3 Students engage in a javelin throwing competition in Minecraft, plotting the distances and scores on line plot graphs in the game.
5.16.c	The student, given a practical problem, will compare data represented in a line plot with the same data represented in a stem-and-leaf plot.	N/A
5.17.a	The student, given a practical context, will describe mean, median, and mode as measures of center.	N/A

5.17.b	The student, given a practical context, will describe mean as fair share.	N/A
5.17.c	The student, given a practical context, will describe the range of a set of data as a measure of spread.	N/A
5.17.d	The student, given a practical context, will determine the mean, median, mode, and range of a set of data.	N/A

PATTERNS, FUNCTIONS, AND ALGEBRA

STANDARD	DESCRIPTION	ACTIVITY
5.18	The student will identify, describe, create, express, and extend number patterns found in objects, pictures, numbers and tables.	Number Pattern Architecture Students explore math models to learn about arithmetic patterns and create towers in architectural designs.
5.19.a	The student will investigate and describe the concept of variable.	N/A
5.19.b	The student will write an equation to represent a given mathematical relationship, using a variable.	N/A
5.19.c	The student will use an expression with a variable to represent a given verbal expression involving one operation.	N/A
5.19.d	The student will create a problem situation based on a given equation, using a single variable and one operation.	N/A