STANDARDS ALIGNMENT GUIDE

Nebraska 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

STANDARD	DESCRIPTION	ACTIVITY
MA.5.1.1 Numeric Relationships: Students will demonstrate, represent, and show relationships among whole numbers, fractions, and decimals within the base-ten number system.		
MA.5.1.1.a	Determine multiple equivalent representations for whole numbers and decimals through the thousandths place using standard form, word form, and expanded notation.	Maths Decimal Garden Expanded upon world credit to https://education.minecraft.net/lessons/decimalfraction-garden/ for original lesson and world. 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. 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.
MA.5.1.1.b	Compare whole numbers, fractions, mixed numbers, and decimals through the thousandths place and represent comparisons using symbols <,>, or =.	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. 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. 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. 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.

MA.5.1.1.c	Round whole numbers and decimals to any given place.	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. 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.
MA.5.1.1.d	Recognize and generate equivalent forms of commonly used fractions, decimals, and percents (e.g., halves, thirds, fourths, fifths, and tenths).	Maths Decimal Garden Expanded upon world credit to https://education.minecraft.net/lessons/decimalfraction-garden/ for original lesson and world. 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. Fractions in Minecraft Students will build math models that correspond to fraction operations and solve four to six problems per standard. 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. 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.
MA.5.1.1.e	Write powers of 10 with exponents.	N/A

MA 5.1.2 Operations: Students will demonstrate the meaning of operations and compute accurately with whole numbers, fractions, and decimals.

MA.5.1.2.a	Multiply multi-digit whole numbers using the standard algorithm.	Multi Digit Multiplication Students will solve and build area models of multi digit multiplication problems. Decimal Dungeon – Part 3 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.
MA.5.1.2.b	Divide four-digit whole numbers by a two-digit divisor, with and without remainders using the standard algorithm.	Long Division in Minecraft Students will build long division math models in Minecraft and solve division problems on paper using the algorithm. Decimal Dungeon – Part 3 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.

MA.5.1.2.c	Multiply a whole number by a fraction or a fraction by a fraction using models and visual representations.	Fraction Capture the Flag Solve fraction problems, peer review math models based on solutions and use the models to play a mini-game. Fractions in Minecraft Students will build math models that correspond to fraction operations and solve four to six problems per standard.
MA.5.1.2.d	Divide a unit fraction by a whole number and a whole number by a unit fraction.	Dividing Fractions Capture the Flag Build math models that represent dividing whole numbers with fractions. Then they will play capture the flag using the math models as obstacles.
MA.5.1.2.e	Explain division of a whole number by a fraction using models and visual representations.	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. Dividing Fractions Capture the Flag Build math models that represent dividing whole numbers with fractions. Then they will play capture the flag using the math models as obstacles. 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.
MA.5.1.2.f	Interpret a fraction as division of the numerator by the denominator.	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. 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. Crafting Fractions Students will observe crafting recipes, write them as fractions, and then use that knowledge to make an escape! Fractions in Minecraft

		Students will build math models that correspond to fraction operations and solve four to six problems per standard. 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. 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. 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.
MA.5.1.2.g	Add, subtract, multiply, and divide decimals to the hundredths using concrete models or drawings and strategies based on place value, properties of operations (i.e. Commutative, Associative, Distributive, Identity, Zero), and/or relationships between operations.	Maths Decimal Garden Expanded upon world credit to https://education.minecraft.net/lessons/decimalfraction-garden/ for original lesson and world. Decimal Dungeon – Part 4 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.
MA.5.1.2.h	Add and subtract fractions and mixed numbers with unlike denominators.	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. 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.
MA.5.1.2.i	Determine the reasonableness of computations involving whole numbers, fractions, and decimals.	N/A
MA.5.1.2.j	Multiply and divide by powers of 10.	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. Survival City Making Roads 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.

ALGEBRA

STANDARD	DESCRIPTION	ACTIVITY
MA 5.2.1 Algebraic Relationships: Students will demonstrate, represent, and show relationships with expressions and equations.		
MA.5.2.1.a	Form ordered pairs from a rule such as y=2x, and graph the ordered pairs on a coordinate plane.	Coordinate Planes in Minecraft Students will use coordinate planes to plot points and draw lines with basic functions within Minecraft.
MA 5.2.2 Algebraic Processes: Students will apply the operational properties when evaluating expressions and solving equations.		
MA.5.2.2.a	Interpret and evaluate numerical or algebraic expressions using order of operations (excluding exponents).	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.
MA 5.2.3 Applications: Students will solve real-world problems involving equations with fractions and mixed numbers.		
MA.5.2.3.a	Solve real-world problems involving addition and subtraction of fractions and mixed numbers with like and unlike denominators.	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. 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.

GEOMETRY

STANDARD	DESCRIPTION	ACTIVITY
MA 5.3.1 Characteristics: Students will identify and describe geometric characteristics and create two- and three-dimensional shapes.		
MA.5.3.1.a	Identify three-dimensional figures including cubes, cones, pyramids, prisms, spheres, and cylinders.	N/A
MA.5.3.1.b	Identify faces, edges, and vertices of rectangular prisms.	N/A
MA.5.3.1.c	Justify the classification of two-dimensional figures based on their properties.	Virtual Worksheet (Triangles) In this virtual world one can acquire a great range of knowledge. Capture the Flag (Quadrilateral Capture the Flag) Compare, contrast and define different quadrilaterals. Build them on the map to play the capture the flag mini-game. Classifying Quadrilaterals Define, build, and classify quadrilaterals then will peer review classmates' structures by labeling shapes with signs and documentation.
MA 5.3.2 Coordinate Geometry: Students will determine location, orientation, and relationships on the coordinate plane.		
MA.5.3.2.a	Identify the origin, x axis, and y axis of the coordinate plane.	N/A

MA.5.3.2.b	Graph and name points in the first quadrant of the coordinate plane using ordered pairs of whole numbers.	Coordinate Planes in Minecraft Students will use coordinate planes to plot points and draw lines with basic functions within Minecraft.
MA 5.3.3 Measurement: Students will perform and compare measurements and apply formulas.		
MA.5.3.3.a	Recognize that solid figures have volume that is measured in cubic units.	Area and Volume This project aims to enhance understanding in the concepts of area and volume in Grade 5 students.
MA.5.3.3.b	Use concrete models to measure the volume of rectangular prisms in cubic units by counting cubic units.	Area and Volume This project aims to enhance understanding in the concepts of area and volume in Grade 5 students. Volume World Students will learn about volume by filling sandboxes, creating equations, and finding the total amount of block in rectangular prisms.
MA.5.3.3.c	Generate conversions within the customary and metric systems of measurement.	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.

DATA

STANDARD	DESCRIPTION	ACTIVITY
MA 5.4.1 Representations: Students will create displays that represent data.		
No additional indicator(s) at this level. Mastery is expected at previous grade levels.		
MA 5.4.2 Analysis & Applications: Students will analyze data to address the situation.		
MA.5.4.2.a	Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (e.g., frequency charts) and bar graphs.	Survival Olympics Students will fish, mine ores, and fight monsters. Then they will make and compare their activities to create bar graphs. Chinese Tang Dynasty Capital Students build and populate this well-ordered city of over 1,000,000 people.
MA.5.4.2.b	Formulate questions that can be addressed with data and make predictions about the data.	N/A
MA 5.4.3 Probability: Students will interpret and apply concepts of probability.		
No additional indicator(s) at this level.		