STANDARDS ALIGNMENT GUIDE

Texas 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. 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

MATHEMATICAL PROCESS STANDARDS

STANDARD	DESCRIPTION	ACTIVITY
The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:		
111.6.b.1.A	Apply mathematics to problems arising in everyday life, society, and the workplace.	American Flag Three-Act Math Welcome to the world of Three-Act Mathematics in Minecraft! Ask Questions, Work Collaboratively, and Build Understanding. 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 Crafting your Review Students learn more by teaching others, and having them create a review for content learned is a great way to get them thinking and problem-solving. Decimal/Fraction Garden Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden. Fraction Stories Have students discover fractions in real life settings and have them communicate their findings through fraction stories. Fraction World Based on a lesson plan submitted by another user, wold download available. How Fast Can you Go? Students will understand how challenging it was to walk for thousands of miles. Learning about Ratios via Minecraft In this mod, students will learn different ratio rules for a specific type of gameplay in Minecraft, and ensure that their code abides by those rules. Minecraft I Skolan Allt fler skolor i Sverige använder Minecraft i skolan för att träna samarbete och kreativa lösningar på utmaningar 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. Take it or Leave it? Discerning what to take and leave behind is an important skills for students to gain.
111.6.b.1.B	Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.	American Flag Three-Act Math Welcome to the world of Three-Act Mathematics in Minecraft! Ask Questions, Work Collaboratively, and Build Understanding. 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

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Area and Perimeter Tasks
Students will demonstrate their knowledge of area and perimeter in these performance tasks.

Area and Volume
This project aims to enhance understanding in the concepts of area and volume in Grade 5 students.

Class Village
Students will need to explore and find their way through the maze. Collecting resources that they can use when it's time to build their village.

Craft your Future – Renovation
Minecraft. In this custom-built Minecraft world, students encounter a variety of problems that reflect construction challenges in cities today.

Craft your Future – Refurbish
In this custom-built Minecraft world, students encounter a variety of problems that reflect construction challenges in cities today.

Decimal/Fraction Garden
Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden.

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.

Fraction World
Based on a lesson plan submitted by another user, wold download available.

How Fast Can you Go?
Students will understand how challenging it was to walk for thousands of miles.

Learning about Ratios via Minecraft
In this mod, students will learn different ratio rules for a specific type of gameplay in Minecraft, and ensure that their code abides by those rules.

Learning Economics with Minecraft: Choices, Costs, and Benefits
Benefits, Choices, Costs, Decision Making, Opportunity Cost

Minecraft I Skolan
Allt fler skolor i Sverige använder Minecraft i skolan för att träna samarbete och kreativa lösningar på utmaningar

Patterns and Motifs
Students will understand patterns in history to identify information about how people lived, their beliefs, their surroundings and culture.

Rainbow Skies

		This project shows how you can create a rainbow in Minecraft using code and the mathematical equation for a circle.
		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.
		Take it or Leave it?
		Discerning what to take and leave behind is an important skills for students to gain.
		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.
		Crafting Fractions
		Students will observe crafting recipes, write them as fractions, and then use that knowledge to make an escape!
		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.
		Fraction Capture the Flag
		Solve fraction problems, peer review math models based on solutions and use the models to play a mini-game.
		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 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.
		Fractions in Minecraft
		Students will build math models that correspond to fraction operations and solve four to six problems per standard.
		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.
		Long Division in Minecraft
		Students will build long division math models in Minecraft and solve division problems on paper using the algorithm.
		Measurement Mini Game
		Students will play, examine, and create plans for a mini game that is 120 meters long and document their work.
		Minecraft Math Gladiators (MMG): Regrouping Obstacle Course

		Inside Minecraft Math Gladiators students will watch videos that will help them find strategies for regrouping. 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. Multi Digit Multiplication Students will solve and build area models of multi digit multiplication problems. Decimal Dungeon – Part 1 Decimal Dungeon – Part 2 Decimal Dungeon – Part 3 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. Subtraction + Regrouping CTF Students will view and build math models of base 10 subtraction problems. Volume World Students will learn about volume by filling sandboxes, creating equations, and finding the total amount of block in rectangular prisms.
111.6.b.1.C	Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.	American Flag Three-Act Math Welcome to the world of Three-Act Mathematics in Minecraft! Ask Questions, Work Collaboratively, and Build Understanding. 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 Area and Perimeter Tasks Students will demonstrate their knowledge of area and perimeter in these performance tasks. Area and Volume This project aims to enhance understanding in the concepts of area and volume in Grade 5 students. Class Village Students will need to explore and find their way through the maze. Collecting resources that they can use when it's time to build their village. Craft your Future – Renovation Minecraft. In this custom-built Minecraft world, students encounter a variety of problems that reflect construction challenges in cities today. Craft your Future – Refurbish

		In this custom-built Minecraft world, students encounter a variety of problems that reflect construction challenges in cities today.
		Decimal/Fraction Garden
		Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden.
		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.
		Fraction World
		Based on a lesson plan submitted by another user, wold download available.
		How Fast Can you Go?
		Students will understand how challenging it was to walk for thousands of miles.
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		In this mod, students will learn different ratio rules for a specific type of gameplay in Minecraft, and ensure that their code abides by those rules.
		Learning Economics with Minecraft: Choices, Costs, and Benefits
		Benefits, Choices, Costs, Decision Making, Opportunity Cost
		Minecraft I Skolan
		Allt fler skolor i Sverige använder Minecraft i skolan för att träna samarbete och kreativa lösningar på utmaningar
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		Take it or Leave it?
		Discerning what to take and leave behind is an important skills for students to gain.
		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.
		Crafting Fractions
		Students will observe crafting recipes, write them as fractions, and then use that knowledge to make an escape!

		[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. [Fraction Capture the Flag](#) Solve fraction problems, peer review math models based on solutions and use the models to play a mini-game. [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 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. [Fractions in Minecraft](#) Students will build math models that correspond to fraction operations and solve four to six problems per standard. [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. [Long Division in Minecraft](#) Students will build long division math models in Minecraft and solve division problems on paper using the algorithm. [Measurement Mini Game](#) Students will play, examine, and create plans for a mini game that is 120 meters long and document their work. [Minecraft Math Gladiators (MMG): Regrouping Obstacle Course](#) Inside Minecraft Math Gladiators students will watch videos that will help them find strategies for regrouping. [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. [Multi Digit Multiplication](#) Students will solve and build area models of multi digit multiplication problems. [Decimal Dungeon – Part 1](#) [Decimal Dungeon – Part 2](#) [Decimal Dungeon – Part 3](#) [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.

		Subtraction + Regrouping CTF Students will view and build math models of base 10 subtraction problems. Volume World Students will learn about volume by filling sandboxes, creating equations, and finding the total amount of block in rectangular prisms.
111.6.b.1.D	Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.	Crafting your Review Students learn more by teaching others, and having them create a review for content learned is a great way to get them thinking and problem-solving. Breaking Numbers Break down arrays and rebuild them in groups of equal numbers to understand how number families are the key to the multiplication and division. 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. 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. 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. 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. Classifying Quadrilaterals Define, build, and classify quadrilaterals then will peer review classmates' structures by labeling shapes with signs and documentation. Commutative Property Bed Wars

			Build Minecraft math models that represent the commutative property of multiplication and use them in a mini-game.
			Coordinate Planes in Minecraft
			Students will use coordinate planes to plot points and draw lines with basic functions within Minecraft.
			Crafting Fractions
			Students will observe crafting recipes, write them as fractions, and then use that knowledge to make an escape!
			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.
			Finding the Unknown
			Students construct math models in Minecraft to determine missing variables.
			Fraction Capture the Flag
			Solve fraction problems, peer review math models based on solutions and use the models to play a mini-game.
			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 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.
			Lines, Angles, and Architecture
			Students study lines and angles and use them to design a facade of a building.
			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.
			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.
			Measurement Mini Game

		Students will play, examine, and create plans for a mini game that is 120 meters long and document their work. 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. 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. 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. Minecraft Math Gladiators (MMG): Regrouping Obstacle Course Inside Minecraft Math Gladiators students will watch videos that will help them find strategies for regrouping. 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. Multi Digit Multiplication Students will solve and build area models of multi digit multiplication problems. Number Pattern Architecture Students explore math models to learn about arithmetic patterns and create towers in architectural designs. Number Patterns Algebra Architecture Students complete and document problems in Minecraft to find growth patterns and missing numbers then use a number pattern to build an architectural structure. Points, Lines, Rays, Segments, and Droppers Students will learn about 2D geometric figures by creating dropper games in Minecraft. Regrouping Video Students will be able to produce a video of them solving a three-digit addition and subtraction problem. Repeated Addition with Parkour Students analyze math models and build their own parkour course in Minecraft to demonstrate understanding. Decimal Dungeon – Part 1 Decimal Dungeon – Part 2 Decimal Dungeon – Part 3 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. Round Number Video Students demonstrate rounding by breaking and placing blocks in Minecraft. They then set up their own problem, creating a video to explain their rounding. Subtraction + Regrouping CTF Students will view and build math models of base 10 subtraction problems. 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 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. 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. Survival Olympics Students will fish, mine ores, and fight monsters. Then they will make and compare their activities to create bar graphs. Symmetry in Pixel Art Study and use lines of symmetry in pixel art. Design your own pixel art with a partner. Volume World Students will learn about volume by filling sandboxes, creating equations, and finding the total amount of block in rectangular prisms.
111.6.b.1.E	Create and use representations to organize, record, and communicate mathematical ideas.	Crafting your Review Students learn more by teaching others, and having them create a review for content learned is a great way to get them thinking and problem-solving. Breaking Numbers Break down arrays and rebuild them in groups of equal numbers to understand how number families are the key to the multiplication and division. 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.
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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.
City Planning - Survival Roads
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Fractions and Multiplication Video |

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		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.
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		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. Survival Olympics Students will fish, mine ores, and fight monsters. Then they will make and compare their activities to create bar graphs. Symmetry in Pixel Art Study and use lines of symmetry in pixel art. Design your own pixel art with a partner. Volume World Students will learn about volume by filling sandboxes, creating equations, and finding the total amount of block in rectangular prisms.
111.6.b.1.F	Analyze mathematical relationships to connect and communicate mathematical ideas.	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. 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. Commutative Property Bed Wars Build Minecraft math models that represent the commutative property of multiplication and use them in a mini-game. 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. 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. Minecraft Math Gladiators (MMG): Regrouping Obstacle Course Inside Minecraft Math Gladiators students will watch videos that will help them find strategies for regrouping. Multi Digit Multiplication Students will solve and build area models of multi digit multiplication problems. Repeated Addition with Parkour Students analyze math models and build their own parkour course in Minecraft to demonstrate understanding. 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. 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 Olympics Students will fish, mine ores, and fight monsters. Then they will make and compare their activities to create bar graphs.
111.6.b.1.G	Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	Breaking Numbers Break down arrays and rebuild them in groups of equal numbers to understand how number families are the key to the multiplication and division. Building Word Problems Build a scene in Minecraft that tells a story involving multiplication or division. Crafting Fractions Students will observe crafting recipes, write them as fractions, and then use that knowledge to make an escape! 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. Finding the Unknown Students construct math models in Minecraft to determine missing variables. Fraction Capture the Flag Solve fraction problems, peer review math models based on solutions and use the models to play a mini-game. 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.
		Regrouping Video
		Students will be able to produce a video of them solving a three-digit addition and subtraction problem.
		Round Number Video
		Students demonstrate rounding by breaking and placing blocks in Minecraft. They then set up their own problem, creating a video to explain their rounding.

NUMBERS AND OPERATIONS

STANDARD	DESCRIPTION	ACTIVITY
The student applies mathematical process standards to represent, compare, and order whole numbers and decimals and understand relationships related to place value. The student is expected to:		
111.6.b.2.A	Interpret the value of each place-value position as 10 times the position to the right and as one-tenth of the value of the place to its left.	N/A
111.6.b.2.B	Represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals.	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. 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. 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.
111.6.b.2.C	Compare and order whole numbers to 1,000,000,000 and represent comparisons using the symbols >, <, or =.	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.
111.6.b.2.D	Round whole numbers to a given place value through the hundred thousands 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. Round Number Video Students demonstrate rounding by breaking and placing blocks in Minecraft. They then set up their own problem, creating a video to explain their rounding.
111.6.b.2.E	Represent decimals, including tenths and hundredths, using concrete and visual models and money.	Decimal/Fraction Garden Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden.
111.6.b.2.F	Compare and order decimals using concrete and visual models to the hundredth.	Fractions in Minecraft

		Students will build math models that correspond to fraction operations and solve four to six problems per standard. 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.
111.6.b.2.G	Relate decimals to fractions that name tenths and hundredths.	Decimal/Fraction Garden Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden.
111.6.b.2.H	Determine the corresponding decimal to the tenths or hundredths place of a specified point on a number line.	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.
The student applies mathematical process standards to represent and generate fractions to solve problems. The student is expected to:		
111.6.b.3.A	Represent a fraction a/b as a sum of fractions 1/b, where a and b are whole numbers and b > 0, including when a > b.	N/A
111.6.b.3.B	Decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations.	N/A
111.6.b.3.C	Determine if two given fractions are equivalent using a variety of methods.	Decimal/Fraction Garden Students will demonstrate understanding a fractional and decimal relationships using a 10 x 10 garden. 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.
111.6.b.3.D	Compare two fractions with different numerators and different denominators and represent the comparison using the symbols >, =, or <.	Fraction Stories Have students discover fractions in real life settings and have them communicate their findings through fraction stories. 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.
111.6.b.3.E	Represent and solve addition and subtraction of fractions with equal denominators using objects and pictorial models that build to the number line and properties of operations.	**Fractions in Minecraft** Students will build math models that correspond to fraction operations and solve four to six problems per standard.
111.6.b.3.F	Evaluate the reasonableness of sums and differences of fractions using benchmark fractions 0, 1/4, 1/2, 3/4, and 1, referring to the same whole.	N/A
111.6.b.3.G	Represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.	**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. **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.
The student applies mathematical process standards to develop and use strategies and methods for whole number computations and decimal sums and differences in order to solve problems with efficiency and accuracy. The student is expected to:		
111.6.b.4.A	Add and subtract whole numbers and decimals to the hundredths place using the standard algorithm.	**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. 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.
111.6.b.4.B	Determine products of a number and 10 or 100 using properties of operations and place value understandings.	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.
111.6.b.4.C	Represent the product of 2 two-digit numbers using arrays, area models, or equations, including perfect squares through 15 by 15.	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.
111.6.b.4.D	Use strategies and algorithms, including the standard algorithm, to multiply up to a four digit number by a one-digit number and to multiply a two-digit number by a two-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties.	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. 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.
111.6.b.4.E	Represent the quotient of up to a four-digit whole number divided by a one-digit whole number using arrays, area models, or equations.	Long Division in Minecraft Students will build long division math models in Minecraft and solve division problems on paper using the algorithm.
111.6.b.4.F	Use strategies and algorithms, including the standard algorithm, to divide up to a four digit dividend by a one-digit divisor.	Long Division in Minecraft Students will build long division math models in Minecraft and solve division problems on paper using the algorithm.
111.6.b.4.G	Round to the nearest 10, 100, or 1,000 or use compatible numbers to estimate solutions involving whole numbers.	N/A
111.6.b.4.H	Solve with fluency one- and two-step problems involving multiplication and division, including interpreting 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.

		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.

ALGEBRAIC REASONING

STANDARD	DESCRIPTION	ACTIVITY
The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to:		
111.6.b.5.A	Represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity.	N/A
111.6.b.5.B	Represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence.	N/A
111.6.b.5.C	Use models to determine the formulas for the perimeter of a rectangle (l + w + l + w or 2l + 2w), including the special form for perimeter of a square (4s) and the area of a rectangle (l x w).	Area and Perimeter Tasks Students will demonstrate their knowledge of area and perimeter in these performance tasks. Area and Volume

		This project aims to enhance understanding in the concepts of area and volume in Grade 5 students. Class Village Students will need to explore and find their way through the maze. Collecting resources that they can use when it's time to build their village. 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.
111.6.b.5.D	Solve problems related to perimeter and area of rectangles where dimensions are whole numbers.	Area and Perimeter Tasks Students will demonstrate their knowledge of area and perimeter in these performance tasks. Area and Volume This project aims to enhance understanding in the concepts of area and volume in Grade 5 students. Area Functions In this lesson, you will be challenged to write code to make quadrilaterals that you have made by hand in Minecraft. Class Village Students will need to explore and find their way through the maze. Collecting resources that they can use when it's time to build their village. 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.

GEOMETRY AND MEASUREMENT

STANDARD	DESCRIPTION	ACTIVITY
The student applies mathematical process standards to analyze geometric attributes in order to develop generalizations about their properties. The student is expected to:		
111.6.b.6.A	Identify points, lines, line segments, rays, angles, and perpendicular and parallel lines.	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. Points, Lines, Rays, Segments, and Droppers Students will learn about 2D geometric figures by creating dropper games in Minecraft.
111.6.b.6.B	Identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure.	Patterns and Motifs Students will understand patterns in history to identify information about how people lived, their beliefs, their surroundings and culture. Symmetry in Pixel Art Study and use lines of symmetry in pixel art. Design your own pixel art with a partner.
111.6.b.6.C	Apply knowledge of right angles to identify acute, right, and obtuse triangles.	N/A
111.6.b.6.D	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.	Area Functions In this lesson, you will be challenged to write code to make quadrilaterals that you have made by hand in Minecraft. Patterns and Motifs Students will understand patterns in history to identify information about how people lived, their beliefs, their surroundings and culture. 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.
The student applies mathematical process standards to solve problems involving angles less than or equal to 180 degrees. The student is expected to:		
111.6.b.7.A	Illustrate the measure of an angle as the part of a circle whose center is at the vertex of the angle that is "cut out" by the rays of the angle. Angle measures are limited to whole numbers.	N/A
111.6.b.7.B	Illustrate degrees as the units used to measure an angle, where 1/360 of any circle is one degree and an angle that "cuts" n/360 out of any circle	N/A

	whose center is at the angle's vertex has a measure of n degrees. Angle measures are limited to whole numbers.	
111.6.b.7.C	Determine the approximate measures of angles in degrees to the nearest whole number using a protractor.	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.
111.6.b.7.D	Draw an angle with a given measure.	Lines, Angles, and Architecture Students study lines and angles and use them to design a facade of a building.
111.6.b.7.E	Determine the measure of an unknown angle formed by two non-overlapping adjacent angles given one or both angle measures.	N/A
The student applies mathematical process standards to select appropriate customary and metric units, strategies, and tools to solve problems involving measurement. The student is expected to:		
111.6.b.8.A	Identify relative sizes of measurement units within the customary and metric systems.	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.
111.6.b.8.B	Convert measurements within the same measurement system, customary or metric, from a smaller unit into a larger unit or a larger unit into a smaller unit when given other equivalent measures represented in a table.	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.
111.6.b.8.C	Solve problems that deal with measurements of length, intervals of time, liquid volumes, mass, and money using addition, subtraction, multiplication, or division as appropriate.	How Fast Can you Go? Students will understand how challenging it was to walk for thousands of miles. Take it or Leave it? Discerning what to take and leave behind is an important skills for students to gain.

DATA ANALYSIS

STANDARD	DESCRIPTION	ACTIVITY
The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data. The student is expected to:		
111.6.b.9.A	Represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions.	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.
111.6.b.9.B	Solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot.	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.

PERSONAL FINANCIAL LITERACY

STANDARD	DESCRIPTION	ACTIVITY
The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to:		
111.6.b.10.A	Distinguish between fixed and variable expenses.	N/A
111.6.b.10.B	Calculate profit in a given situation.	N/A
111.6.b.10.C	Compare the advantages and disadvantages of various savings options.	N/A
111.6.b.10.D	Describe how to allocate a weekly allowance among spending; saving, including for college; and sharing.	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.
111.6.b.10.E	Describe the basic purpose of financial institutions, including keeping money safe, borrowing money, and lending.	N/A