



STEM Education Works®

Scope & Sequence

3D Printing - Success Pack



3D PRINTING – Success Pack

Grade Band	Unit	Overview
K-2	2D and 3D Shapes	Students compare and contrast 2D and 3D shapes and create both a 2D and 3D shape using a 3D printer.
K-2	Sight Word Practice	Students practice high-frequency word recognition and modeling by creating and printing 3D letters.
K-2	Sink or Float	Students learn about water displacement and design a buoyant object using 3D printing.
K-2	Place Value	Students use place value blocks to represent two- or three-digit numbers, matching them with appropriate models of unit cubes and tens bars. They create and print a model of a two-digit number.
K-2	Types of Punctuation	Students learn about periods, question marks, and exclamation points. They create and print a 3D model of each. They use these punctuation marks to indicate the correct ways to end sentences.
K-2	Compass Rose	Students learn cardinal directions and create 3D-printed compass roses to solve a scavenger hunt.
3-5	Messages Within Folktales and Fables	Students identify a folktale or fable's theme and create a symbol to represent it.
3-5	Observable Properties of Matter	Students use Tinkercad® to design a solid figure. Students will use their senses to classify their models into categories based on their observable properties.
3-5	Partitioning with PLA	Students learn about partitioning objects into equal-sized fractions by designing a 3D model and partitioning it using a whiteboard marker.
3-5	Seeing Words as Symbols	Students choose an important word from a book and create a 3D model of a picture representing its definition.
3-5	Snack Cup Creations	Students calculate mass and volume of a cup, then design and 3D-print their own cups. Cups will be evaluated based on how well they hold snacks.
3-5	Great Pencil Pick Up	Students differentiate between rights and responsibilities and identify the responsibility of keeping their property tidy. They address pencils being on the floor in their classroom by creating a structure to keep pencils on desks.



NGSS Standards Alignment	NGSS Discipline	Connected Subjects	Time Required
K-2-ETS1-2	Engineering, technology, and applications of science	Math, SEL	1 hour
K-2-ETS1-1 K-2-ETS1-2	Engineering, technology, and applications of science	ELA, art, SEL, movement	1 hour
K-PS2-2 K-2-ETS1-1 K-2-ETS1-2	Physical science	Science, math, SEL, movement	1 hour
K-2-ETS1-1 K-2-ETS1-2	Engineering, technology, and applications of science	Math, SEL	1 hour
K-2-ETS1-1 K-2-ETS1-2	Engineering, technology, and applications of science	ELA, SEL, movement	1.5 hours
K-2-ETS1-2	Engineering, technology, and applications of science	Social studies, math, art, SEL, movement	1.5 hours
3-5-ETS1-1 3-5-ETS1-2	Engineering, technology, and applications of science	ELA, social studies, art, SEL, movement	1.5 hours
3-5-ETS1-1 3-5-ETS1-2	Physical science	Science, math, art, SEL, movement	1 hour
3-5-ETS1-1 3-5-ETS1-2	Physical science	Math, art, SEL	1 hour
3-5-ETS1-2	Engineering, technology, and applications of science	ELA, social studies, art, SEL	1 hour
3-5-ETS1-2	Physical science	Science, math, art, SEL, movement	2 hours
3-5-ETS1-3	Engineering, technology, and applications of science	ELA, social studies, art, SEL, movement	2 hours

Grade Band	Unit	Overview
3-5	Making Money	Students learn about the evolution and significance of money, including the role of technology in its creation, before creating a stamp to design their own currency.
3-5	Reading Monopoly	After reading an age-appropriate novel or picture book, students create a game board and questions. Students use the 3D printer to create game board pieces.
3-5	Geometry Park	After studying angles (right, obtuse, and acute) and lines (parallel and perpendicular), students create a park structure that includes a geometric term they learned.
3-5	Revolutionary War Freedom Symbol	Students create a symbol for freedom based on their knowledge of the Revolutionary War. They explain how this symbol would have inspired the colonists.
3-5	Volume of a Rectangular Prism	Students create a right rectangular prism using the 3D printer and find its volume using unit cubes or the formula $V = l \times w \times h$.
3-5	Affixes and Greek and Latin Roots	Students learn common affixes Greek and Latin roots and play a game using a 3D-printed Tinkercad® model of an affix they designed after working with Quizlet flashcards.
6-12	Create Your Own Water Coaster	Students build their own water coaster using classroom supplies, design it on Tinkercad®, and 3D-print the raft or float.
6-12	Cybersecurity Breakout Game	This collaborative breakout game challenges students while teaching online safety and digital footprint awareness through completing tasks and challenges.
6-12	General Music Game Creation Project	Students create a music-themed board game.
6-12	Volume, Density, and Mass, Oh My!	Students explore the impact of density on object volume and mass by 3D-printing objects of similar sizes but varying densities through infill adjustment. They then determine each object's density by measuring its mass and volume.
6-12	Reduce the Waste	Students research daily food waste from school cafeterias and design a carrying case prototype for transporting excess food to local food banks or shelters.



NGSS Standards Alignment	NGSS Discipline	Connected Subjects	Time Required
3-5-ETS1-1 3-5-ETS1-2	Engineering, technology, and applications of science	ELA, social studies, math, art, SEL	1 hour
3-5-ETS1-1 3-5-ETS1-2	Engineering, technology, and applications of science	ELA, social studies, math, art, SEL	1.5 hours
3-5-ETS1-1	Engineering, technology, and applications of science	Math, art, SEL, movement	2 hours
3-5-ETS1-2	Engineering, technology, and applications of science	ELA, social studies, art, SEL	1 hour
3-5-ETS1-1 3-5-ETS1-2	Physical science	Math, SEL	2 hours
3-5-ETS1-1	Engineering, technology, and applications of science	ELA, social studies, SEL	2 hours
HS-ETS1-2 HS-ETS1-3	Earth and space science	ELA, science, art, SEL, movement	2 hours
HS-ETS1-2 HS-ETS1-3	Engineering, technology, and applications of science	Social studies, SEL, movement	1.5 hours
HS-ETS1-2	Engineering, technology, and applications of science	ELA, social studies, SEL	1.5 hours
HS-ETS1-2	Physical science	Science, math, SEL, movement	1.5 hours
HS-ETS1-2 HS-ETS1-3	Earth and space science	ELA, science, social studies, art, SEL, movement	2 hours

