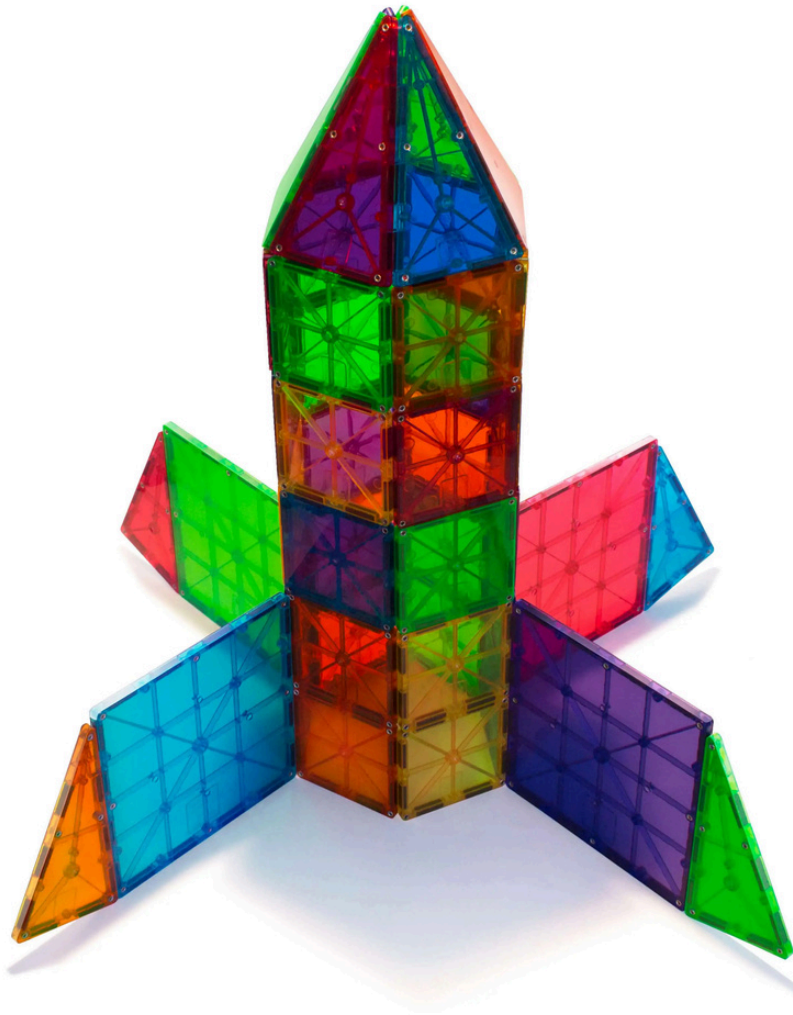


# Magna-Tiles



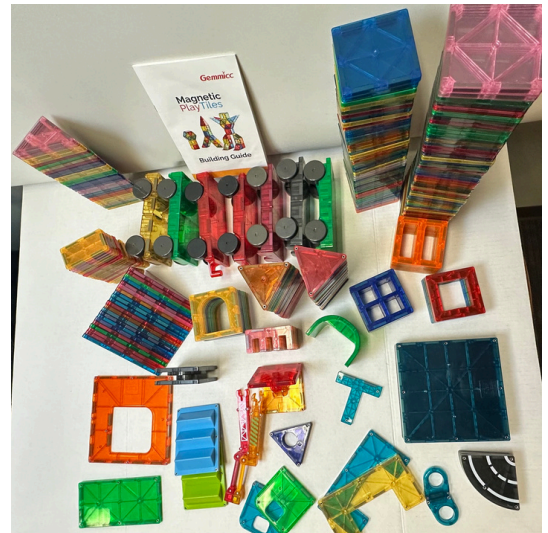
Mid-Valley  
**STEM-CTE HUB**



[www.midvalleystem.org](http://www.midvalleystem.org)  
[midvalleystemctehub@linnbenton.edu](mailto:midvalleystemctehub@linnbenton.edu)  
Linn-Benton Community College  
Albany Campus - CC-212

# Magna-Tiles

The Magna-Tiles Kit offers an engaging, hands-on approach to STEAM learning by allowing students to explore geometric concepts, symmetry, and structural engineering through magnetic construction. This kit enables exploration of geometry, spatial reasoning, and creativity through interactive, project-based activities. The Magna-Tiles set encourages creativity, critical thinking, and problem-solving skills in a screen-free environment.



## Grade Level

PreK - 5th grades

## Group Size

Up to 4 students per kit

## Time Duration

30 minutes to multiple sessions

## Content of Kits

### Components

- 14 Small Squares
- 2 Large Squares
- 8 Equilateral Triangles
- 4 Right Triangles
- 4 Isosceles Triangles



# Usage

## Getting Started

1. **Unpack the Kit:** Carefully remove all Magna-Tiles pieces from the packaging. Ensure you have all kit pieces on hand.
  2. **Familiarize with Shapes:** Review the different geometric shapes included in the set.
  3. **Safety Check:** Ensure all tiles are intact with no cracks or sharp edges. Notify MVSCH if you find any damaged Magna-Tiles.
  4. **Building Basics:** Demonstrate how the magnetic edges allow tiles to connect and form structures.
- 

## Storage

After each session, collect all tiles and store them in a container or the original packaging to prevent loss and ensure easy access for future use.

## Troubleshooting

- **Weak Connections:**
  - Ensure that the magnetic sides are properly aligned.
  - Check for debris on the edges that might interfere with the magnets.
- **Structural Stability:**
  - Encourage building on a flat, stable surface to prevent structures from toppling.
  - Discuss the importance of a strong base in construction.



# Activity Guide

## Beginner

### Building Basic Shapes and Structures

Start by creating simple geometric shapes such as squares, triangles, and rectangles using Magna-Tiles. They will learn about the properties of these shapes and how they come together to form larger structures. This foundational activity introduces concepts like symmetry, stability, and spatial awareness, while encouraging creativity and exploration through hands-on learning.

## Intermediate

### Magna-Tile Architecture

Design and build more complex architectural structures such as towers, bridges, or domes using Magna-Tiles. They will focus on creating balance and understanding how to distribute weight effectively to maintain structural integrity. Students will also experiment with different designs to improve the strength and stability of their structures. This activity reinforces engineering concepts like load-bearing and structural design while enhancing problem-solving and critical thinking skills.

## Advanced

### Magna-Tile Suspension Bridge

Design and build a working model of a suspension bridge using Magna-Tiles. They will apply principles of engineering, such as tension and compression, to create a bridge that can support weight. Students will be challenged to optimize their designs for both strength and aesthetics, testing their bridges by adding weight incrementally. This project encourages deeper understanding of structural mechanics, material properties, and real-world applications of engineering in infrastructure design.

## Extension Activities:

### Magna-Tile City

Students will collaborate in teams to build a small-scale city using Magna-Tiles. Each team will focus on creating a different part of the city, such as residential buildings, roads, or public spaces. The teams will integrate their structures to form a cohesive urban environment. Through this collaborative activity, students will apply principles of urban planning, architecture, and engineering while working together to design a functional and imaginative city.



# Learning Extensions

## STEAM Connections: Arcitecture - Engineering - Design

### Learning Objectives:

- Understand basic geometric shapes and their properties.
- Develop spatial reasoning and problem-solving skills.
- Foster creativity and innovation through open-ended construction.
- Encourage teamwork and communication in collaborative projects.

### Career Connections:

- **Architect:** Designing and planning building structures.
- **Civil Engineer:** Constructing and maintaining infrastructure projects.
- **Industrial Designer:** Creating concepts for manufactured products.
- **Urban Planner:** Developing plans and programs for land use.

### Essential Employability Skills:

- Critical thinking
- Problem-solving
- Creativity
- Teamwork
- Communication





# Resources and Accessibility

## Safety Guidelines

- Supervise all activities involving Magna-Tiles to ensure proper use.
- Remind students to handle the tiles gently to prevent damage.
- Keep small parts, such as additional accessories, organized and out of reach of young children when not in use.
- Ensure that the magnetic tiles are not placed near electronic devices or medical equipment sensitive to magnets.

## Accessibility

- Ensure that workspaces are organized and free of obstacles to accommodate all students, including those with physical disabilities.
- Provide alternative methods for building or manipulating tiles for students with fine motor challenges.

## Library Catalog



## Library Resources



## Feedback

Tell us about your experience

