# Brain Flakes

Mid-Valley
STEM-CTE HUB

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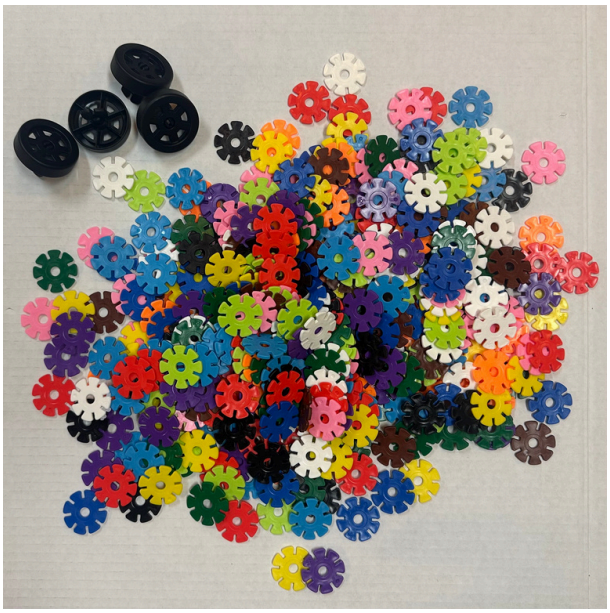
# Brain Flakes



The Brain Flakes STEAM Kit introduces students to engineering design, geometry, and artistic expression through hands-on building with colorful interlocking discs. These lightweight, versatile pieces can be connected in endless ways to form 2D patterns or complex 3D structures. This kit strengthens spatial reasoning, fine motor skills, and imaginative problem-solving while allowing students to experiment freely or follow challenge-based prompts. Ideal for early learners through middle schoolers, Brain Flakes are an engaging tool for open-ended STEAM exploration.

## Grade Level

**K - 6th**

## Group Size

**accommodates up to 10 students**

## Time Duration

**15 - 45 minutes**

## Content of Kits

### Components

- Assorted Brainflakes
- Building bases

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# Usage

## Getting Started

1. **Introduce the Connection Mechanism -** Show how Brain Flakes connect using their center slots and how angles can be created by changing the attachment direction.

2. **Start with Free Exploration -** Allow students 5–10 minutes to snap pieces together freely to understand how they fit and move.

3. **Demonstrate Simple Builds -** Build a basic flat shape (like a flower or snowflake) or a simple 3D structure (like a ball) as an example.

4. **Set a Design Challenge Prompt -** Offer a starter challenge such as “Build the tallest tower you can” or “Create something with symmetry.”

5. **Encourage Team Collaboration -** If working in groups, assign roles such as designer, builder, and tester to promote inclusion and communication.

## Storage

- Return all brain flakes to the provided storage contain between uses.

## Troubleshooting

- **Pieces Not Snapping Properly -** Check that students are aligning the center slots directly—light twisting can help with secure connections.
- **Structures Keep Collapsing -** Encourage the use of wider bases and layered reinforcement for better stability in vertical builds.
- **Students Struggling to Start -** Provide visual build prompts or allow them to replicate a simple model before designing independently.
- **Lost or Scattered Pieces -** Assign clean-up roles and establish a “missing parts tray” where loose discs can be placed at the end of the session.

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# Activity Guide

## Beginner

**Shape Builder**
Students use Brain Flakes to build simple 2D shapes—triangles, squares, circles, and stars. They count the number of pieces used and compare sizes, introducing basic concepts of shape, pattern, and symmetry.

## Intermediate

**3D Challenge Build**
Students work individually or in teams to create a 3D structure such as a tower, bridge, ball, or creature. They must ensure stability, consider balance, and plan their design before building, applying basic engineering and problem-solving skills.

## Advanced

**Functional Design Project**
Students are challenged to build a model that serves a specific function—like a spinning top, a structure that can hold weight, or a small vehicle. They explain their design choices and test how well the creation performs its intended task.

## Extension Activities:

**Design & Replicate**
Students sketch a design on paper, then attempt to build it with Brain Flakes. They can swap sketches with classmates and try to replicate each other's models, reinforcing spatial translation, communication, and iterative design.

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# Learning Extensions

## STEAM Connections: Engineering - Design - Math

## Learning Objectives:

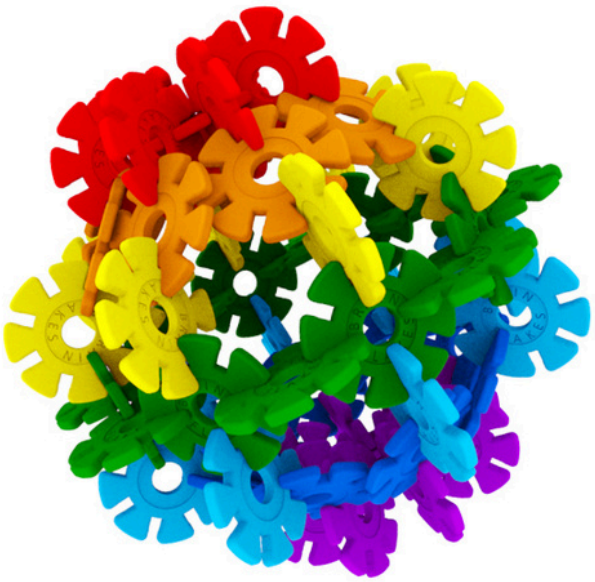
- Identify and construct geometric shapes and patterns using physical manipulatives.
- Strengthen fine motor skills and hand-eye coordination through interlocking design work.
- Apply principles of structure and balance in building stable 3D forms.
- Use creativity and critical thinking to solve design-based challenges.
- Collaborate effectively in groups to plan, build, and improve original constructions.

## Career Connections:

- **Creativity –** Design unique shapes, figures, and functional items using flexible materials.
- **Problem-Solving –** Adjust structures for strength, shape, or stability as needed during construction.
- **Collaboration –** Share responsibilities and ideas while working on group builds.
- **Communication –** Describe designs clearly and give/receive feedback constructively.
- **Attention to Detail –** Follow patterns and align pieces carefully to achieve precise results.

## Essential Employability Skills:

- Creativity
- Innovation
- Problem-solving
- Communication
- Attention to detail
- Collaboration



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# Resources and Accessibility

## Safety Guidelines

- **Supervise Use with Younger Students -** Brain Flakes are small and should be kept away from children under 3 to avoid choking hazards.
- **Keep Work Areas Clear -** Encourage students to keep builds and loose pieces on the table to avoid tripping or slipping on fallen parts.
- **Use Gentle Pressure When Connecting -** Teach students to snap pieces together gently—excess force can break discs or strain fingers.
- **Avoid Putting Pieces in Mouths or Near Eyes -** Remind students that these are building tools, not toys for oral use or tossing.

## Accessibility

- **Allow Role Flexibility in Groups -** Let students contribute as designers, planners, or idea-sharers if manipulating the discs is difficult.
- **Incorporate Visual Instructions -** Provide large-print or picture-based build prompts to support students with diverse learning styles.
- **Offer Extended Time and Patience -** Allow students who need more time or assistance to complete builds without pressure.

## Library Catalog

## Library Resources

## Feedback

QR to feedback survey