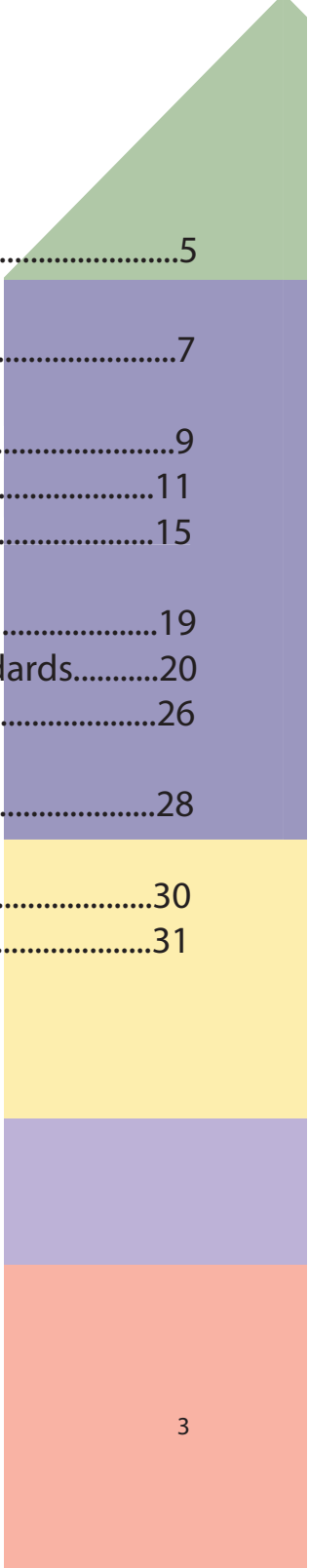




Pennsylvania Curriculum Guide

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Welcome to Blocks Rock!

Early childhood educators know that block play is a fundamental experience for young children. The “Block Corner” is a time-honored tradition in early learning environments as block play promotes young children’s growth and learning in many ways – language development, mathematical understanding, curiosity, and friendships. Numerous research studies have shown the benefits of structured block play as part of a young child’s classroom experience. Structured block play requires the ability to analyze a spatial representation and develops skills in estimation, measurement, patterning, part-whole relations, visualization, symmetry, transformation, and balance (Newman, et al., 2016).

Blocks Rock! is a competitive block-building activity that helps children develop spatial thinking and mental rotation skills. This brain development tool was created in 2005 as an educational resource to help children learn through play. This guide provides the rationale for using Blocks Rock! in your classroom and offers suggestions for implementing the game as well as enhancing the experience.

As an early childhood educator, you play a critical role in modeling curiosity and persistence to support young children’s learning. Creating an environment where children feel safe in taking risks, asking questions and making leaps in their thinking is critical to their success. The competitive nature of this game motivates many children to continue playing the game. Use the Blocks Rock! game to encourage creativity in problem-solving, to promote positive social interactions, and to stretch children’s thinking.

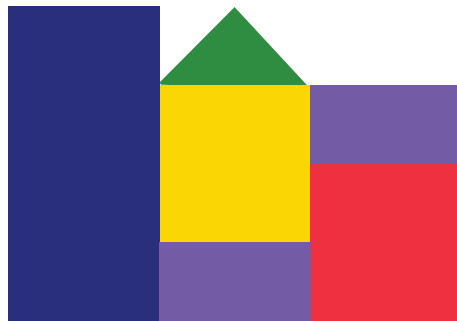
Overview of STEM Curriculum for Early Learning Environments

Early care and education programs are constructed around the concepts of STEM = Science, Technology, Engineering and Mathematics. Through the exploration of STEM concepts, young children increase conceptual knowledge and strengthen social and emotional skills, including executive function, all of which are critical for later school success. The learning environment, experiences and interactions with adults and peers are intentionally designed to promote growth and learning for children.

In a high-quality early learning environment, the key goals and outcomes include:

- Improving the child's social development skills - conversing with peers and adults, being independent, keeping hands to self, sharing and listening.
- Improving the child's cognitive skills. Ex: recognition of letters, pre-reading skills, concepts such as numbers and colors, book knowledge and vocabulary.
- Improving the child's executive function (promoting positive school behavior skills). Ex: turn-taking, manipulating materials, listening to a story, self-help skills.
- Improving parenting and family engagement practices – helping families learn how to observe their child in an educational environment, implementing at-home assignments and leading within the child's learning environment through classroom involvement.

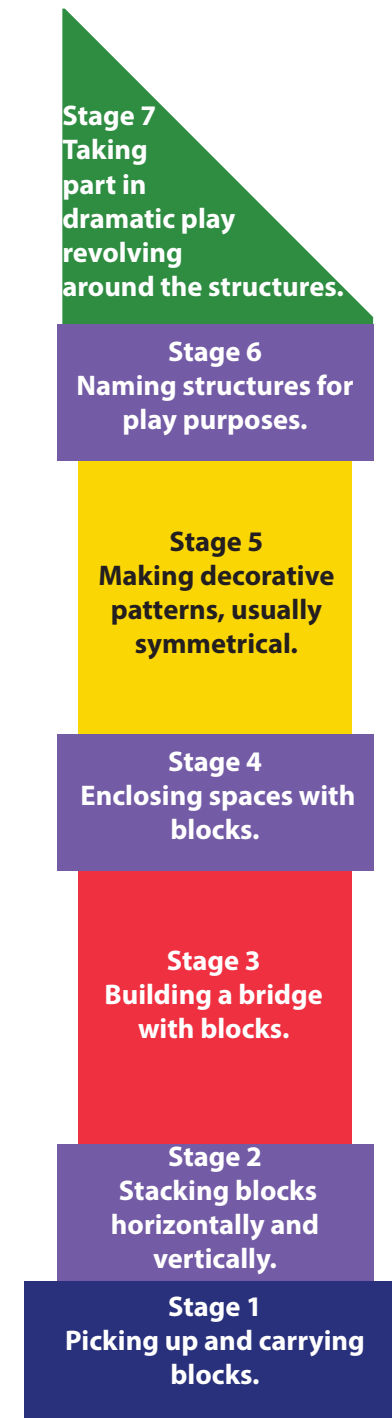
A word about competition and cooperation: In the early learning environment, educators may observe children engaged in “constructive competition” which is grounded in mutual respect and an understanding that other children possess desirable skills and competencies. Some children are motivated by the competitive aspects of playing the game. Others enjoy the cooperative nature of playing together. Often, the child with specific skills will teach the other children how to play the game and how to use strategies to win. While winning is very important to preschoolers, being friends and spending time with peers is even more important (Sheridan & Williams, 2006). Early childhood educators can support children’s cognitive and social-emotional development by focusing on both competition and cooperation.



These child outcomes align with the Indiana Department of Education's Academic Standards. The Indiana Early Learning Standards (Foundations to the Indiana Academic Standards) establish guidelines for early learners' development of foundational skills in the content areas as well as critical social-emotional competencies. Specifically, the Foundations which focus on STEM-specific learning and functions include:

- ▲ Early Reading: alphabet awareness, phonological awareness, concepts of print and comprehension.
- ▲ Numeracy: counting, cardinality, written numerals, quantity and comparison.
- ▲ Computation and Algebraic Thinking: mathematical structure and patterning.
- ▲ Data Analysis: classification, data collection, organization and description.
- ▲ Geometry: spatial relationships and space analysis.
- ▲ Sense of Self: self-awareness, confidence, identification and expression of emotions.
- ▲ Science: properties of objects, characteristics of living creatures and plants.
- ▲ Engineering: solving problems using the engineering design process.
- ▲ Self-Regulation: executive functions such as impulse control, planning and emotional regulation.
- ▲ Building Relationships: social development and engagement with others.
- ▲ Initiative and Exploration: initiative, self-direction, interest and curiosity as a learner.
- ▲ Attentiveness and Persistence: focus on a specific activity; persistence to complete tasks

Stages of Block Building



Researchers have long studied the positive contribution of block play to development and have empirically identified the increasingly complex stages of block play in children.

When young children play the **Blocks Rock!** game, they often demonstrate many of these stages. In a study completed at The Indianapolis Children's Museum, children ages 3 – 5 years old who played **Blocks Rock!** were observed picking up and carrying blocks (Stage 1), stacking blocks (Stage 2), building bridges (Stage 3), and making symmetrical, decorative patterns with the blocks (Stage 5). Young children were more likely to continue playing the game if an adult engaged with them as they played.

Source: Wolf, 2011



Playing the Game

The **Blocks Rock!** game has a set of cards; two identical sets of blocks of varying shape, size, colors; and a bell. Each player has a set of blocks, and one player turns over a card during play that has a particular structure, point value, and how to build the structure (e.g., up or flat on the table). The complexity of the structure increases during play. Each player attempts to build the structure as fast as possible with the player who does so correctly first and rings the bell being awarded the points displayed on the card. The score is kept and once all cards have been played the winner is the player with more points or cards.

Helping young children to be ready for **Blocks Rock!** includes several opportunities for the exploration of the game. To do this, select a low-traffic area for guided explorations of the game materials. In this space, sit down with a child and place the same number, color, and shape of blocks in front of both of you. Be sure to have the bell handy, so that this can be practiced as well. Begin by stacking your blocks on top of each other, and ask the child to do the same. Even though in **Blocks Rock!** children will be asked to organize the blocks horizontally, begin with vertical stacking to capitalize upon children's natural inclination to build vertically. Once the child has built the tower, let them ring the bell.

After you have practiced building towers and ringing the bell, you will want to move to demonstrating how towers can be built on their sides (horizontally). As you place blocks in a predictable sequence (e.g., red-red-blue, blue-red-blue, etc.) horizontally in front of you, be sure to talk about what you are doing. Ask the child to create the sequence with their blocks as you are building yours. When they have completed the pattern, let them ring the bell. Once they are able to match your pattern, ask them to create a pattern for you to make and ring the bell.

Now that you have practiced building, it's time to introduce the cards included in the **Blocks Rock!** game. You will want to be strategic here in which cards you begin with (i.e., structures made of four – five blocks are where to begin), and you will want to ensure that both you and the child have the number, shape and size of blocks necessary to build the structure represented on the card. Demonstrate how to construct the structure. As you build, ask the child to make the structure as well. Be sure to use the names of shapes, the color of those shapes, as well as how they relate to the other shapes being used in the structure (e.g., You might say, "Next to my green triangle, I'll put my red square. Can you place your red square next to your green triangle?"). Once the structure is built, ask the child to ring the bell. It is important to remember in this step of the exploratory phase that many attempts and practices will be needed before being able to move forward. To be successful here requires the child to integrate many concepts (i.e., shape rotation, motor skills, hand-eye coordination, and spatial reasoning), to create a plan, and to take turns with another player (you), all things that may be difficult at times.

As children become more competent in building from the templates (i.e., the cards) found in the **Blocks Rock!** game, you will want to introduce the final component to the game...speed. When selecting the cards from which the next structure is to be built, add the idea of being fast at building. To do this, start by looking at the card together and selecting the appropriate blocks to use. Once you both have your blocks picked out, verbalize the steps you will take in putting your structure together (e.g., You might say while pointing to the shapes on the card, "First, I'll put my green triangle here. Then, I'll place my red square below it. Finally, I'll put by blue rectangle under the red square."). Don't expect the child to verbalize their thinking, but model it for them. After you've verbalized your process, ask the child to create the structure. When the structure is made, let them ring the bell.

For young children, three- and four-year-olds, **Blocks Rock!** is a game that they will play with an adult. Typically, these will be one-on-one interactions within a quiet, low-traffic space in the classroom that allows for concentrated efforts to occur. However, this game, once introduced in your classroom, is something that children and parents can play together. Using the **Blocks Rock!** game as a means of guided construction play will help children develop the capacity to rotate and analyze shapes (spatial visualization); the ability to shift focus from one stimulus to another (cognitive flexibility); the aptitude to solve problems in a variety of ways; and the competence to increase language use as they engage in conversations about their building.



Using Blocks in the Early Learning Environment

Ten Things Young Children Learn from Block Play

- Problem Solving
- Imagination
- Self-expression
- Mathematics
- Continuity and Permanence
- Creativity
- Science
- Self-esteem
- Social and Emotional Growth
- Development in all areas

Materials and Props to Enhance Block Play

The block corner is a powerful arena for children's learning. Consider incorporating a variety of materials into the block corner to encourage children's creativity, spatial reasoning and imagination. The [Blocks Rock!](#) materials can be housed in the block corner for easy access.

environmental signs
dress up clothes
blueprint paper
tape measures
wood cookies figurines
flat boulders mirrors containers
cars mats rulers
vehicles pallets tree stumps
tires pencils low tables
trucks photos loose parts
items from nature
labels shoe boxes
wooden spools
clipboards
cardboard tubes
fabric pieces
[Blocks Rock!](#) game

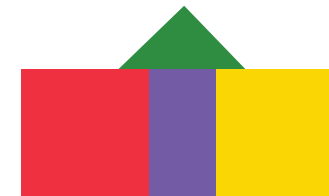
Activities to Extend [Blocks Rock!](#)

In addition to the structured competitive game, [Blocks Rock!](#) offers endless possibilities for learning. Early childhood educators can use the materials from [Blocks Rock!](#) to introduce new concepts, reinforce learning, and encourage innovation and creativity in thinking. Educators can structure activities during free play, as center activities or in small groups with guided instruction.

Read Aloud



Introduce STEM concepts by reading aloud picture books (see list). Use vocabulary related to building and problem-solving to give children a foundation in the language of STEM. Prompt discussion with questions to foster comprehension and predictions.



Free Exploration

Allow children to use the materials independently. This provides the child opportunity to explore all facets of the materials, to construct an understanding of the physical properties of the blocks, to practice using the bell, and to develop confidence using the materials.



Let's Play



Observe how children use the blocks as symbolic representations of items in their dramatic play. For example, using the rectangular blue block and pretending to make a phone call on a mobile phone

Counting Rocks!



Model 1:1 correspondence, counting, grouping, count sets of items, compare sets – use words such as more, fewer.

Sign Up

Demonstrate how to make a sign-up sheet for children to take turns using the Blocks Rock! Game. Encourage children to create their own lists to track who has the next turn.



Conversations:

Use the playing cards to start conversations, talk about the designs, use concept words – on top of, below, next to, more than, etc.



Freeze Dance

Use the bell as a signal for children to "Freeze" when dancing to music.



Copy Cat

Show children how to use the larger play mat with the block designs to replicate, either by placing blocks directly onto the mat, or next to the mat.



Monkey See, Monkey Do



Invite children to copy or extend a pattern (ABAB or ABCABC) that you have created with movements (ex: clap, stomp, clap, stomp) and then use the blocks to create patterns for children to extend or copy.

Sort it Out

Encourage children to classify the blocks into different categories, focusing on the physical properties such as color, shape, size.



Children's Literature Related to Blocks Rock!

Thinking Like a Scientist

Beaty, A. and Roberts, D. (2016). *Ada Twist, Scientist*. Abrams Books for Young Readers.

Murray, D. (2016). *City Shapes*. Little, Brown.

Yamada, K. (2014). *What Do You Do with an Idea?* Compendium, Inc.

Using Technology

Eggers, D. (2015). *This Bridge Will Not Be Gray*. McSweeney's.

Galdone, P. (1979). *The Three Billy Goats Gruff*. Seabury Press.

Milich, Z. (2005). *City signs*. Kids Can Press.

Portis, A. (2001). *Not a box*. Harper Collins.

Engineering and Building

Alling, N. (2012). *When I build with blocks*. Create Space.

Barton, B. (1990). *Building a house*. Mulberry Books.

Beaty, A. and Roberts, D. (2007). *Iggy Peck, Architect*. Abrams Books for Young Readers.

Beaty, A. and Roberts, D. (2013). *Rosie Revere, Engineer*. Abrams Books for Young Readers.

Hoberman, M.A. (1978). *A House is a House for Me*. Viking Penguin.

Hutchins, P. (1987). *Changes, Changes*. Aladdin Picture Books.

Shulman, L. and Wolff, A. (2004). *Old MacDonald had a woodshop*. Puffin Books.

Solving Problems with Mathematics

Fleming, D. (2006). *Alphabet under construction*. Square Fish.

Galdone, P. (1970). *The Three Little Pigs*. Seabury Press.

Gibbons, G. (1990). *How a house is built*. Holiday House.

Hale, C. (2012). *Dreaming Up*. Lee and Low Books.

Yolen, J. (2016). *What to do with a box*. Creative Editions.

Alignment with the Pennsylvania Learning Standards for Early Childhood Pre-Kindergarten

Indicators of Child's Progress Key Goals addressed by the structured play with Blocks Rock! are red.	Suggested Activities
Approaches to Learning through Play	
AL.1. Constructing and Gathering Knowledge: curiosity and initiative, risk taking, stages of play	Playing BR! with a peer Free Exploration Read Aloud
AL.2. Organizing and Understanding Information: engagement and attention, task analysis, persistence, patterning, memory	Sort it Out Counting Rocks Conversations Dramatic Play Freeze Dance Monkey See
AL.3. Applying Knowledge: engagement and attention, invention, representation	Copy Cat Sign Up
AL.4. Learning through Experience: making connections, resiliency, problem solving	

Language and Literacy Development	
1. Foundational Skills: book handling, print concepts, phonological awareness, phonics and word recognition, fluency	Read Aloud Conversations Monkey See
2. Reading Informational Text: main idea, text analysis, key ideas and details, text structure, vocabulary, diverse media, analysis across texts, vocabulary acquisition and use, range of reading	Copy Cat Sign Up
3. Reading Literature: theme, text analysis, literary elements, point of view, text structure, vocabulary, sources of information, text analysis, strategies, vocabulary acquisition and use, range of reading	
4. Writing: Informative/Explanatory—focus, organization, conventions of language; Narrative—focus, content, organization, conventions of language; writing process, conducting research, credibility, reliability and validity of sources, range of writing	Free Exploration Conversations Dramatic Play Sign Up
5. Speaking and Listening: collaborative discussion, critical listening, evaluation, purpose, audience and task, contexts, conventions of standard English	Playing BR! with a peer Free Exploration Sort it Out Counting Rocks Conversations Dramatic Play Freeze Dance Monkey See Copy Cat

Mathematical Thinking and Expression	
1. Numbers and Operations: cardinality, counting, comparing, mathematical processes	Playing BR! with a peer Free Exploration Counting Rocks Conversations Dramatic Play Monkey See Copy Cat Sign Up
2. Algebraic Concepts: operations and algebraic thinking, mathematical processes	Playing BR! with a peer Free Exploration Monkey See Copy Cat
3. Geometry: identification, application, mathematical processes	Playing BR! with a peer Free Exploration Sort it Out Counting Rocks Conversations Monkey See Copy Cat
4. Measurement, Data, and Probability: measurement, data, mathematical processes	Playing BR! with a peer Free Exploration Sort it Out Counting Rocks Conversations Dramatic Play Monkey See Copy Cat

Scientific Thinking and Technology	
3.1A-C Biological Sciences: living and non-living organisms; genetics; evolution	
3.2 A-B Physical Sciences: chemistry; physics	Playing BR! with a peer Free Exploration Sort it Out Counting Rocks Conversations Dramatic Play Monkey See Copy Cat
3.3A Earth and Space Sciences: earth structure, processes, and cycles	
4.1-4.4 Environment and Ecology: ecology; watersheds and wetlands; agriculture and society; humans and the environment	
15.4 Computer and Information Technology	
Social Studies Thinking	
5.1-5.2 Civics and Government: principles and documents of government; rights and responsibilities of citizenship	Playing BR! with a peer Conversations
6.1, 6.3, 6.5 Economics: scarcity and choice; functions of government; income, profit, and wealth	
7.1-7.2 Geography: basic geographic literacy; physical characteristics of places and regions	
8.1 History: historical analysis and skills development	Free Exploration Read Aloud

Creative Thinking and Expression	
9.1.M, 9.1.D, 9.1.V Production and Performance: music and movement; dramatic and performance play; visual arts	Free Exploration Freeze Dance Monkey See Copy Cat
9.3 Critical Response to Works in the Arts	
Health, Wellness, and Physical Development	
1. Concepts of Health	
2. Healthful Living	
10.3 Safety and Injury Prevention	
10.4 Physical Activity: gross motor coordination	Playing BR! with a peer Free Exploration
10.5 Concepts, Principles, and Strategies of Movement: fine motor coordination	Sort it Out Counting Rocks Dramatic Play Freeze Dance Monkey See Copy Cat
Social and Emotional Development	
16.1 Self-Awareness and Self-Management	Playing BR! with a peer Free Exploration Read Aloud
16.2 Establishing and Maintaining Relationships	Sort it Out Counting Rocks Conversations Dramatic Play
16.3 Decision-Making and Responsible Behavior	Freeze Dance Monkey See Copy Cat Sign Up

Notes:

Activity	Pennsylvania Learning Standards for Early Childhood Pre-Kindergarten							
	Approaches to Learning Through Play	Language and Literacy Development	Mathematical Thinking and Expression	Scientific Thinking and Technology	Social Studies and Thinking	Creative Thinking and Expression	Health, Wellness, and Physical Development	Social and Emotional Development
BR! Structured block play with an adult.	AL1, AL2, AL3, AL4	1.5	2.1, 2.2, 2.3, 2.4	3.2	5.1-5.2		10.4, 10.5	16.1, 16.2, 16.3
BR! Structured block play with a peer.	AL1, AL2, AL3, AL4	1.5	2.1, 2.2, 2.3, 2.4	3.2	5.1-5.2		10.4, 10.5	16.1, 16.2, 16.3
Free Exploration	AL1, AL2, AL3, AL4		2.1, 2.2, 2.3, 2.4	3.2	8.1	9.1.M, 9.1.D, 9.1.V	10.4, 10.5	16.1, 16.2, 16.3
Read Aloud	AL1, AL2, AL3, AL4	1.1, 1.2, 1.3			8.1			16.1, 16.2, 16.3
Sort it Out	AL1, AL2, AL3, AL4	1.5	2.3, 2.4	3.2			10.4, 10.5	16.1, 16.2, 16.3

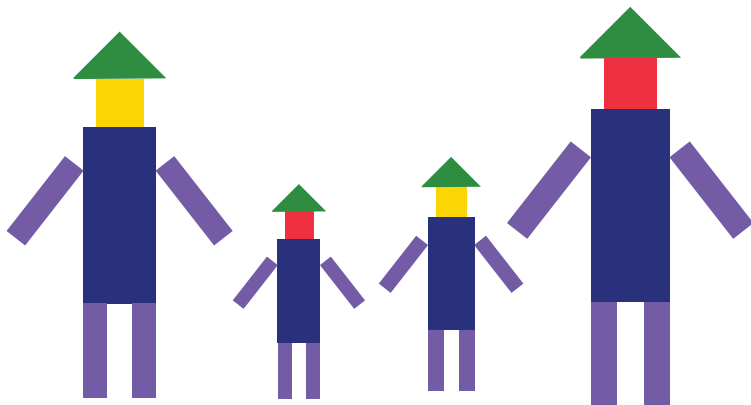
	Approaches to Learning Through Play	Language and Literacy Development	Mathematical Thinking and Expression	Scientific Thinking and Technology	Social Studies and Thinking	Creative Thinking and Expression	Health, Wellness, and Physical Development	Social and Emotional Development
Counting Rocks!	AL1, AL2, AL3, AL4	1.5	2.1, 2.3, 2.4	3.2			10.4, 10.5	16.1, 16.2, 16.3
Conversations	AL1, AL2, AL3, AL4	1.1, 1.2, 1.3, 1.4, 1.5	2.1, 2.3, 2.4	3.2	5.1-5.2			16.1, 16.2, 16.3
Dramatic Play	AL1, AL2, AL3, AL4	1.5	2.1, 2.4	3.2	5.1-5.2		10.4, 10.5	16.1, 16.2, 16.3
Freeze Dance	AL1, AL2, AL3, AL4	1.5				9.1.M, 9.1.D, 9.1.V	10.4, 10.5	16.1, 16.2, 16.3
Monkey See Monkey Do	AL1, AL2, AL3, AL4	1.1, 1.2, 1.3, 1.5	2.1, 2.2, 2.3, 2.4	3.2	5.1-5.2	9.1.M, 9.1.D, 9.1.V	10.4, 10.5	16.1, 16.2, 16.3
Copy Cat	AL1, AL2, AL3, AL4	1.1, 1.2, 1.3, 1.5	2.1, 2.2, 2.3, 2.4	3.2	5.1-5.2	9.1.M, 9.1.D, 9.1.V	10.4, 10.5	16.1, 16.2, 16.3
Sign Up	AL1, AL2, AL3, AL4	1.1, 1.2, 1.3, 1.4					1	16.1, 16.2, 16.3

Sharing Information with Families

Communicating with families is an important way to connect home and school. Parents are the child's first teacher and when families feel as if they have meaningful interactions with school, they are more likely to stay involved. Helping families to understand their child's experience in your setting is an important step in developing a strong partnership with families.

Suggestions:

- Send a letter home explaining to families that you have been playing a new game and provide them with prompts to engage their child and to learn more about the game. See the sample letter.
- Host a family game night. Young children can learn about taking turns, following directions and sportsmanship when playing games with peers and adults.
- Share information about how to order the Blocks Rock! game for home. Or, provide instructions for downloading the app. To learn more, visit blocksrock.com.



SAMPLE LETTER TO FAMILIES

Dear Families,

We have been playing a new game in our classroom, Blocks Rock! This competitive block-building activity helps children develop spatial thinking and mental rotation skills. Blocks Rock! encourages creative problem-solving, positive social interactions, and fun!

As your child's first teacher, you play an important role in modeling curiosity and persistence to support learning. At home you can create an environment where your child feels safe in taking risks, asking questions and making leaps in their thinking. Extend your child's experience with this game by asking about playing Blocks Rock!:

- o Tell me about the block game you played today.
- o Which friends played Blocks Rock! with you?
- o Tell me about what you built with the blocks.
- o Describe how you played the game? What did you use?

Blocks Rock! has been proven to help children develop important knowledge and skills in science, technology, engineering and mathematics (STEM). Playing this game with an adult or a classmate is another way that your child is learning essential concepts. If you are interested, you can purchase Blocks Rock! to play at home or you can download the app. Check out the Blocks Rock! website to learn more about this class favorite - <https://blocksrock.com/app>.

As always, thank you for sharing your child with us. Please don't hesitate to call or email with any questions.

Sincerely,
Your Name

About the Authors

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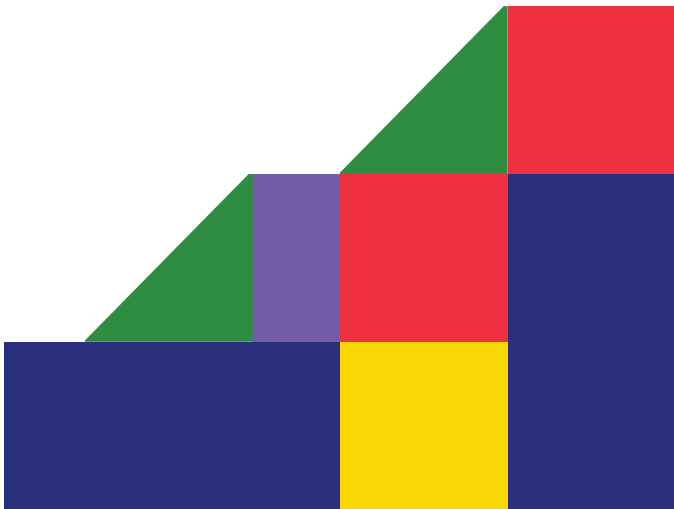
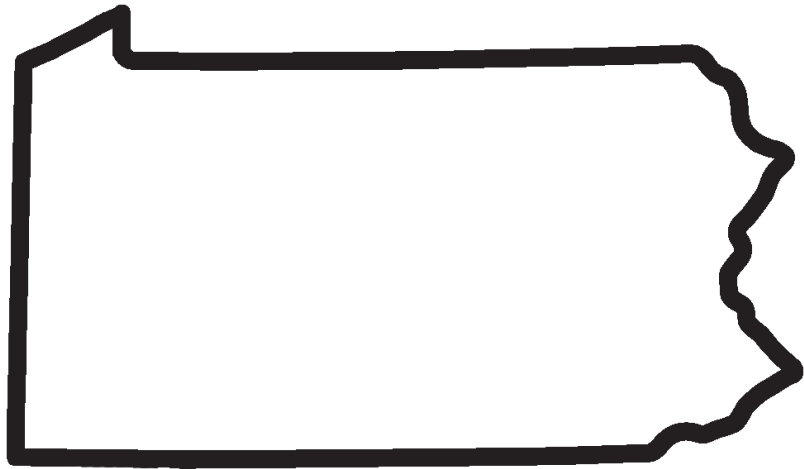


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