

**Hands-On
Learning**

Week 8

**1st
Grade**

Independent Study Packet



**Educational Activities
to Create, Problem Solve,
Move, and Have Fun**

Table of Contents

This Activity Packet is a collection of open-ended learning challenges that encourage your child to create, build, design, and move. For these activities, you will need materials like paper, tape, markers, and scissors. You will also need other materials, but feel free to substitute with what is around your home.

We recommend allowing your child to choose 2-3 activities per day. Each packet contains a selection of "choice boards," and these can be used over

multiple days. You may also want to review the packet together and make a week long plan using the planner included, or your own.

Brain Breaks can be used throughout the week to support your child in moving their body when they need to take a break from focusing on academic work. The STEM Design Challenge: Plan, Reflect, Revise sheet can be used to help your child dig deeper into the open-ended learning challenges.

Weekly Planner	Page 3
Brain Breaks	Pages 4 – 5
STEM Design Challenge: Plan, Reflect, Revise	Pages 6 – 8
Whimsical Activity Choice Board	Page 9
Building Brick Challenge: Build a Boat	Page 10
Dance Party Choice Board	Page 11
Hop in Order	Page 12
Animal Movement	Pages 13 – 15
Chalk Walk Choice Board	Page 16
Build a Tunnel	Pages 17 – 18
Design Challenge: Making a Catapult	Pages 19 – 20
Design Challenge: Marble Labyrinth	Pages 21 – 23
Mix Monochromatic Colors	Page 24
Outer Space Painting	Page 25

WEEKLY PLANNER



Name: _____

Month: _____ Days: _____ - _____ Year: _____

☐ MONDAY

To do list:

Course activities:

☐ _____

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☐ _____

☐ _____

☐ _____

☐ TUESDAY

To do list:

Course activities:

☐ _____

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☐ WEDNESDAY

To do list:

Course activities:

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☐ THURSDAY

To do list:

Course activities:

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☐ FRIDAY

To do list:

Course activities:

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WEEKEND ACTIVITIES:

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Brain Breaks

What are brain breaks? Young learners often struggle to stay focused for long periods of time. Brain breaks are short periods of time when we take a step away from the routine work we are doing. They are quick and effective ways to energize and refresh our thinking.

★ Research indicates that brain breaks improve concentration and relieve stress. They increase productivity and provide children with opportunities to develop their social skills and creativity through kinesthetic activities. They also boost brain function! Use these short brain breaks to help refocus before getting back to work.

- 1. Dance Party:** Put on some fun music and dance!
- 2. Keep It Up:** Get a beach ball and keep it from hitting the ground. Add an additional ball to make it even more fun!
- 3. Jump Counting:** Have your child count while jumping with each count. Challenge them by counting by twos, fives, or tens!
- 4. “Head, Shoulders, Knees, and Toes”:** Use a movement song like this one to get your child moving. For added fun, see how fast you can go! This is a great one for young learners.
- 5. Freeze Dance:** Similar to the Dance Party brain break, this one incorporates listening skills. When the music stops, your child must freeze and hold their position until the music begins again.
- 6. Physical Challenges:** Engage your child in the classic challenge of rubbing their belly, and patting their head. Another version to try is to grab your nose with your left hand, and grab your left ear with your right hand.

Brain Breaks

- 7. Race in Place:** Have your child stand up and run in place. On your signal, your child will get back to work.
- 8. Simon Says:** Play this oldie but goodie to see how well your child can follow specific directions...but only if Simon Says!
- 9. Rock, Paper, Scissors:** Teach your child to play this fun, quick game and see who wins! Best out of three.

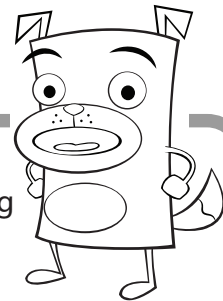
For another approach to brain breaks, try these:

- **Drawing or coloring**
- **Mental math:** Give a sequence of instructions for learners to follow while doing math in their head.
- **Invisible pictures:** Have your child draw an invisible picture in the air and try to guess what it is.
- **Story starters:** Begin a story for one minute and let your child finish the story on their own.

Name _____

Date _____

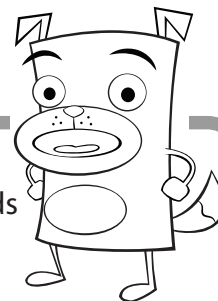
STEM Design Challenge: Plan, Reflect, Revise



Part 1: Plan

Directions: Create a plan for your STEM design challenge by drawing pictures or writing words in the space provided.

STEM Design Challenge: Plan, Reflect, Revise



Part 2: Reflect

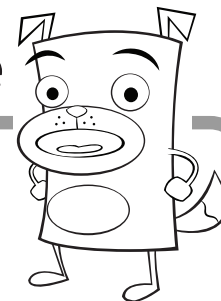
Directions: Reflect on your STEM design challenge by drawing pictures or writing words in the space provided. Think about the following questions:

- What worked?
- What did you change?
- What did you learn?
- What are you still wondering?

Name _____

Date _____

STEM Design Challenge: Plan, Reflect, Revise



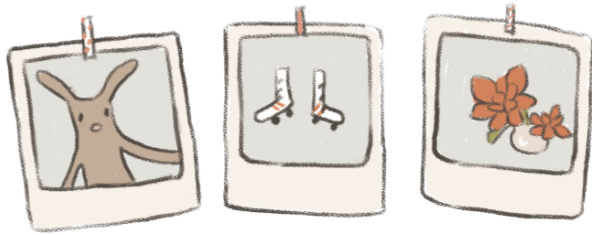
Part 3: Revise

Directions: Draw a picture and/or write words to show how you would change your design based on what you learned!

Whimsical Activity Choice Board

directions: Choose one or more activities to complete at home.

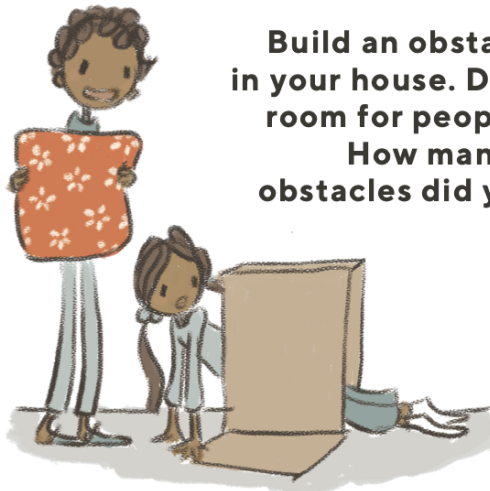
Take pictures of your favorite things in the house. Get help to send them to friends or family with a message about why you took those pictures.



feed me the mouse!



Get an old electronic device that does not work anymore, like an old telephone. Give it a new job as a puppet. Make it "say" and "do" things. What will be the puppet's message?



Build an obstacle course in your house. Do you have room for people to race? How many different obstacles did you create?



Host a finger puppet show. Make puppets with paper and tell a story. You can also retell a story you know really well.

Collect flowers, leaves, and other natural ingredients to create a fairy potion. Imagine what would happen if someone drank the potion. Does it affect the way they think, act, or feel?



WARNING: Do not drink the potion or give it to animals or to other people!

Use cookie cutters or plastic utensils and play dough to make the habitat of an animal. Then tell a story about the animal's habitat, or tell facts about the animal and its habitat.



Building Brick Challenge: Build a Boat



Develop your child's mathematical and engineering skills with this fun building brick challenge.

In this activity, your learner will be challenged to create a boat out of building bricks. They can even test out their design to see if it floats! This activity is a great way to “seas” the day by encouraging creativity and problem-solving skills in your child.

What You Need:

- Building bricks of any size and shape

What You Do:

1. Ask your learner, “Can you build a boat out of building bricks?”
2. Encourage your child to make a **plan**. Ask, “How many bricks do you think you will need?” or “Do you want to draw a picture of your boat first?”
3. Give your child time to **create** their design. Ask, “Do you need help?” (They should ultimately be doing most of the building.)
4. Have designers **play** with their new design. Ask, “Do you think your boat will float in water?” Have them test their boat in the water.
5. After testing out the design, ask your learner what ways they can **adjust** their design. For example, “Is there anything you want to change about the boat?” or “What do you think you can do to make it float?”
6. Challenge designers to **share** their new designs. They can record a video, or write a few sentences about the design and include a drawing or picture of it. Prompt them to include details about the boat and any challenges they had while building it.

Amplify this challenge! Choose one or more of the following questions to add a new level of difficulty to the challenge:

- Can you make your boat float? (If it didn't float before)
- Can you make your boat float with three toys in it?
- Can you time how long your boat stays afloat?

Dance Party Choice Board

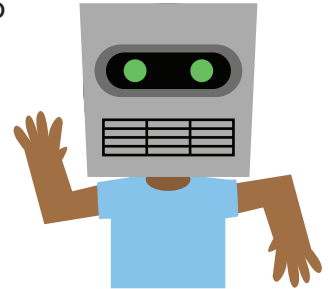
Directions: Choose a song and use one of the following to get your body moving!



Join the ballet: Dress up in your fanciest clothes and become a ballerina on the stage.



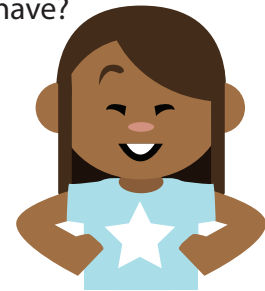
Robot dance: Turn into a mechanical robot and see who can do the most realistic robot moves!



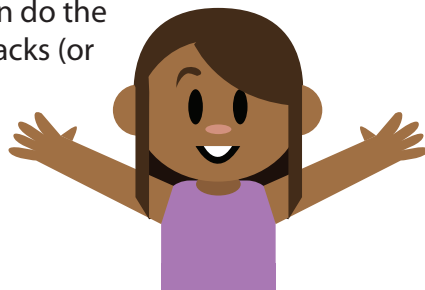
Spotlight dance: Grab a flashlight and take turns dancing in the spotlight.



Dance like a superhero: What kind of superpowers do you have? Incorporate your superpower into your dancing.



Jump to the beat: Put on some upbeat music and see who can do the most jumping jacks (or jumps) for the duration of the song. The winner chooses the next move!



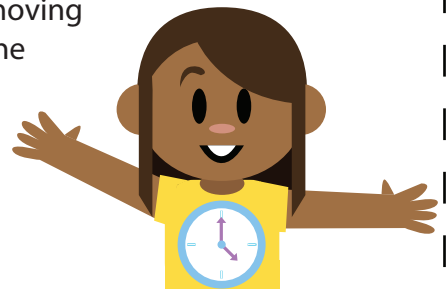
Scarf or ribbon dance: Grab some scarves, ribbons, or long pieces of fabric and dance to the music using your materials as a prop.



Animal dance: Turn on some lively instrumental music and turn into your favorite animal on the dance floor!



Slow motion dance: Dance as slowly as you can while still moving your body for the entire song.



Hop in Order



Physical activity comes in many shapes and forms, and often in the entertaining form of games! Physical activity strengthens muscles, bones, and joints, while also supporting mental health, sleep, and other aspects of life. Here is a fun at-home physical activity that encourages movement while also working on literacy or math skills! In this activity geared towards children from preschool through second grade, children will hop in order of game cards of your own making—be it alphabetical order, numerical order, sentence order, skip-counting, story sequence, and more. The variations are endless, and children will enjoy the combination of movement and learning!

What You Need:

- Index cards or blank paper cut down to card size
- Markers

What You Do:

1. Get out 5–10 index cards (or small pieces of paper), and write either letters of the alphabet (lowercase or uppercase), numbers (e.g., between 0-20, 100-150, etc.), or sight words on each card.
2. Choose a spot—either inside or outside—where there is enough space to move around without knocking anything over.
3. Place the cards on the ground in order (such as alphabetical or numerical) and far enough apart to encourage mid-size jumps.
4. Invite your child to start at the beginning and hop to the end in the given order or sequence, reading each card aloud. For older kids, you can give them math problems for them to solve (e.g., have them hop to the sum of $5 + 5$) or practice reading skills by laying out words that create complete sentences.

Get creative and use different areas around your home and incorporate different movements for subsequent rounds (e.g., tiny hops, jumping on one foot, walking backward). Invite your child to take part in the planning for siblings or other family members, and consider playing as a family!

Animal Movement



Get active at home by pretending to be different animals with this animal movement activity that the whole family can enjoy together. Staying inside or close to home doesn't mean you can't get your body moving in new and exciting ways! Regular physical activity will increase muscle tone, strengthen bones, and support mental health. As you take turns leading others in different animal movements, consider adding your own additions to the game, or moving throughout different rooms or into the yard! Designed for children from preschool through first grade, this fun and engaging activity is a great way to get moving, be silly, and practice gross motor skills.

What You Need:

- Animal Movement Cards worksheet

What You Do:

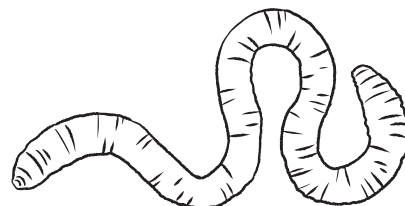
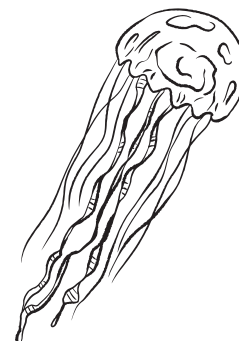
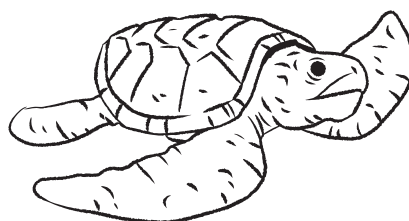
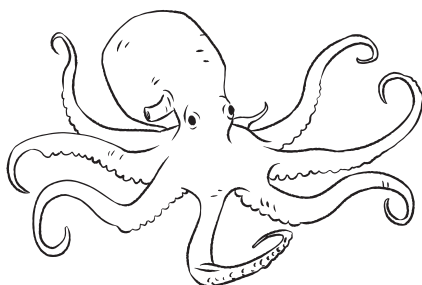
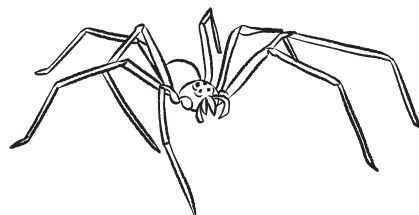
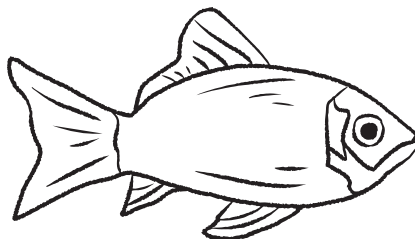
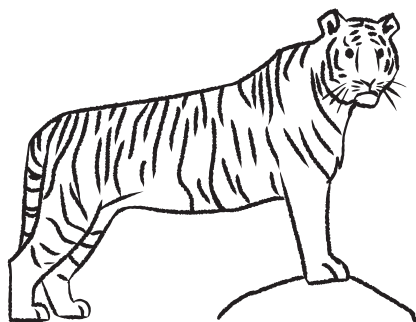
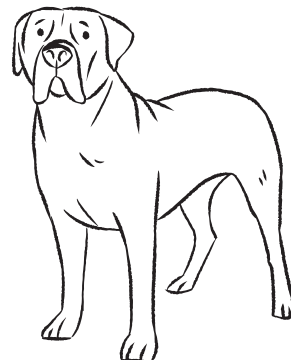
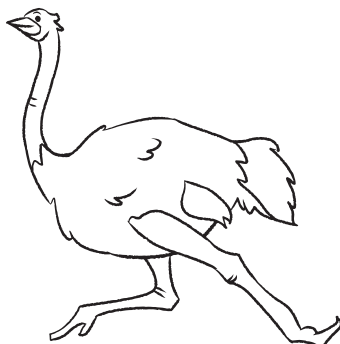
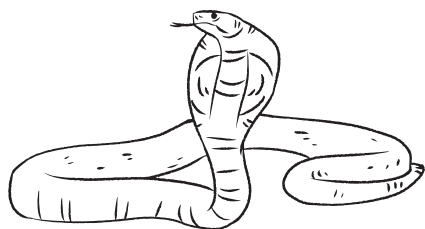
1. Cut out the animal cards and place them in a stack face down.
2. Ask your child if they want to imitate the movement and sound of each animal or just the movement.
3. Decide who will go first, then have that person choose a card from the stack of cards. The player choosing the card will model how to act out the movement of the animal, then all players will copy the movement.
4. Continue to play until all the cards have been used up.
5. Extend the game by creating your own cards to add to the stack. Challenge your child to write (or have younger children dictate) details about the movement or animal (e.g., a snake slithers).

Name _____

Date _____

Animal Picture Cards

Directions: Color the pictures. Then cut out the cards and use them to play a game!

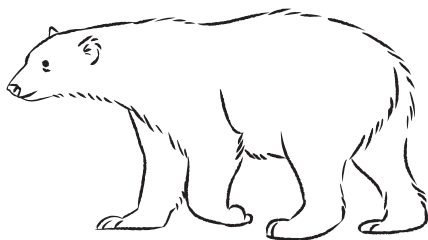
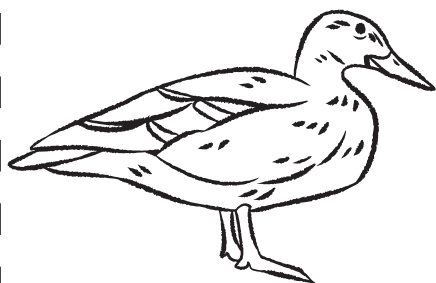
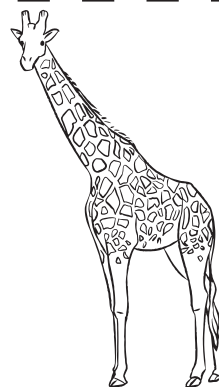
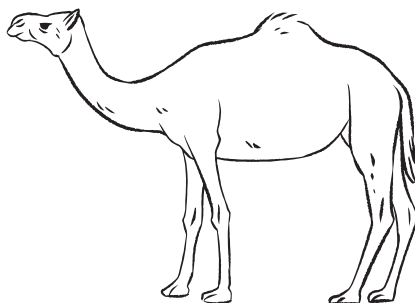
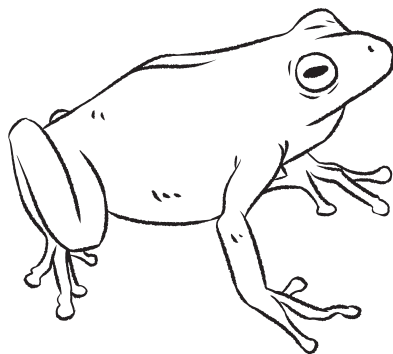
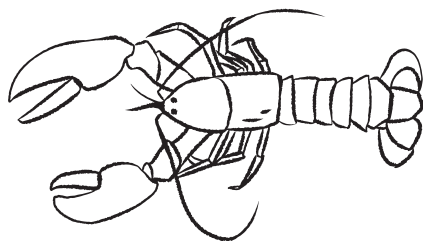
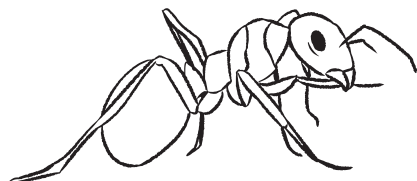
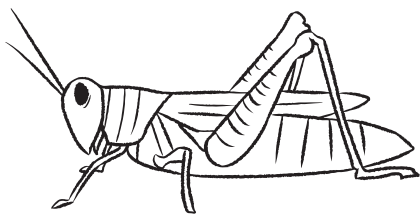


Name _____

Date _____

Animal Picture Cards

Directions: Color the pictures. Then cut out the cards and use them to play a game!

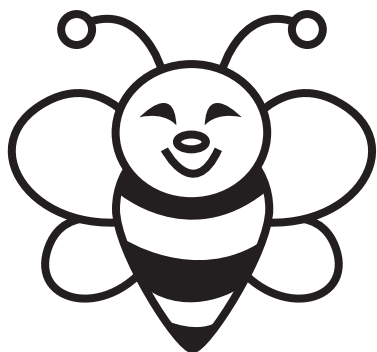


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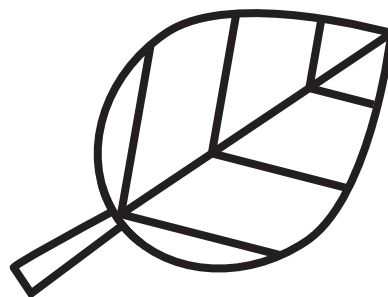
Date _____

Chalk Walk Choice Board

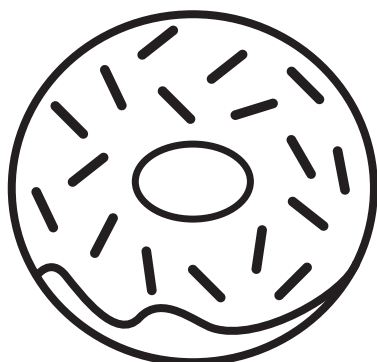
Directions: Take a walk around the neighborhood. Choose one of these encouraging drawing options and draw it on the sidewalk in your neighborhood. Color in the affirmations on the choice board when you finish drawing them.



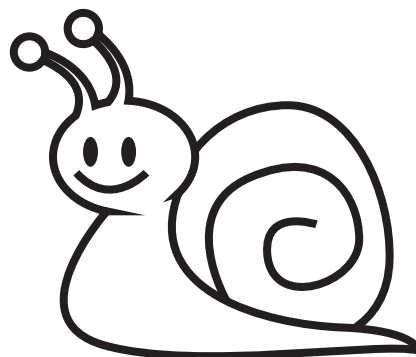
Bee Kind



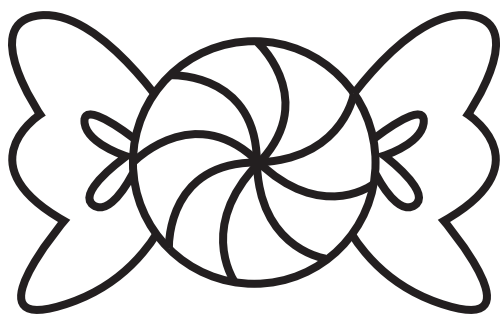
We be-leaf in you!



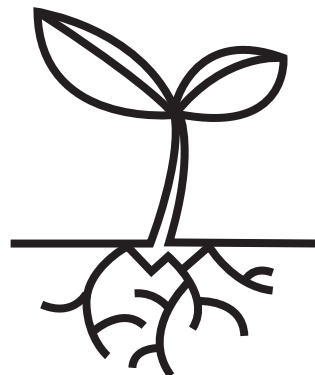
Donut give up!



You snailed it.



Daily Encourage-Mint



We're rooting for you!

Build a Tunnel



If your child has ever ridden in the subway or metro, or gone on a long road trip, they have probably traveled through a tunnel. Tunnels are located underground and sometimes even underwater. Some tunnels are dug just to help transportation vehicles, but other tunnels have laboratories, or are created to observe underwater animals at aquariums.

Tunnels are dug underground for various reasons. Thousands of years ago, people dug tunnels to take out minerals from the ground. Farmers also made tunnels for irrigation, and before we had toilets, people made sewage channels to dispose of waste.

In this science and engineering activity, challenge your child to design and build a tunnel of their own. During their planning process, ask them to decide on a purpose for their tunnel and how it will help make people's lives easier. Encourage your budding engineer to imagine the location of their tunnel and how it can be helpful to people, as well as aesthetically pleasing.

What You Need:

- Access to the internet
- Variety of household materials, such as:
 - Play dough
 - PVC pipes
 - Toilet paper or paper towel rolls
 - Paper
 - Tape
 - Glue
 - Paint

What You Do:

1. Review the information from the introduction to this activity with your child.
2. Conduct a search online for additional facts and examples of tunnels.
3. Show pictures of various tunnels from around the world. Ask your learner if they can think of any tunnels they have seen before (such as at the playground or on road trips).
4. After a conversation about the purpose of tunnels and where they are located, ask your learner, "Can you build your own tunnel?"
5. Encourage your child to make a plan, thinking about materials they will use and what their tunnel may look like. They can even draw a picture of their proposed tunnel. To encourage thinking, ask your learner:

Build a Tunnel



- What will your tunnel look like?
 - What materials will you use to make your tunnel?
 - How much space will you need?
 - What is the purpose of your tunnel?
6. Give materials to your child, or let them choose what they will need for their tunnel.
 7. Make sure you're available for questions or assistance while your child creates their design, but have them build the tunnel on their own. Encourage your child to refer back to their plan.
 8. When they're ready, tell your learner to play with their new tunnel. It's important to remind them about the purpose they set for their tunnel. Ask your child:
 - Is your tunnel strong?
 - Is it able to do what you wanted it to do?
 - Can you think of things to make your tunnel better?
 9. After testing out the design, ask your learner to think of ways they can adjust their design. For example, ask, "What changes can you make to the tunnel? What do you need in order to make adjustments to your tunnel?"
 10. Allow time for your child to share their new designs. They can record a video explaining the tunnel and its purpose, or they can write an informational, how-to explanation about their tunnel. Make sure they take pictures to include in their writing.

Amplify this challenge! Choose one or more of the following questions to add a new level of difficulty to the challenge:

- Can you develop the landscape around the tunnel? People create tunnels usually through mountains, large hills, or underwater.
- Can you make your tunnel longer? The largest undersea tunnel in the world is 31.4 miles long with 23.5 miles underwater.
- Can you make your tunnel stronger to withstand the elements and storms?
- Can you create a tunnel using a different method? Research the different methods for creating a tunnel and try to make a new tunnel with a different method. Compare the new tunnel to your first tunnel. Which tunnel serves its purpose best? Why do you think that is?

Design Challenge: Making a Catapult



In this activity, your child will be challenged to use three simple materials to create a launcher for an action figure or small toy. This prompt is intentionally open-ended so that your child can be creative about how they use the materials.

The purpose of this activity, like many design challenges, is for your child to gradually develop skills of empathy, persistence, and resilience. We have given instructions that you can use to guide your child through each step of the design thinking process. Make sure to complete each step in the instructions so that your child can fully experience the design thinking process, which includes phases of brainstorming, prototyping, testing, reflecting, and modifying. However, feel free to go beyond what we have written, and have fun with this activity!

What You Need:

- One paper cup
- A rubber band
- One plastic spoon
- An action figure or similarly-sized toy
- Pen and paper for note-taking

What You Do:

1. First, explain the prompt of this challenge to your child. Tell them that the purpose of this activity is for them to come up with a creative way to use a cup, a rubber band, and a spoon to create a catapult for their action figure or toy.
2. Mention that there isn't only one way to go about this challenge: It's open-ended, and your child should know that they can come up with several different ideas.
3. Once your child has a clear understanding of the prompt, it's time for them to brainstorm different ways they can use their materials. Feel free to show your child the materials you're providing, but don't let them start building quite yet.
4. Ask your child to write or draw all their ideas on a piece of paper so that they can refer back to them. Alternatively, you can ask your child to explain their ideas to you while you write and draw them on a piece of paper.

Design Challenge: Making a Catapult



5. After your child has brainstormed for a few minutes or can no longer come up with any ideas, ask them to choose the idea they think will work best. This is an important step of the design thinking process because it teaches your child to prioritize the functionality of their design over their personal preferences. Also, this will help prevent your child from getting emotionally attached to a single design.
6. Now that your child has decided which design they think will work best, allow them to start building! In order to develop resilience, it's important that your child learns to work through challenges independently. However, depending on the capabilities (and age) of your child, you may need to assist them as they put their prototype (design) together.
 - Generally, we recommend that you intervene only if you have a safety concern or if you feel that your child absolutely can't make any progress without your assistance.
7. After your child has finished building their prototype, it's time to test it out! Allow them to try launching their action figure and observe the process.
 - If the catapult successfully launches the toy, congratulate your child on their success.
 - If the prototype doesn't work, make sure your child doesn't feel discouraged. It's important to encourage your child to identify why their design didn't work, and help them go back to the beginning of the design thinking process to create a better one. Before your child starts over, you may want to ask them the following questions so that they can think about what they should change in their next design: "What worked with your design? What didn't work with your design? Which part of your design do you think you should change next time?"
8. Continue repeating this process until your child has created a catapult they are proud of!
9. In order to have your child reflect on the design thinking process, ask them some of the following questions:
 - a. What was the best part about your final design?
 - b. What could you have improved in your final design?
 - c. What was the most challenging part of this activity?
 - d. What did you learn?

Design Challenge: Marble Labyrinths



In this activity your child will create a marble maze out of large straws and other materials. This challenge allows for open exploration time with the materials and then provides challenges for your child to complete based on how they respond to being able to first create a maze without restrictions. This activity gives your child room to try a challenge multiple times and many different ways, and gives your child the opportunity to solve a problem creatively.

What You Need:

- 1-2 marbles
- Large milkshake straws
- Any other recycled materials that your child would like to use in their maze
 - Bottle caps
 - Popsicle sticks
 - Cardboard
 - Construction paper
 - Paper towel rolls
- Box lid (a shoebox works well; collect a few of these to make multiple mazes)
- Scissors
- Tape or glue
- Pen and paper for brainstorming and notetaking

What You Do:

1. To begin, talk to your child about what makes a maze fun or challenging and how they can create their own. Ask your child if they have played games with mazes or seen mazes before.
 - What made the mazes difficult or easy?
 - What made the mazes fun?
 - Did the mazes use one kind of material or shape or multiple kinds of materials or shapes?
2. After discussing with your child, show them all of the items they will use to create their mazes and allow them to explore the materials.
 - Ask your child to create a maze for a marble to go through. If your child needs help cutting more straws, assist them with this step. However, try to let your child play with creating different mazes on their own.
 - Remind your child that they can use any of the materials available to make their maze.
3. Once your child has had sufficient time to make a first maze, have your child test it. Instruct your child to place a marble at their maze's entrance and have them solve their maze. Ask your child what they noticed while making and solving their maze.
 - What made the maze easy or difficult to solve?

Design Challenge: Marble Labyrinths



- How did the marbles interact with the different materials?
- How long did solving the maze take?
- What were the steps used in designing their first maze?
- How could using the design process help create more complex or well thought out mazes?

4. Now, introduce the design challenge to your child. Tell them that they will use what they've already learned by making their first maze to solve different maze challenges. Give your child a challenge to start. Challenges could include:

- Make a maze using three different kinds of materials.
- Make a maze using only four straws.
- Make a maze that looks like a smiley face, heart, or other shape.
- Make a maze that uses only straws or another type of material.
- Make a maze that takes a friend or family member over 30 seconds to solve.
- Make a maze in under one minute.
- Use every material on the table to make a maze.
- Make a maze that has pieces cut out of the base box lid, which make the maze more difficult to solve. (You might have to assist your child with cutting the lid).
- Make a maze with no sides to keep the marble inside of the maze. (You might have to assist your child with cutting cardboard or their box lid).

5. Ask your child to brainstorm different ways to create a maze for one of the challenges. Have your child draw or write their ideas on a piece of paper. Your child could also lay pieces in their maze box without taping or glueing anything down.

6. After your child has several ideas, ask them to choose the design that they think will work best.

Remind your child of the goal of the maze: to complete the challenge assigned to them.

- This is an important step of the design thinking process, because it teaches your child to prioritize the functionality of their prototype (design) over their personal preferences. This also prevents them from getting too emotionally attached to one design.

7. Now, it's time for your child to build their maze! Give your child space to experiment, but step in to help if necessary. Allow your child's ideas to evolve as they try out different ways of making their maze and encourage your child to write down what works and what doesn't work.

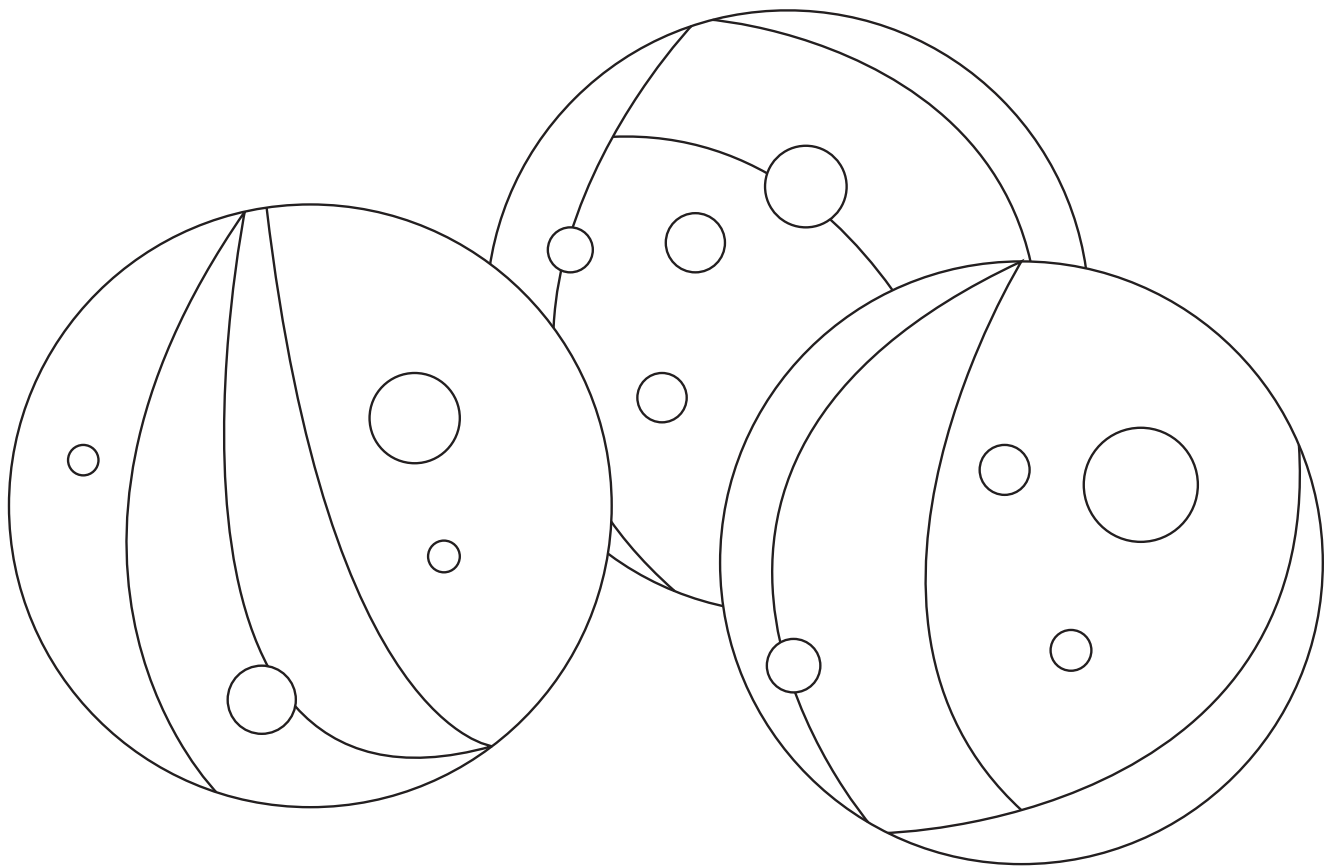
8. After your child has finished their maze, have them test it.

- If your child's maze has successfully completed the challenge, congratulate them on their work!

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- If your child's maze does not complete the challenge, ask them what they think went wrong. Discuss what worked and didn't work in the building process and ask your child to go back to the brainstorming stage and try out a different design.
9. Once your child has successfully completed a challenge, give them another one to complete or allow them to make up their own challenges, restrictions, and requirements for their mazes.



Mix Monochromatic Colors!



This is a great activity to give your child a hands-on lesson all about secondary colors, which are created when two primary colors are mixed together. After learning or reviewing some color-based vocabulary, young artists will choose a secondary color to explore and create a monochromatic color chart of all the many shades of their chosen color. Mixing their own palette of colors and making each one a different tint or shade is a bit like a puzzle—it's a fun challenge that will help children understand how many colors they can get from just a few tubes of paint.

What You Need:

- White watercolor paper cut into a square
- Ruler
- Pencil
- Primary color tempera paint (red, yellow, blue)
- Black tempera paint
- White tempera paint
- Paint brushes
- Water cup
- Mixing palette
- Rags

What You Do:

1. Discuss with your child the difference between **tint** and **shade**, and define the word **monochromatic**.
 - A tint is when white is added to a color.
 - A shade is when black is added to a color.
 - Monochromatic refers to all the hues (tints and shades) of one color.
2. Have your child use a pencil and ruler to grid the white paper into at least 20 squares.
3. Have them decide on a secondary color to work with (green, orange, or purple), and choose the correct primary colors to make their secondary color. Here is where your learner can start experimenting!
 - blue + yellow = green
 - yellow + red = orange
 - blue + red = purple
4. Have your child squeeze out their chosen primary colors onto a mixing palette, and also squeeze out black and white paint in separate areas on the same palette.

Outer Space Painting



This outer space art project is out of this world! It's filled with colorful planets, rockets, astronauts, satellites, aliens, and anything else your young explorer can imagine. This project is a fantastic way to follow up a space-themed story or movie, or a visit to a science museum or planetarium (in person or online). It's also a great way to extend knowledge of our solar system while encouraging your child's imagination.

What You Need:

- Watercolor paper, 8.5" x 11"
- Crayons (take out the dark colors)
- Black tempera paint
- Water
- Paint palette
- Flat paint brush

What You Do:

1. Share photographs of outer space with your child. You can look up images of the solar system, satellites, astronauts, space stations, spaceships, and galaxies. Also, take a look at artist renderings of aliens or outer space fantasy worlds to jump start your child's imagination.
2. On white paper, have your child color their version of outer space using crayons. They should use vivid colors and press down hard with the crayons—solid shapes without any paper showing through will give the best results.
3. Scoop out some black paint onto a paint palette and check its consistency. If it's thick, add a little bit of water. The paint should be similar to the consistency of hot chocolate.
4. Help your child brushing the black paint over the entire picture in even strokes going in the same direction. If the paint is too thick, it won't be resisted by the crayon and will turn the entire picture black. If the paint is too thin, it may go on as gray and require two coats of paint. It's best to test a small section before covering the entire picture.
5. Allow the space exploration picture to dry.

Your child can make a whole collection of these space scenes to string up for an out-of-orbit effect!