Hands-On Learning

Week 7

3rd Grade

Independent Study Packet

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

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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: Brainstorm and Reflection Sheet can be used to help your child dig deeper into the open-ended learning challenges.

WEEKLY PLANNER

Name: _____

Month: _____ Days: _____ - _____ Year: _____

MONDAY

To do list:

Course activities:

TUESDAY

To do list:

Course activities:

WEDNESDAY

To do list:

Course activities:

THURSDAY

To do list:

Course activities:

FRIDAY

To do list:

Course activities:

WEEKEND ACTIVITIES:

Name _____ Date _____

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.

Name _____ Date _____

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
Brainstorm and Reflection Sheet

STEM design challenges are prompts that encourage learners to build something new for a specific reason or purpose. They include ideas from science, technology, engineering, and mathematics.

Directions: Complete this worksheet to help you think about your creation during your design process. Write down information or use check marks to show you have finished the step.

1. **Plan:** Sketch or write about what you will create.

What is the challenge?

Materials:	**Ideas:**

Blueprint: Sketch what your creation will look like.

2. **Create:** Build your creation based on your plan.

3. **Play**: Try out your creation. Swap with another person so they can try it too. Ask them what they would change to make your creation better.

Name _____ Date _____

STEM Design Challenge
Brainstorm and Reflection Sheet

4. **Adjust:** Make changes to your creation if you need to.

What changes did you make? Why?

5. **Share:** Show off your creation! Draw a picture of your finished design.

… and Reflect: Jot down notes about what you will share.

What worked for you? What was a challenge you had during your design process? What did you learn? How did you make changes based on what you learned?

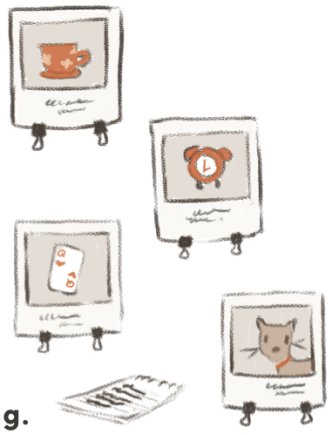
Name _____ Date _____

At-Home Activity Choice Board

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

Select a book that everyone in your home is familiar with. Assign everyone a character. Decide that any arguments that day must take place in character.

Take pictures of at least four random objects around the house. Then create a story which includes these objects, either as characters or important objects, in the story. You can write the story down, or narrate it, creating a video or audio recording.



Improvise a story with another person. You start the story, and another person adds onto the story. Take turns until all storytellers agree on the ending. If you cannot agree, flip a coin to decide who gets to end the story. If the other person is long-distance, send emails back and forth or use a shared document for the story.

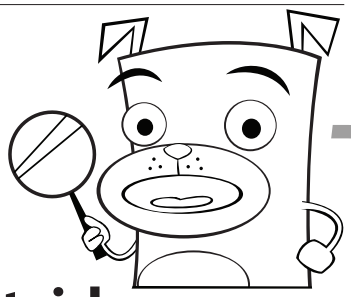
Challenge family members to construct a building that can fit into a small box while you create your own building. Then join all the buildings to create a town. As you assemble the town, ask yourself questions like, "Where do people live and what do they do? What is the environment like? How are these people connected?"

Find two plants in your home, preferably in different rooms, and imagine they are penpals. Write letters from one to another throughout the day, and read them to them.

Choose a time of day that is called Bad Mood O'Clock. It is when everyone is usually in a low mood. When Bad Mood O'Clock strikes, start a dance party or work out together to work the mood away!

Name _____ Date _____

At-Home Scavenger Hunt



Directions: Explore your home and the area around your home to find the items listed below. Once you find the item, write a check mark next to it.

Inside

- ☐ Find something made of metal.
- ☐ Find a fiction book.
- ☐ Find a tool that helps you pick things up.
- ☐ Find an item that is a need rather than a want.
- ☐ Find an object that makes your life easier.
- ☐ Find something on which you can write.
- ☐ Find a photo of someone you love.
- ☐ Find a nonfiction book.
- ☐ Find an item that holds meaning for you.
- ☐ Find something that uses electricity.

Outside

- ☐ Find something that makes a noise.
- ☐ Find something shiny.
- ☐ Find something made of a natural resource.
- ☐ Find an item that is natural and green.
- ☐ Find something to recycle.
- ☐ Find something that uses photosynthesis.
- ☐ Find an item that does not need sunlight.
- ☐ Find something that is living.
- ☐ Find something that is nonliving.
- ☐ Find an item that is helpful to humans.

Which item on the inside list was most difficult to find? Why do you think that is?

_____

_____

_____

What item on either list was most interesting to find? Why? Record your answer and sketch an illustration of the item on the back of this sheet or another piece of paper.

_____

_____

_____

Name _____ Date _____

Dance Battle

Encourage the brain-body connection in your child with movement games. This activity will decide who's got the better moves, throughout the ages of music! In addition to providing an opportunity for movement, this can be a great way to connect with your child and show them how dance and music have evolved over time.

What You Need:

- Open space
- Music and speakers

What You Do:

1. Find an open space, outdoors or indoors, with nothing around that can be knocked over once your dance battle kicks off.
2. Show your child some popular dance songs and videos of dances from different time periods; Elvis to disco, 80s pop to the Macarena! Talk to them all about how you danced at their age, as a teenager, young adult, etc.
3. Now play the music and see who's got the better moves!
4. Here are some enrichment prompts to ask your child that will take your dance battle to the next level:
   - Some dances are more directional and some allow for more freestyling; which do you like more?
   - What kind of music do you like dancing to most?
   - Can you make up your own dance?
   - When will current popular music become the next "oldies"?

Dance Ideas:

- Ballroom dancing: Throw it way back to classical music. Try the waltz!
- Line dancing: Try the "Macarena".
- Disco: Try "Y.M.C.A."
- Elvis Presley: Try to get your knees moving like "The King"!
- Newer dances: Try "the floss".

Name _____ Date _____

Building Brick Challenge: Make a Tic-Tac-Toe Grid

Did you know tic-tac-toe has been played since the times of the Roman Empire? Tic-tac-toe is played on a grid of 3 by 3, where opponents take turns marking boxes with either an "x" or an "o" while trying to get three of their markings in a row.

In this activity, your learner will be challenged to create their own tic-tac-toe grid out of building blocks. The best part is that when they are done, they have their own homemade game to play. During this activity, your child will work on developing problem-solving and spatial awareness skills.

What You Need:

- Building bricks of any size and shape

What You Do:

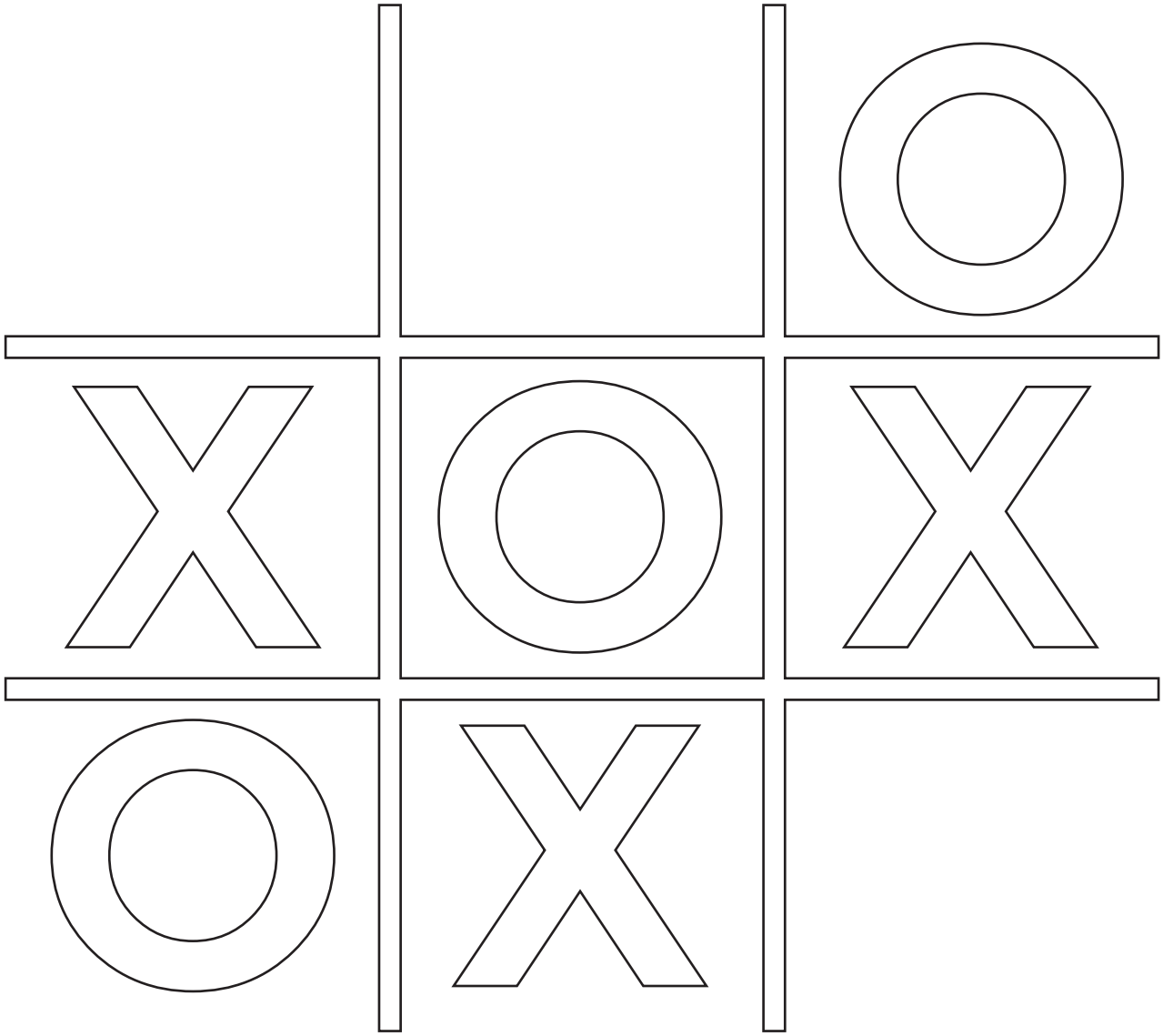
1. Ask your learner, "Can you build a tic-tac-toe grid?"
2. Encourage your child to make a **plan**. Ask, "How many bricks do you think you will need?" or "How large or small do you want your grid to be?"
3. Give your child time to **create** their design. Ask your child if they need help, but they should be allowed to do most of the building. You can also ask your child if they want to use other materials to create "x" and "o" pieces.
4. Have designers **play** tic-tac-toe with their new design.
5. After testing out the design, ask your learner what ways they can **adjust** their design. For example:
   - Do you want to make the grid larger or smaller?
   - Do you think tic-tac-toe can be played on a grid other than 3 by 3?
6. Challenge designers to **share** their new designs. They can record a video, or write an article describing it. Ask some prompting questions, like:
   - What did you enjoy the most about this activity?
   - Did you find tic-tac-toe challenging?
   - Who won the most rounds of tic-tac-toe?
   - Did you discover a strategy for winning?

Name _____ Date _____

Building Brick Challenge: Make a Tic-Tac-Toe Grid

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

- Create and play tic-tac-toe on a 5 by 5 grid!
- Make it fun for the whole family by having a family-wide tic-tac-toe tournament!



Name _____ Date _____

Design and Build a City

If you travel through any city, you're sure to notice the hustle and bustle. Cities are full of activity with people entering buildings, stores, parks, museums, and theaters. Children will be traveling to school or playdates, and there are sure to be some construction projects underway. Challenge your learner to design and build a city of their own in this creative engineering activity. Geared toward third, fourth, and fifth graders, this activity allows budding city planners the flexibility to create whatever they desire with gentle prompting questions that will guide them in their design process.

What You Need:

- Various materials around the house, like:
  - Empty cereal boxes or small boxes
  - Tape
  - Paper
  - Any other artistic materials to decorate the city (optional)
- Space to spread out the city

What You Do:

1. Ask your child, "Can you build a city?" Discuss the design, purpose, and outlines of typical cities. Tell your learner their challenge is to create a city worth living in and define what that means to them.
2. Encourage your child to make a plan. Help inspire their thinking by asking:
   - What are some things you like in your town and neighborhood that you would like to include in your design?
   - What are some buildings, services, recreational places, or activities you would like to include in your community?
   - What is the geographical terrain of the city?
   - Is there freshwater located in or near the city?
3. Let your child take their time as they create their own city. Have your child use their chosen resources to build components of their city. They may take a few days, depending on how detailed they would like to be with their buildings, signs, streets, etc.
4. Tell your budding city planner to play with their new design. They can pretend to be a student in the city traveling to school. Ask, "What are some things you would see on the way to school? What would the traffic be like? Would you use public transportation?"

Name _____ Date _____

Design and Build a City

5. After testing out the design, ask your learner to think about ways they can adjust their design. For example, "What do you think will make your community even better? How would you help people feel welcome and safe?"
6. Challenge designers to share and describe their new designs. Some presentation options include recording a video or writing a blog about their design. Make sure they include pictures! As your learner creates their presentation, ask them some of the following questions:
   - What do you want people to understand about your city?
   - Why would people like to live in the city?
   - Which part of your city are you most excited about or makes you the proudest?

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

- Can you create different communities within the city?
- Can you make the community look similar to one you have visited in the past?
- How is your community different from one located in another country?
- How would moving buildings around change the feel or purpose of the community?
- Can you adjust your city so that electricity is powered by renewable energy?
- Can you make a big tourist attraction in your city to promote tourism and strengthen the economy?

The opportunities for learning are endless with this fun and engaging design experience. This is a project that can take a day or weeks.

Name _____ Date _____

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.

Name _____ Date _____

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?

Name _____ Date _____

Design Challenge: Making a Boat

In this activity, your child will be tasked to create a boat that can successfully float 25 pennies. They can be creative with how they make their boat and can use any household items. We have given instructions which you can use to guide your child through the design thinking process. We have also given step-by-step instructions for making a boat in case your child is stuck and needs some inspiration.

What You Need:

- Plastic straws
- Duct tape
- Plastic wrap
- Plastic container/Tupperware
- Mini paper cup
- 25 pennies set aside in a plastic bag
- Pen and paper for taking notes

What You Do:

1. Before your child gets to work, make sure that they fully understand the prompt of this challenge. Explain to them that they're supposed to use the materials you're providing in order to create a boat that will hold 25 pennies and stay afloat.
2. Ask your child some of the following questions so that they start thinking about why certain things float and why others sink:
   a. Besides a boat, what are some things you know that float in water?
   b. What are some things that sink in water?
   c. Why do you think a boat is able to float? (Answer: the concept of buoyancy.)
3. Explain to your child that buoyancy is a force underneath an object that pushes it upward. When an object (like a boat) has more buoyancy, it can float higher on the water because it is being pushed upward with more force.
4. After your child fully understands the prompt of this challenge and has considered the properties of objects that float, they can begin **brainstorming** different ways to build a boat of their own.
   - Feel free to show your child all the materials you will provide, but don't let them start building just yet. Instead, have them draw or write down their ideas on a piece of paper so that they can refer back to them later. (You can also write them down if you'd like.)
5. Once your child is done brainstorming, ask them to choose the idea they think will work best. Be sure to ask them why they are choosing this design, emphasizing the purpose of the boat (to float 25 pennies).

Name _____ Date _____

Design Challenge: Making a Boat

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

6. Next, allow your child to begin **building**. Be sure to supervise for safety purposes, but allow them to work independently through challenges as much as possible.
7. After your child is done building, it's time to **test** the design. Have your child place the 25 pennies on their boat, counting them aloud one by one. Then, fill a container with water to serve as a "pool" for the boat to float on. Next, have your child place their boat on the water and observe whether it successfully floats the pennies.
   a. If your child's boat successfully floats with 25 pennies in it, congratulate them for their success!
   b. If your child's boat sinks, make sure they aren't discouraged. Ask your child what they think went wrong and why. Then, encourage them to go back and repeat this process in order to make a boat that works next time.

Below, we have written instructions for building a boat in case your child is struggling to come up with ideas. Feel free to have your child build something entirely on their own, or use the procedure below:

1. First, take a piece of duct tape and stick some plastic straws to the adhesive side of the tape.
   - Ask your child why plastic straws are a useful item to make a boat out of. (Answer: plastic straws are buoyant, meaning they're able to float in water.)
2. Next, wrap your straws and duct tape in plastic wrap.
   - Ask your child why they think using plastic wrap is useful. (Answer: plastic wrap makes the boat "waterproof.")
3. Tape down the plastic wrap using duct tape to secure it in place.
   - At this point, you have finished building the boat's structure.
4. After your child has finished building their boat, have them tape down a small paper cup to serve as a weight holder for their pennies.
   - Ask your child why they think it's important to have a weight holder. (Answer: a weight holder balances out the weight of the boat, so it won't tip over when you place the pennies on top.)
5. Next, have your child add the pennies inside the cup one at a time, counting how many there are.
6. Finally, test out your child's boat!

Name _____ Date _____

Tackle a Tinfoil Painting

Etching dates back to the 5th century, made famous by artists like Albrecht Durer. Also called intaglio, etching on metal is typically done by covering a metal plate with a waxy coating and then carving a picture into the plate. The plate is then dipped in a special acid called mordant, eating away at the metal that's not protected by the wax and creating indentations that allow the metal plate to be inked and printed. Instead of bringing hazardous chemicals into your home, your child can explore this ancient art technique with the help of some tinfoil, black paint, and the end of a paintbrush!

What You Need:

- Tinfoil
- Scissors
- Tape
- Cardboard
- Black tempera paint
- Dishwashing detergent
- Large paintbrush
- Toothpicks, paintbrushes, and craft sticks for making marks
- Piece of colorful construction paper

What You Do:

1. Do some quick research to learn more about etching with an internet search of Albrecht Durer or intaglio printmaking.
2. Invite your child to cut a 6" x 6" piece of tinfoil using a ruler and scissors. They can use some small pieces of rolled tape placed on the back corners to secure the tinfoil to a piece of cardboard.
3. Have them get out the black tempera paint and a brush. Before they get painting, squeeze a drop or two of dishwashing detergent onto their tinfoil.
4. Encourage your child to use a big brush to evenly distribute the black paint mixed together with the dishwashing detergent all over the tinfoil.
5. While they're waiting for the paint to dry, have them brainstorm ideas for their artwork and create a sketch to use when etching. While they're drawing out their ideas, discuss how they can use cross-hatching to create shading and depth within their etching! Cross-hatching is using lines drawn closely together in one direction and then layered with another set on top to create changes in tones. Have them practice using a pencil.
6. It's etching time! Offer your child several mark-making implements of various sizes, such as toothpicks, the ends of paintbrushes, or tongue depressors.
7. Have your child "scratch" their design into the dried paint, using the different-sized implements to create lines in various sizes.
8. Once your child has finished, they can carefully remove the tinfoil from the cardboard and mount it on a colorful piece of construction paper!

Name _____ Date _____

Star Card

You can shoot for the stars, but why not grow them from a pot, too? Plant a pot of stars with this magical card. Using little more than foam and construction paper, children will create a pot, some leaves and foliage, and stars that grow from the pot like flowers. Your child will practice cutting shapes and layering patterns as they work on this creative craft. This is a fun and easy way to ring in the spring or summer seasons, and it makes a great birthday or holiday card to give to friends and family!

What You Need:

- Construction paper (we used glitter-embedded construction paper)
- Orange and red foam sheets
- Scissors
- Glue
- Pencil

What You Do:

1. Have your child fold one sheet of construction paper in half to create the base for the card.
2. Have them draw and cut out the base and lip for the pot from the foam sheets. They can glue them together to finish the pot and set it aside.
3. Encourage your child to draw the outlines for stars of all sizes on different colored construction paper. After they're done drawing them, they can cut them out.
4. Now, they can draw and cut out leaves from green construction paper.
5. Finally, it's time to assemble all of the parts. Have them glue down a few of the leaves first, then glue down the pot, the rest of the leaves, and all of the stars to complete their star card.