



## Challenge #1: Design A Board Game

### Inspired by Book 3 - "Let The Games Begin!"

Have fun creating your own Board Game along with the rules to play. This is a great way for you to be creative and inventive, while improving language art and math skills at the same time.

### Challenge Objective

The objective for this challenge is to create a board game from scratch! There is a lot of room for creativity and fun as they determine what their players need to do to win the game.

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### What You'll Need

- A piece of poster board (11" x 17" is a good size)
- Some paper to use to sketch out ideas and write down the rules
- Pencils, markers, and/or crayons
- Colored construction paper
- Glue
- Scissors
- Tape
- Set of dice (or 1 die)

### Instructions

1. Gather some inspiration to get started! Look at a few board games that you have in your house or even some online games. How do you play? Do you roll dice? Do you pick a card? Keep these things in mind when creating your own.
2. Decide the theme of your game. Will it be set in space, on an island, in your town?
3. Sketch out the game board - you might use blocks of color, squares or circles for the path! Don't forget a start and finish point for your game! Are your spaces numbered? If so, do they count up by 1s or 5s?
4. Add in some special items - are there are special pathways that take you ahead if you land on them?
5. Create your rules. How many people can play? What do they need to do in the game to get from the start to the finish (do they roll a die? Do they pick a card?)
6. You will need game pieces for your players to use. You can find things in the house like a penny, a button, and a thimble or you can create your own pieces by cutting them out or making them out of playdough or clay. You will need to be sure that each piece is unique so the players know which piece is theirs.
7. You have your sketch, your playing pieces, and your rules, now it's time to transfer your design to the poster board. It is best to do it in pencil first before you add color with markers and crayons. You can add drawings on the board to match your theme. Be creative!
8. Now you are ready to challenge your friends and family to a game. Review the rules with the players and have fun! Who will make it to the finish line first!



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## Challenge #2: Ice Cream Flavor Fun

This sweet activity will encourage you to be creative while learning how salt effects the freezing temperature of water.

### Challenge Objective

The objective for this challenge is to invent your own ice cream flavor, name it and create a poster to "market" it to customers. If you owned an ice cream parlor, how would you sell your new flavor?

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### What You'll Need

- Milk, vanilla, sugar, ice, salt
- 2 quart sized plastic baggies
- 1 gallon sized plastic freezer bag
- A hand towel or gloves to keep your fingers from getting too cold!
- Ingredients for your new icecream flavor
- A poster board
- Markers and crayons
- Construction paper
- Scissors

### Instructions

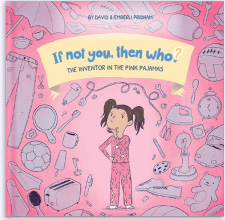
1. Plan out what flavor ice cream you are going to invent. What do you want in it? Fruit, chocolate, vanilla, peanut butter, etc.
2. With any invention, it is important to come up with a name. You want everyone to love your new ice cream flavor so what will you name it? You could name it after yourself (Susie's special flavor) or maybe the name is how it makes you feel (Happy Camper Ice Cream). You can also name it for the ingredients you put in (Chocolate Sprinkle Mint Ice Cream).
3. Mix the milk, vanilla and sugar together in one of the quart sized bags. Add your special ingredient(s) that makes your ice cream unique!
4. Seal the bag tightly and squeeze out the extra air. Double bag this with the other quart size bag to ensure no ice cream leaks while shaking!
5. Fill the gallon sized bag with ice and sprinkle salt on top of the ice.
6. Place the quart sized bag into the gallon sized bag. Let all of the air escape the bag and seal it.
7. Wrap the bag in a towel or put on your gloves so your hands don't get cold! Shake and massage the bag making sure the ice surrounds the mixture - shake for 5-8 minutes to freeze the entire mixture.
8. Create your poster to "sell" your new ice cream flavor invention. You can take a picture of the ice cream in a bowl, print it out and put it on your poster, or you can draw a picture of it. Make sure to put the name of your flavor invention on the poster. You can even come up with a slogan (something to help tell people why your ice cream is great). Have fun and be creative!



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## Challenge #3: Coral Reef Shadowbox

**Inspired by Book 1 -  
"The Inventor In The Pink Pajames!"**

This activity encourages you to explore the coral reef ecosystem. You will have fun learning as you add different elements to your colorful coral reef.

### Challenge Objective

In this challenge, you will create a replica of a coral reef ecosystem in a shoebox. It is easy and fun to add the coral, shells, plants, and fish that you find in a coral reef. Learn how they live together in their bubble. Jacques Cousteau invented the aqualung, a device that makes it easier to explore, collect data, and take photos while underwater which enabled him and others to study the coral reef ecosystem.

### What You'll Need

- Colored paper (blue, tan, white, brown)
- A shoe box
- Glue, scissors, colored pencils/pens, and small sticks

### WHAT IS AN ECOSYSTEM?

"An ecosystem is a geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life. Ecosystems contain biotic or living, parts, as well as abiotic factors, or nonliving parts."

- National Geographic

### Instructions

1. Fill the back of the box with blue construction paper for the water.
2. You can also put tan or brown construction paper on the bottom for the ocean floor.
3. Draw and color different elements for your coral reef. These include colorful fish, coral, rocks, plants and other things found in the ecosystem.
4. Cut the drawings out leaving some extra room at the bottom of the drawing. You will fold over the extra to create a stand for them.
5. Glue or tape all of the elements (except for the 2 colorful fish) that you've created into the shoebox.
6. On the side of the box, punch a small hole large enough for one of the sticks to go through.
7. Push a stick through and then tape a fish onto the end of the stick inside the shoebox. This will allow you to make it look like the fish is swimming through the coral reefs. You can do this on both sides of the box.
8. Finish your shadowbox off by decorating the oceanfloor with some cool rocks or seashells!



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## Challenge #4: Make It Better

Technology makes things easier for us in our lives. Tasks that used to take a long time to do can be done faster, items that were big become smaller and easier to handle. In this activity you will pick something you use every day and invent a way to make it better.

### Challenge Objective

Be an inventor today by making something you use every day a little bit better by adding something to it, or changing something about it.

### What You'll Need

- A couple sheets of paper
- A Pencil and eraser
- Colored pencils, pens or markers

### Instructions

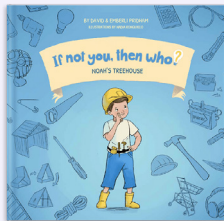
1. Pick an item from the list below:
  - Scissors
  - Hairbrush
  - Toothbrush
  - Spoon
  - Backpack
2. Write down some ideas of how you might make your item work better for you. Think of what you use it for. Could you add a motor to it? Could it work by pushing a button? Maybe it can fold up to a smaller size when you aren't using it. Spend some time brainstorming ideas. It helps if you have the item in front of you and you can look at it and move it around.
3. Decide which idea you like best and draw a picture of what it will look like with your invention. It helps if you label the parts or even write a description of how it will work so you can show it to your family and friends. Who knows... maybe you will have the next great technology invention!

#### WHICH ONE CAN YOU MAKE BETTER?



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## Challenge #5: Build A Bridge!

### Inspired by Book 2 - "Noah's Treehouse!"

This awesome activity will encourage you to problem solve and build! It's a fun STEM challenge that also serves as an introduction to engineering.

### Challenge Objective

The objective of this challenge is to build a bridge that will hold something that weights at least 2 pounds.

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### What You'll Need

- Plastic cups
- Popsicle sticks and/or paper rolled up tightly to make strong posts
- Tape or glue
- String
- A few small items that weigh different amounts with the heaviest being 2 pounds (these could be toys, fishing weights, cans of soup, etc.)

### Instructions

1. Using the listed materials, build a bridge structure that can hold the items you've collected. This may require some trial and error!
2. Starting with the lightest item you've collected, see if your bridge can hold each item one at a time.
3. If the bridge sags or breaks - try to see if you can make it stronger before testing the next item!
4. Once you've created a successful bridge try building a new design to see if it can do better!
5. For fun, try to build the bridge higher by adding plastic cups to the end of the structure to see if you bridge can still hold the items! - be sure to improve on the bridge if it sags or breaks!

### EXAMPLE BRIDGE DESIGNS:



### DO YOU KNOW HOW LONG THE LONGEST BRIDGE IN THE WORLD IS?

The longest bridge in the world is the Danyang-Kunshan Grand bridge in China. It is a remarkable 102 miles long!



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## Challenge #6: Puzzling with Tangrams

This is a fun way for you to learn the relationship of shapes. Have fun putting your tangrams together to create different images.

### Challenge Objective

Using the Tangram image provided, can you cut out the pieces and put them together to create the 3 different images below? What other images can you create with your tangram.

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### What You'll Need

- A piece of cardboard or poster board (8 ½" x 11")
- Print of the Tangram provided
- Scissors
- Glue stick
- Colored paper (optional)

### Instructions

1. Print the Tangram provided
2. Paste the printed Tangram on the piece of cardboard or poster board
3. Cut the pieces out carefully along the lines (you can glue colored paper to the shapes when they are cut out if you would like).
4. Using the shapes provided, see if you can create the following images.
5. After you put these together try to create your own image.

Tangram #1



Tangram #2

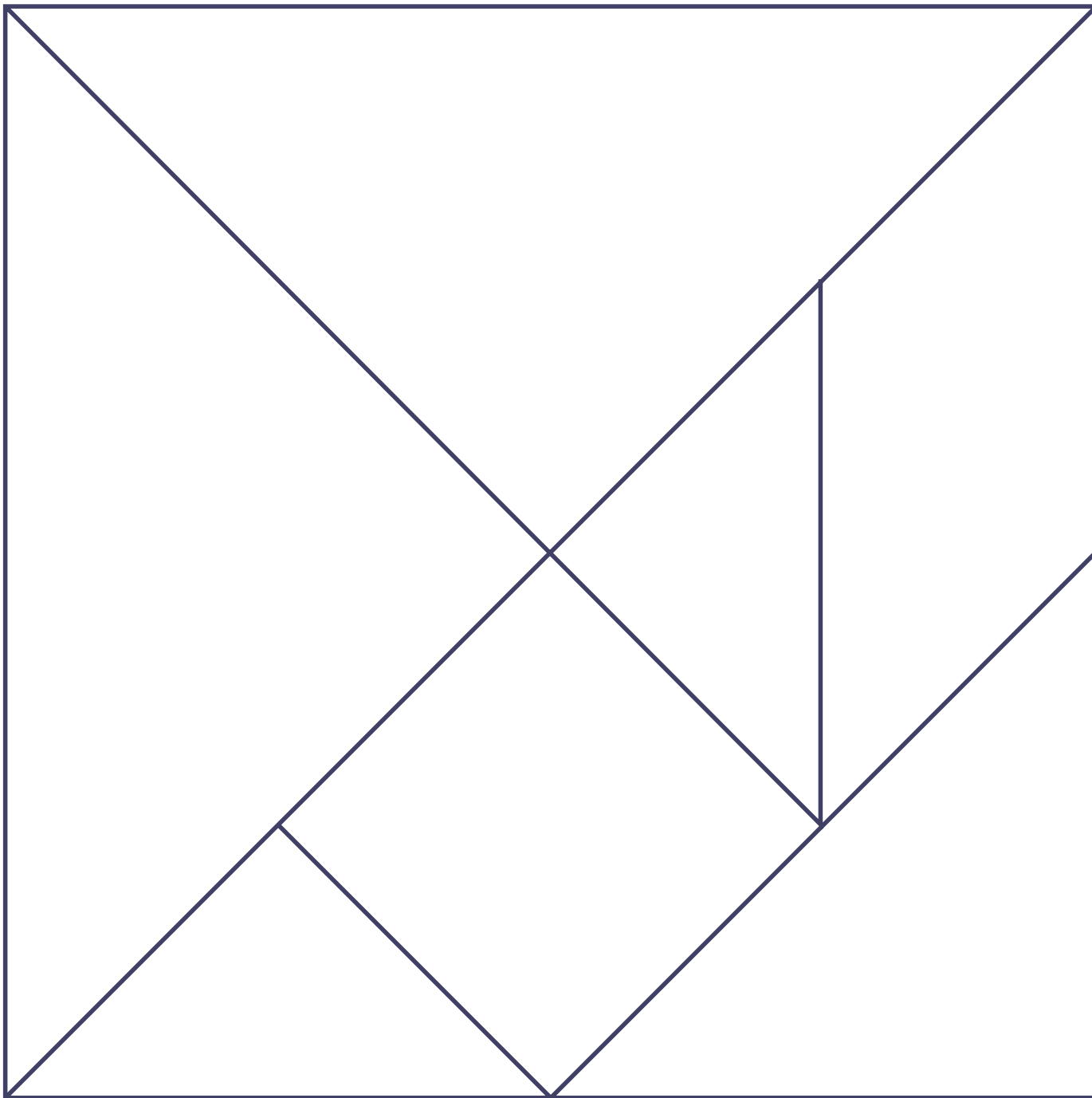


Tangram #3



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## Challenge #7: Build A Kaleidoscope!

A fun activity that will encourage you to get creative. Have fun, while practicing using your creativity and fine motor skills.

### Challenge Objective

Using the Tangram image provided, can you cut out the pieces and put them together to create the 3 different images below? What other images can you create with your tangram.

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### What You'll Need

- A Pringles can
- Acrylic paint
- Colored tissue paper / scrap paper
- Cling wrap
- A hammer and nail
- Scissors
- Tape and glue

### Instructions

1. Take your Pringles can and decorate it - use acrylic or craft paints to decorate the outside. You can use a sponge to dab on different colored paints or use a paint brush to make cool designs! If you don't want to paint, decorate the can with scrap paper and stickers!
2. Using a hammer and nail, make a small hole into the bottom of the Pringles can - you may need an adult's help for this! Be careful! This will be the hole where you look through the kaleidoscope!
3. Decorate the Pringles cap. Cut up pieces of colored scrap paper and glue them to the outside of the Pringles cap. You can even add some glitter, if you have some on hand, to make your kaleidoscope extra sparkly when you look through it!
4. Decorate the cling wrap. Using the Pringles can, trace a circle with a permanent marker onto the cling wrap. Next, decorate that circle with cut up pieces of colored scrap paper and glue. Then take another piece of cling wrap and glue it on top of the decorated piece.
5. Once the paint and glue are dry on everything, it's time to put it all together. Cut around the circle on the cling wrap, but allow a little room and make the circle a little bigger than it actually is.
6. Next, tape the edges of that decorated circle to the outer edges of the open end of the Pringles can. Once you've done that, put the cap on the can, look through the hole, twist the cap and enjoy your kaleidoscope!



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## Challenge #8: Recycled Flower Pots

### Inspired by Book 4 - "We're Going Green!"

This activity encourages you to recycle and be creative! You will learn that everyday items can have a "new life" when used for something else. You will also practice your writing skills by including instructions on how to take care of your plant.

### Challenge Objective

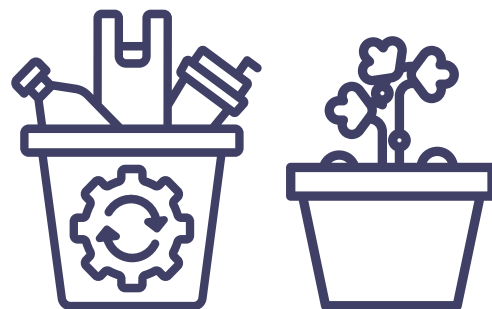
The objective of this challenge is to use a recycled bottle to create an attractive new flower pot! Maybe your mother will display it in the kitchen and you can watch the plant grow. You will need to include instructions on how to care for the plant.

### What You'll Need

- A plastic bottle (Gatorade type bottles work well)
- Scissors
- Paint & paint brushes
- Masking tape
- An index card and a pen/pencil
- Potting soil and seeds (note: radishes and basil seeds grow fast)

### Instructions

1. Cut the top off the plastic bottle (parents will need to help you with this). You will want to cut it at the height of a small flower pot.
2. Use masking tape to tape around where you cut the plastic so you don't have any sharp edges.
3. Turn the plastic flower pot over and poke a couple of holes in the bottom to allow water to drain out of the pot.
4. Now it is time to paint your new flower pot! Be creative. You can paint a background color and then paint designs on it (maybe flowers, animals, a house, or just an abstract design).
5. Be sure to allow time for your paint to dry before you plant your plan in the new flower pot!
6. Once the pot is dry you can plant your seeds. Put in your soil and a couple of seeds.
7. On your index card, write down the instructions to care for your plant to help it grow. (You can read up on how to grow them on the packet of seeds or online. Do they need light? How much water do they need?)



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