

DISCOVER
EXPLORE
IMAGINE

ANN ARBOR HANDS-ON MUSEUM PRESCHOOL VISIT GUIDE



EXPERIMENT
NATURE
WONDER



Preschool Childcare Provider's Visit Guide

There are many great opportunities for preschoolers to learn and explore throughout the museum. This guide will help you make the most of your visit, and provides extension activities to continue your science discoveries after your visit. Get ready to explore!

Planning Your Visit

Field trip information can be found at www.aahom.org/fieldtrips

- We suggest you plan 1 ½ hours for your visit
- A ScienceWorks Lab and/or a lunch will increase the length of your visit
- In general, the museum is less crowded early in the week and early in the school year
- 1 adult chaperon is required for every 6 children
- Admission is \$5 per person for groups of 20 or more (current prices 2012)
- A lunchroom may be rented in advance for \$10 for 30 minutes (current prices 2012)

ScienceWorks Labs

All About Our Senses; 30 minute Preschool lab

Explore the five senses. Can you taste a sound? Smell a color? Come play with us and explore sight, sound, smell, taste, and touch.

Slime Time! 50 minute K-1 lab

Investigate states of matter by measuring and mixing ingredients for two types of slime. Is it a solid, a liquid, or something else? Get ready to get messy!

Preschool Gallery

The Preschool Gallery is designed especially for children 4 years old and younger. Our youngest visitors can engage their senses by splashing in our water tables, participate in dramatic play by dressing up like fire fighters or hosting lunch in the play kitchen. Our newest exhibit to explore is Engineers on a Roll. Funded by Toyota Technical Center, Engineers on a Roll is a combined engineering lab, playscape and climber for preschoolers. Brightly colored and constantly active, our youngest visitors will love directing, sorting and experimenting with balls in motion.

Tips For the Best Visit:

- Make sure your chaperons and children know their groups before arriving.
- Tell your children what to do if they get separated from their group.
- Give each chaperon a different path through the museum. For example, Group A starts in the Preschool Gallery, while Group B starts on the 1st Floor.
- Agree on a signal that means gather together. Make sure teachers, chaperons, and students all know the signal.

How to Use this Guide

Before your visit:

Gather your children together to talk about the field trip. There are many wonderful exhibits that they will explore at the museum, and they will be on a treasure hunt for some extra special exhibits. Show your children pictures of the exhibits in this guide that they will be looking out for. Take some time to talk about how they will recognize each exhibit. Ask what they notice about each one (long colorful pipes, an upside down guitar), and encourage them to describe details. Have the children decide on a special word that means they spotted an exhibit. This is also a perfect time to talk about staying with their chaperon and what to do if they get lost.

During your visit:

As you explore the museum, take some time to stop at the exhibits in this guide as you discover them. Do not worry about finding them all. Gathering your group together to investigate particular exhibits will help slow your children down and encourage them to spend time exploring the exhibits. The mini challenges will help you and your children understand the science behind the exhibit. Don't worry about being an expert on any of the topics. You are exploring along with them.

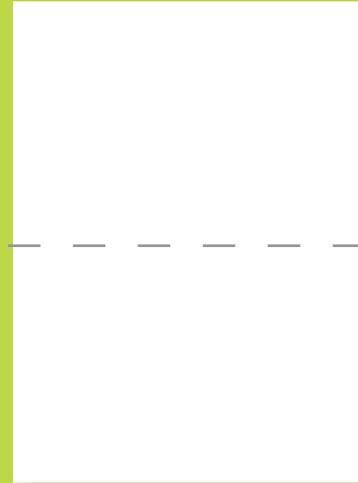
After your visit:

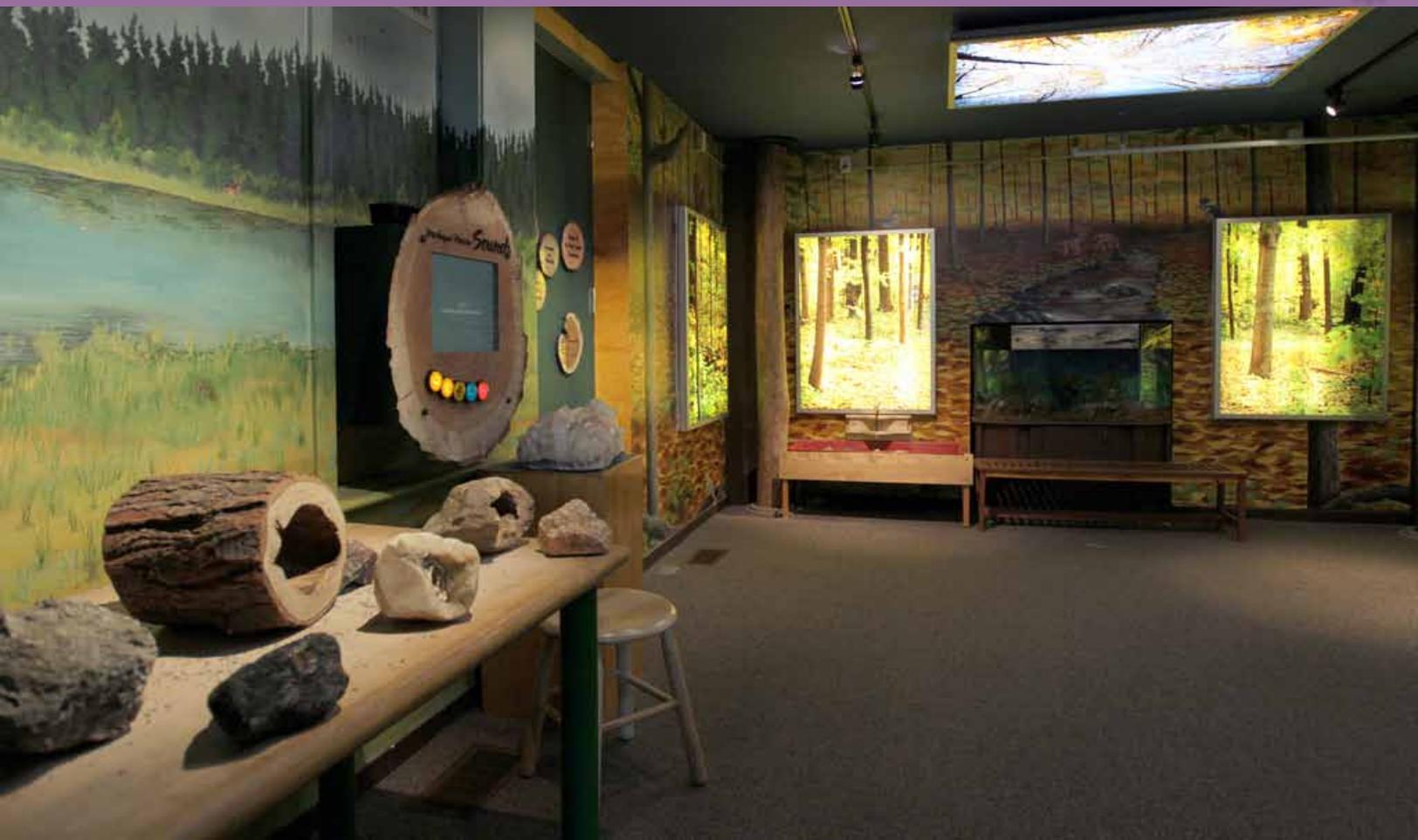
Look at the pictures of the mini challenge exhibits again. Ask what they remember about each one. Each mini challenge is followed by an Explore Some More! activity that expands on the science concepts and allows them to continue exploring and discovering.

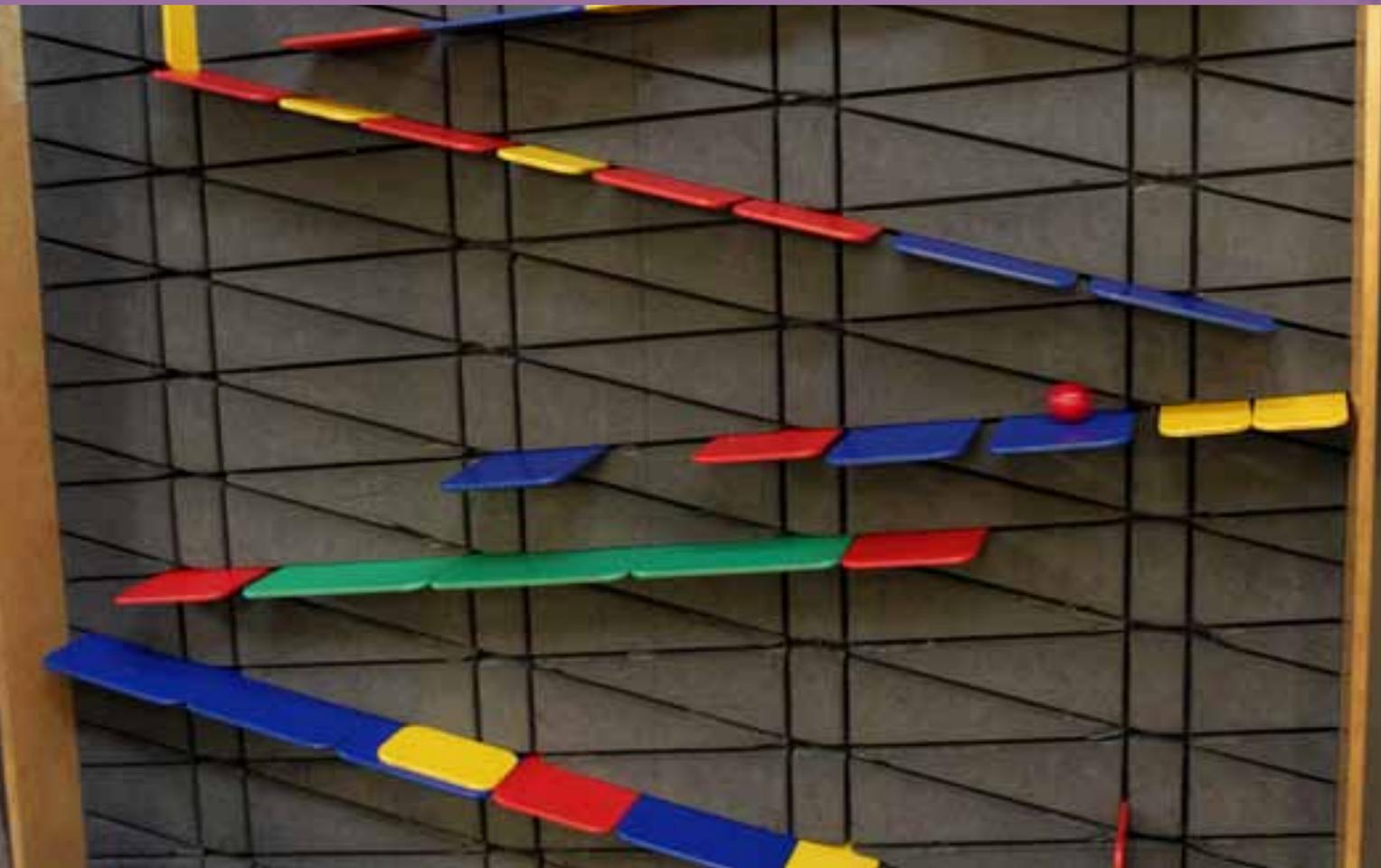


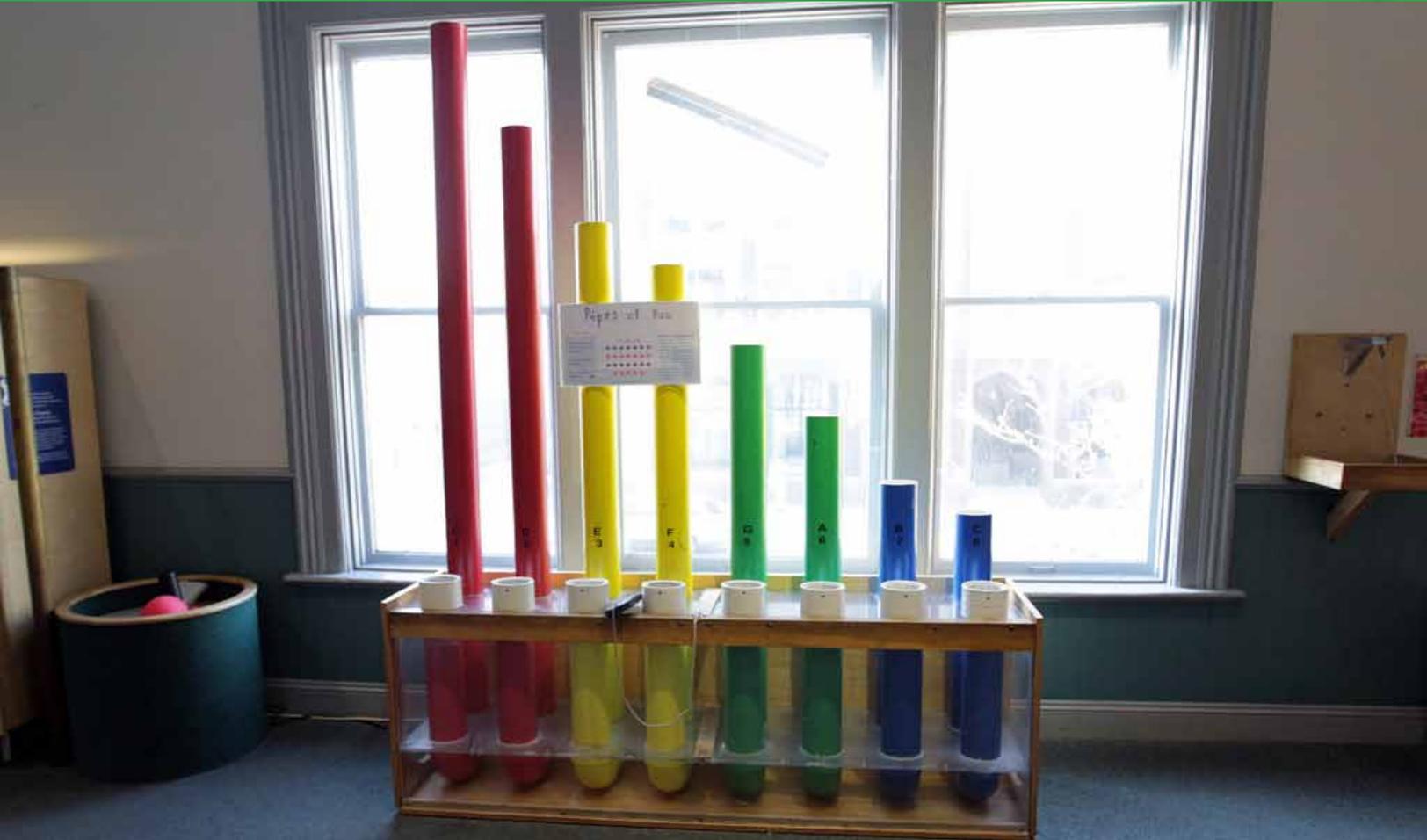
Exhibit Photo Index

Feel free to copy, cut and laminate this index to create exhibit picture cards for each group to use during their visit.











Mini Challenge

Engineers on a Roll is all about motion. Ask your students to discover where the balls start moving. Where do the balls move the fastest, the slowest. Have your children look for specific color patterns, such as purple, yellow, purple, yellow. Ask questions that encourage your children to compare different parts of the exhibit.

Explore Some More! Motion Commotion

For this activity, your students will slow down and put their creativity in motion by describing how something starts moving.

What You Need:

Any inanimate object like a ball, shoe, toy, or stuffed animal

What You Do:

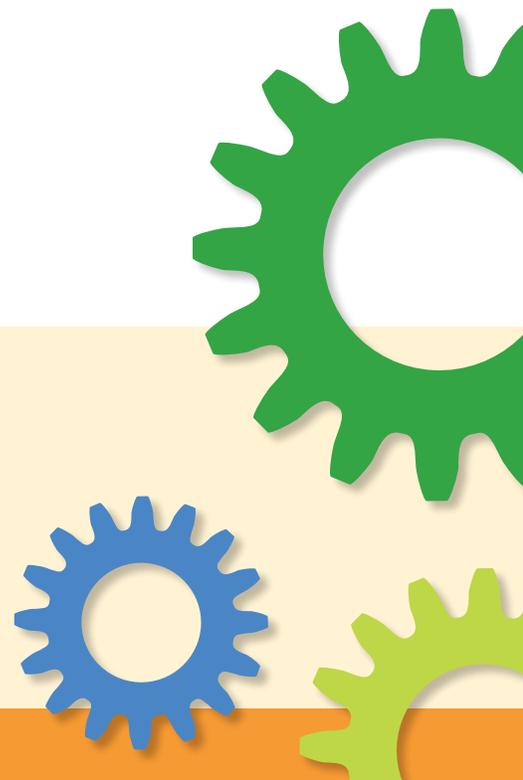
Activity Time

1. Tell your children you have a very exciting friend to introduce. With much fanfare, place your object on the table and tell the class its name (for this description, a banana named Bernard). Get everyone really quiet and watching really close, because Bernard can do tricks.
2. When the kids protest enough, ask them why they think Bernard isn't about to do any cool tricks. This will get them thinking about what causes an action or movement to occur. Bernard is sitting still, so what would have to happen to get him to move or do something.
3. Go around and let each student tell a story about how Bernard could start moving. As you go around, emphasize the forces that cause the movement (wind blew him off the table, a wave took him to an island)

Meets the following Michigan Early Childhood Standards for Quality:

(Science) 1. Children develop positive attitudes and gain knowledge about science through observation and active play.

(Language and Early Literacy Development) 3. Children develop abilities to express themselves clearly and communicate ideas to others.



Mini Challenge

Michigan Nature is a great place to introduce your children to making observations. What sounds do you hear? What do you see? Have you seen any of the animals or plants near your home?

Explore Some More! Observation Window (or I Spy Window)

After your visit, practice making observations with an Observation Window. Looking through the window will help your kids focus and learn to look more slowly.

What You Need:

Cardstock
Craft sticks
Glue
Crayons

What You Do:

Ahead of Time

1. Cut the cardstock in half to create two 8.5 x 5.5 inch pieces.
2. Using a craft knife, a straight edge, and cutting on a mat or a layer of cardboard, cut a window out of each piece, leaving a 1 inch frame. The first window you cut can be used as a template for the rest.

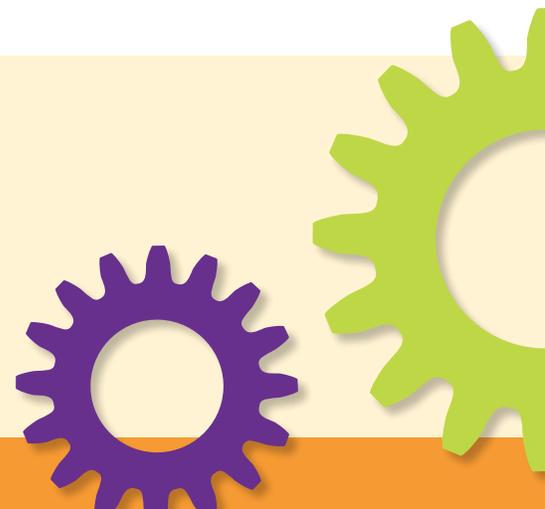
Activity Time

1. Start the activity by talking about the sense of sight. We use our eyes to see and also our brain. Our eyes collect light and send the image to our brain. What can we see right now? What other animals have eyes? Do any not have eyes? Provide photographs of different animal eyes and compare them. Why would different animals have different eyes? Are they all awake at the same time?
2. Have each child decorate their window. Encourage them to draw two eyes at the top of the window and their favorite things to look at around the rest.
3. Glue or tape a craft stick to the back of the window as a handle. The child can decide where to place the stick. Do they want a tall window or a wide window? Maybe a tilted window.
4. Use your windows anytime you want your children to look closely and make observations. Take the windows to a park and lay them on a patch of ground. Look closely at everything in the view of your window. Use your windows to look at the sky. Does everyone see the same thing? Does their view change even if they hold their window still? Use your windows to look around the room and play I Spy Bingo. Be creative, make it a game, and encourage your children to slow down and take time to look and think.

Meets the following Michigan Early Childhood Standards for Quality:

(Science) 1. Children develop positive attitudes and gain knowledge about science through observation and active play.

(Science) 2. Children show a beginning awareness of scientific knowledge related to living and nonliving things.



Mini Challenge

Magnetism is a force that can exert a push or a pull. How many magnets can you hang from the pipe in a line? Is the magnet pushing or pulling on the washers? What force pulls on the washers when the chain gets too long? (Gravity!) What shapes can you build with the washers and the magnet?

Explore Some More! Fishing Pool

Build a fishing pool with your children to investigate which materials are attracted to magnets. If time allows, have your children help make the fish; then they will be more excited to fish them out of the pool!

What You Need:

Dowel
Yarn
U Magnet
Cereal box or other paperboard
Construction paper
Clear packing tape or hot glue
A collection of small magnetic and non-magnetic items (puff ball, button, penny, nail, paperclip, yarn, magnet, bottle cap, pop tab, etc). Include at least one magnetic material per student.

What You Do:

Ahead of time

1. Construct fishing poles. Tie one end of the yarn around the U magnet so the two ends of the magnet hang down. Tie the other end of the yarn securely to the dowel. The length of the dowel and string are not important.
2. Draw a simple fish shape on the back of the cereal box. Cut it out to make a tracing template.
3. Using the template, trace fish on the construction paper.

Activity time

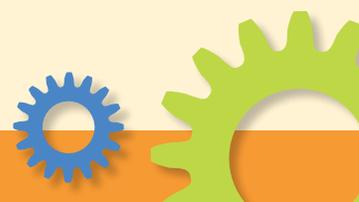
1. Have the children cut out the fish.
2. Bring the fish up to a glue station where an adult will secure one item to each fish using hot glue or clear packing tape.
3. Toss the fish, item side up, into a fishing pool. This can be a circle of blue yarn, a piece of blue cloth, or just a spot on the floor.
4. Have the children guess which fish they will be able to catch with their magnet fishing pole. Pass the fishing pole around and let each child "catch" one fish. Caught fish should be collected in one pile. Once all the magnetic fish are caught, compare the two piles of fish. What do the caught fish have in common? How could they catch the fish that are left in the pool?

Meets the following Michigan Early Childhood Standards for Quality:

(Science) 1. Children develop positive attitudes and gain knowledge about science through observation and active play.

(Math) 2. Children begin to develop skills of comparing and classifying objects, relationships and events in their environment.

(Math) 7. Children begin to develop an understanding of numbers and explore simple mathematical processes (operations) using concrete materials.



Mini Challenge

With a child at each station, have one close his eyes while holding his ear to the “phone.” Have the other child whisper to him first facing him, second by using the phone. Which did the partner hear? Which is easier to hear? Switch roles and repeat. How are the “phones” connected? Does sound travel faster through the open room or through the tube?

Explore Some More! Telephone

Children can make their own Speak and Listen at home. While it may look just like a trusty old fashioned cup telephone, we have a hint to make it work better!

What You Need:

Paper cups, 2 per telephone
Yarn, the thicker the better
Plastic Tapestry Needles
Large plastic beads, 2 per telephone (optional)
Masking tape (optional)
Bowl of water

What You Do:

Ahead of Time

1. Thread the tapestry needles with yarn. The length is up to you. Keep in mind the line must be pulled taut to work.

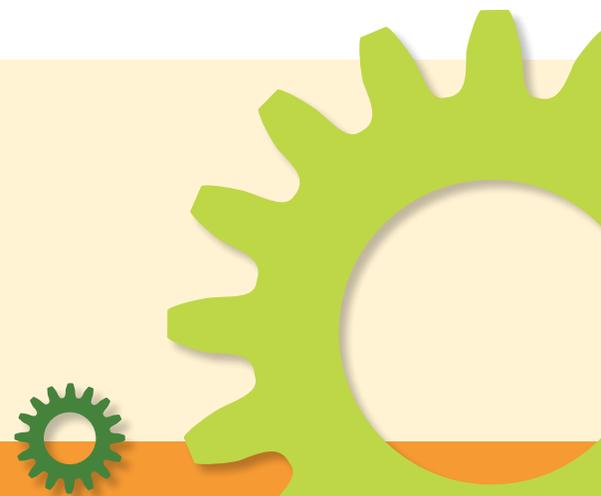
Activity Time

1. Give each pair of children a tapestry needle threaded with yarn and two cups. The first student pushes the needle through the bottom of the cup from the inside to the outside. The second student pushes the needle from the outside of their cup to the inside. Push both cups together to the middle of the length of yarn.
2. Thread a bead onto each end of the yarn. Double the yarn over about 1 inch and wrap with masking tape. -OR- If time allows, you can skip the beads and instead teach students how to tie a knot in the end of the yarn.
3. Slide cups out to the ends of the yarn. The bead or knot will keep the cups from coming off of the yarn.
4. At this point, have them test their telephones. Pull the yarn taut, but don't pull too hard! One student talks into their cup while the other listens.
5. Sound travels through the yarn faster than it does through air. Have them feel their yarn and ask if there is any air in it. Air in the yarn makes it light and fluffy. By replacing that air with water, the sounds will travel even faster down the yarn, making their telephone louder.
6. Dip the yarn in water and repeat step 4. The sound coming through the phone will be louder and clearer.

Meets the following Michigan Early Childhood Standards for Quality:

(Science) 1. Children develop positive attitudes and gain knowledge about science through observation and active play.

(Language and Early Literacy Development) 3. Children develop abilities to express themselves clearly and communicate ideas to others.



Mini Challenge

Construct a ramp that will make the ball drop last exactly 5 seconds. What happens if you make the ramp long? What happens if the ramp is straight (level)? Why does the ball fall down rather than stay in one place or float?

Explore Some More! Parachutes

At this exhibit, your children are challenged to slow the ball's descent with a series of ramps. Another way to slow a descent is with a parachute. This model parachute is just right for a gummy bear flight.

What You Need:

Napkins
String (kite string is best)
Sticky dots or tape
Paper clips
Gummy Bears

What You Do:

Ahead of Time

1. Cut string to 1 foot lengths, 4 per child.

2. Cut sticky dot sheets apart so there are 5 dots on each sheet.

Activity Time

1. Give each student a napkin, four lengths of string, and 5 sticky dots.

2. Unfold the napkin.

3. Use the sticky dots to attach one string to each corner.

4. Children will need help with this step, so come around with paper clips to help them. Gather the ends of the string and thread them through the paper clip. Double the string over about 1 inch. Have the student wrap a sticky dot around the string to secure the paper clip.

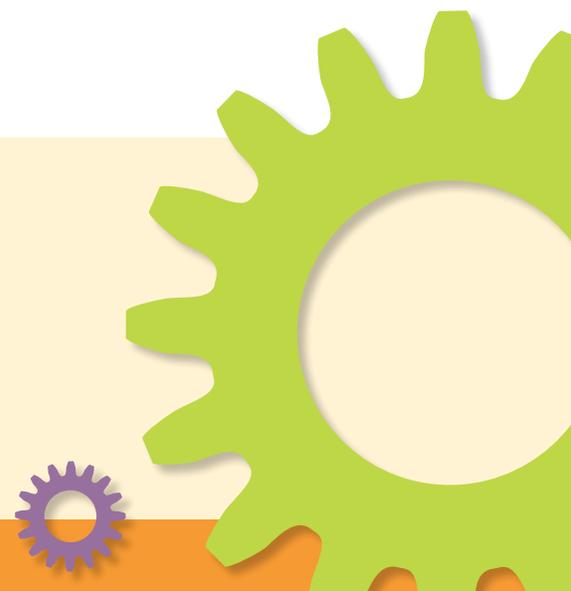
5. Give each child 2 gummy bears. Place one gummy bear in the paper clip harness.

6. Hold up both gummy bears (one attached to parachute, the other not) and drop them after a countdown.

7. Ask your students what the parachute filled with. Is air something or nothing? If they think nothing, have them take a deep breath in. Air takes up space and is something! Air resistance pushing up causes the parachute gummy bear to land more gently.

Meets the following Michigan Early Childhood Standards for Quality:

(Science) 1. Children develop positive attitudes and gain knowledge about science through observation and active play.



Mini Challenge

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Explore Some More! Parachutes

At this exhibit, your children are challenged to slow the ball's descent with a series of ramps. Another way to slow a descent is with a parachute. This model parachute is just right for a gummy bear flight.

What You Need:

A small cup of water

A tuning fork, any size will work but smaller tuning forks are more surprising

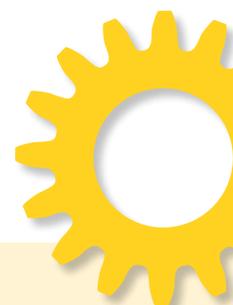
What You Do:

Activity Time

1. Repeat the activity from the Oscylinder Scope. Have each child gently place two fingers on their throat and say their name nice and loud. What did they feel? Vibrations! All sounds are made from vibrations.
2. Give the tuning fork one sharp hit on a surface (this can be a shoe, a rubber mallet, a baseball). Bring the tuning fork close to the ear of anyone who would like to hear the sound. Ask if it is a high pitch or a low pitch, making your voice high and low respectively. Can you see the vibrations like you could see the guitar strings vibrating? On a larger tuning fork they may be able to see the tines vibrating.
3. Call up a child to be your first volunteer. Ask them to hold the glass of water a few inches from their face, but not drink it.
4. Hit the tuning fork again, and immediately dip the tines of the fork into the water glass. Water will spray out from the cup! How did the water spray out from the cup? Would it work if the tuning fork was silent?

Meets the following Michigan Early Childhood Standards for Quality:

(Science) 1. Children develop positive attitudes and gain knowledge about science through observation and active play.



Mini Challenge

Hit the top of the tallest pipe with the mallet. What happens? Hit the top of the shortest pipe with the mallet. Does it sound the same or different? What happens if you hit the side of the pipe instead of the top? Can you play the song using the numbers listed? Can you play a different song or make up your own?

Explore Some More! Orchestra To-Go

While you cannot take the Pipes of Pan home with you, most children need little encouragement to experiment with noise-making. Here is an instrument that is simple to make and, with a little creativity, provides limitless opportunity to experiment with sound.

What You Need:

Plastic Takeout Container
Rubber Band

What You Do:

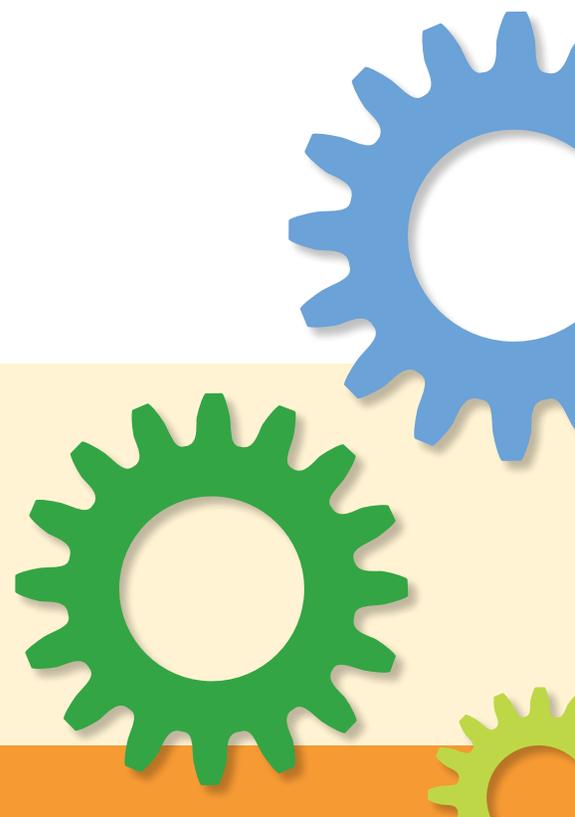
Activity Time

1. Stretch a rubber band around the middle of the takeout container
2. Pluck the rubber band to create sound. Look closely to see the band vibrate.
3. Pinch the rubber band at different points while plucking. How does the sound change as you pluck a shorter or longer length of band? Just like the larger Pipes of Pan made a lower pitch (deeper sound), a larger or longer rubber band also produces a lower pitch.
4. Experiment! Use thick or thin rubber bands. Pinch the band at different points while you strum to make a song with different notes. Hold the instrument in the air while you play, or press it onto a door or table. If you want to add multiple "strings," cut notches in the container so the bands don't pop off. Can you turn it into a drum?

Meets the following Michigan Early Childhood Standards for Quality:

(Science) 1. Children develop positive attitudes and gain knowledge about science through observation and active play.

(Creative Development) Children show how they feel, what they think, and what they are learning through listening, participating in, and creating instrumental and vocal music experiences.



Mini Challenge

Before your kids splash away, give them an easy question to get them exploring. Find an object that floats. Can you make an object that is floating, sink? What about making an object that sinks, float?

Explore Some More! Liquid Sandwich

Everyone expects a boat to float, but can you get a liquid to float? Dive into the properties of liquids by mixing up a liquid sandwich. And no, you cannot eat it!

What You Need:

2 Tall Clear Water Glasses
Food Coloring, 3 colors
Corn Syrup
Cooking Oil
Water
5 small bowls
Bonus activity: water, salt,
small container/cup

What You Do:

Ahead of Time

1. Measure out 1/4 cup of each liquid into a separate bowl. Label each bowl.
2. Add different colors of food coloring to the corn syrup, isopropyl, and water.

Activity Time

1. What happens when you mix liquids? Fill both water glasses half full and add a different color of food coloring to each (red and yellow, yellow and blue, or blue and red). Ask the students to guess what will happen before you mix the two glasses together. Will you be able to make a water sandwich and see different layers? Pour one glass into the other. What did they observe? The water will mix together and you will get a new color; you will end up with water soup!
2. Ask the students how they think you could make a liquid sandwich (that will not mix) and encourage any answer. We are going to try using different types of liquids. Ask your students if they can think of any liquid besides water. Show them the 5 liquids you have premeasured. Tell them what each one is and which ones you added food coloring too. You can skip adding the food coloring ahead of time and have the students choose the colors.
3. Pour the corn syrup into the empty glass. Next add the water, followed by the cooking oil. Try to pour the corn syrup right to the bottom of the glass, but pour the other liquids down the side of the glass. You will get a 3 layer liquid sandwich! Ask the students why the liquids didn't mix this time. The liquids each have a different density. Compare the lower density liquids to life preservers. The oil is floating on the water just like a life preserver helps a person float on water. The oil, like the life preserver, is less dense than the water, and the corn syrup is denser so it floats.

BONUS: To explain the concept of sinking and floating with relation to density, have students predict what will happen if they place a golf ball into a small container filled with fresh water. Will the ball sink or float? Have the kids add salt to the water until the golf ball floats. How did this work? (The salt increases the density of the water until it is denser than the ball, causing the ball to float.)

Meets the following Michigan Early Childhood Standards for Quality:

(Science) 1. Children develop positive attitudes and gain knowledge about science through observation and active play.

