GOT SCIENCE? GUIDE

Grades 3-5

Discover the science in Science city's most popular areas—and some hidden spaces.

Please note: Exhibits are sometimes removed temporarily for repair or refurbishment, or may be in use by other groups, so be prepared to be flexible.

Teachers: *Standards for KS and Strands for MO listed on these pages next to the exhibits are intended for guides to understanding or reinforcing concepts addressed by these suggested standards. Follow-up in your classroom about the students' experiences will further enhance the hands-on learning experienced at Science City.*

****The following exhibits are listed in alphabetical order. This is not a recommended flow for exploring the science center. Reference a science center map for assistance.***

GIANT LEVER

NGSS: 3-PS2, 3-5-ETS1
MO Science Strands: 2, 7
CCS ELA Connections: CCSS.ELA-LITERACY.W.3.4, 4.4, 5.4

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Observe the set-up.

- What do you notice that is different about the location of the ropes on the Giant Lever?
- Do you think this will effect which side will win in a tug-of-war? Explain your theory.

Activity: Divide your group into two teams of two or more people.

- Did the winning team have the strongest members?
- Ask the teams to switch sides and have another tug-of-war.
- Which side seems to have the advantage in winning?
- What is the best plan if you wish to be on the winning team at this game?

FACT **The lever is one type of simple machine.**

Name other simple machines.

Light Alley

MO Learning Standards: Strand 7,8
CCS ELA Connections: CCSS.ELA-LITERACY.W.3.4, 4.4, 5.4

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Color Wall

- What colors do your see?
- What colors are formed when those colors combine?

Shadow Wall

Stand between the boxes and the special white wall. Follow directions on the boxes for using the strobe light to make your shadow on the white wall.

- Outdoors in the sunshine, do shadows usually stay put when a person moves?
- Why do you think your shadow stays on the wall after you walk away?

Music Park

NGSS: 4-PS3, 4-PS4
MO Learning Standards: 2, 7
CCS ELA Connections: CCSS.ELA-LITERACY.W.3.4, 4.4, 5.4

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FACT **Pitch refers to a sound being high or low.**

Play a rhythm on one of the instruments. Describe why pitch changes from low to high.

Metallophone (Metal Xylophone)
Did you know? A xylophone has wooden bars; a metallophone is made with metal bars.
Play a rhythm on the metallophone with the mallet.

FACT **Vibration is a rapid, back and forth motion. If the sound waves are close together, their vibration will produce a high pitch.**

Place your hand on the top of one bar of the metallophone as you pound on the bottom of that bar—away from your hand.

- Describe what you feel and hear.
- Repeat with a longer or shorter bar. What differences do you notice?

FACT **Sound waves travel on air. Pitch is determined by how close together the waves travel.**

Whisper Dishes
Sit in front of one Whisper Dish while another person sits at the opposite Whisper Dish.
WHISPER to one another in your regular, indoor voices. (Do not shout!)

- What happens?
- Why do you think the Whisper Dish works?
- What is happening to the sound waves?

Nature Center

NGSS: 3-LS1, 3-LS2, 3-LS4, 4-LS1, 5-LS1, 3-5 – ETS1
MO Learning Standards: 4, 7
CCS ELA Connections: CCSS.ELA-LITERACY.W.3.4, 4.4, 5.4

THINK! Tapping on the glass or cages frightens the animals. Please be kind to our animals and use quiet voices. Ask a Science City staff member for more information about the animals.

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Explore the many different types of animals in the Nature Center.

- What is a "native habitat?"
- Name two animals in the Nature Center that are native to the United States.
- Ask one of our educators to show you our Crested Gecko, Leonard and tell you how he is helping the medical field create instruments for surgery.
- How does the gecko hang onto smooth surfaces?
- Can you think of two other problems we might be able to solve by mimicking the feet of the Gecko?

Activity: Select one of our mammals and one of our reptiles to compare.

- Mammal you selected:
- Reptile you selected:
- What differences do you notice?
- Compare the habitats of the two animals you selected.

FACT **All reptiles have scales or shields as a body covering. These scales are waterproof and make life on land possible. The scales form a constant barrier to evaporation.**

- Why is it important for reptiles to not lose body water to evaporation?
  Hint: Think about their native habitat.
- For the Spiny-Tailed Lizard, where are its most visible scales?
- What do you suppose this lizard uses for defense or protection?

Prehistoric Dig / Dino Lab

NGSS: 3-LS1, 3-LS2, 3-LS3, 3-LS4, 4-LS1, 4-ESS1
MO Science Strands: 4,5,7,8
CCS ELA Connections: CCSS.ELA-LITERACY.W.3.4, 4.4, 5.4

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Observe the paleontologist, or other lab technicians, at work in the Dino Lab.
Or, if the Dino Lab does not have workers, watch the video (overhead in the dig site area) of the paleontologist at work in the field at an actual dinosaur dig.

- What does a paleontologist study?
- Why would a paleontologist's work need to be slow and careful?

Use the magnifying lens at the display table to look for fossil details.

- Describe one of the fossils.
- Draw a picture of the fossil.

Use the Earth timeline on the wall in the dig site area near the blue elevator.

- Did any people live on Earth at the same time as dinosaurs?
- How long ago did dinosaurs live on Earth?

Science on a Sphere

Various standards depending on content
CCS ELA Connections: CCSS.ELA-LITERACY.W.3.4, 4.4, 5.4

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Visit the kiosk inside the Science on a Sphere exhibit area. There are a variety of choices that address various Kansas and Missouri education standards. Select a dataset that best fits the grade level curriculum for your group. Take a seat and observe the many facets demonstrated with this technology.

- What dataset did you watch?
- Record one interesting thing that you learned.
- What other topic would you like to learn about at Science on a Sphere at another visit?

Sky Bike

NGSS: 3-PS2,4-PS3, 3-5-ETS1
MO Science Strands: 2, 7
CCS ELA Connections: CCSS.ELA-LITERACY.W.3.4, 4.4, 5.4

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Ride the Sky Bike—or observe other riders. Notice the bricks on a ledge attached below the bike.

- What force pulls the bricks downward?
- Why is it important that the person riding the bike weigh less than the bricks?
  Hint: Think of a seesaw or balance scale)
- Why does the bike always stay right side up?

Challenge: If the bricks total weight is 200 pounds, what modifications would be needed to allow a person who weighs more than 200 pounds to successfully ride the Sky Bike?