GOT SCIENCE? GUIDE

Grades 6-8

Science is everywhere—but not always obvious. Enjoy these scientific discoveries in your Science City adventure.

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: MS-ETS1, MS-PS2
MO Strands: 2.2 (5th & 7th), 7.1
CCS ELA Connections: CCSS.ELA-LITERACY.W.6.4, 7.4, 8.4

Guide

Before performing a tug-of-war, observe the difference in point of attachment for each rope on the Giant Lever. *NOTE: One rope is attached two feet above the fulcrum, the other is attached six feet above the fulcrum--or the point at which the lever pivots.*

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

- Try a tug-of-war. Which team won? (The team with rope positioned high on the lever, or low on the lever?)
- Switch sides, keeping the same teams. Did the same team win or not?
- How would you explain these results?

Mister E. Hotel

MO Science Strand: 7
CCS ELA Connections: CCSS.ELA-LITERACY.W.6.4, 7.4, 8.4

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FACT **There is an optical illusion (a trick on your brain) in every room.**

Explore carefully so you don't miss the mysteries.

Disappearing Diner: Go into the diner with a partner. One of you should stand behind the diner table.

- What has happened to the lower half of his/her body?
- How does this illusion work?
- Would this illusion work if the panels below the counter were made of shiny steel or a dull material? Why or why not?

Safe Storage: Locate the hidden safe. Try to touch the jewel in the safe.

- Can you explain what you are seeing?

Haunted Washroom: Enter the washroom located behind the black drape.

- Who seems to disappear more in the mirror, a person wearing light clothing or a person wearing dark clothing?
- Why do you think that is?

Warper Room: Find the room with the black and white rotating disk (warper). Stare at the warper for a full 20 seconds, and then look at your hand or an object.

- Describe what is happening to the image at which you are looking?
- How do you think the warper works?
- Does your theory match the explanation on the sign found next to the Vision Warper?

Nature Center

NGSS: MS-ETS1, MS-LS2
MO Science Strands: 3.1, 4.1
CCS ELA Connections: CCSS.ELA-LITERACY.W.6.4, 7.4, 8.4

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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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?
- Why is it important for us to look to nature to help solve some of our human problems?

Our reptiles need a heat lamp over his habitat. The rabbits do not require this device.

- Can you explain why?
- What other differences do you see between the reptiles and the rabbits?

Nature Center *(continued)*

Nature Center-*Classification:* Observe these animals; then place them in the correct category below.

- Spiny-tailed lizard
- Bearded dragon lizard
- Leopard frog
- Tree frog
- Salamander
- Box turtle

Amphibian Amphibians have moist, glandular skins. Their toes lack claws.	**Reptile** Reptiles are covered with scales, shields or plates. Their toes have claws.

SCIENCE ON A SPHERE *(Teacher guidance recommended)*

Various standards depending on content

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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: MS-ETS1, MS-PS2, MS-PS3
MO Science Strands: 2.2, 7.1, 8.1
CCS ELA Connections: CCSS.ELA-LITERACY.W.6.4, 7.4, 8.4

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Read the posted information near the entrance to the Sky Bike.

Observe others riding the Sky Bike. Then try it yourself (if you wish).

- Which is heavier, the counterweight (the bricks) or the rider?
- How do the bricks keep the rider from tipping over?
- Does the rider need to balance himself like on a regular bike? Why or why not?

- Describe what would happen if the rider were heavier than the counterweight of the bike. Why would this happen?

- Name three simple machines that allow a bicycle to work:

- Name three ideas of physics that allow a bicycle to work.

- Which law of physics do you NOT have to worry about while riding the Sky Bike?