# EXHIBIT HALL ACTIVITY GUIDE

**Top Tip:** Look at the signs to help you answer questions!

## Whisper Tube

Stand at one end of the tube and have a partner stand at the other. Talk, don't yell, and listen to one another. *Could you hear the other person?* **YES or NO**

Look at the your partner while they are talking.
*Do you hear the sound right away or is there a delay?* **RIGHT AWAY or DELAY**

What is the speed of sound? _____ **miles per hour (mph)**

## Bubble Zone

Use the rings in the bubble table to make the largest bubble possible. *Is the bubble rigid or does it stretch and bend?* **RIGID or STRETCH/BEND**

Make a bubble window and hold it. *What colors do you see?*

*Are bubbles a liquid, a solid, or a gas?* **LIQUID SOLID GAS**

## Sustainable Energy Dancefloor

Complete the Energy Battle game with at least one partner. *How many joules (units of energy) did you produce?* _____ **joules**

*How many did your partner produce?* _____ **joules**

## Flight Zone

Choose a paper airplane design and make it (hint: you may need to cut the paper to size.) Test it at the launcher. *Did your plane fly through any hoops? If so, which one(s)?*

*How far did your plane travel?* _____ **feet**

Try to improve your design so that your plane flies father. Check out the sign for tips to solve common problems. You can also use tape or staples to add weight. Test it again.

*How many hoops did your plan fly through?* *What was your new distance?* _____ **feet**

## Parachute Launcher

Launch the parachute into the air and try to catch it. *Could you do it?* **YES or NO**

*How does a parachute slow the descent of an object or person?*

## Gravity Well

Starting at the top of the well, release four balls so that they reach the bottom without running into each other. *Did you release them at the same time?* **YES or NO**

Send a ball into the well rolling along the side. Release another ball aiming it directly toward the bottom. *What happens to the second ball?*

*What do scientists call the rolling pattern of the first ball?*

## Super Bounce

Lift and drop just the top ball (don't throw it). Now lift and drop the top two balls. Now three. Now four. *Which time did the smallest ball bounce the highest?*

*Which of Sir Isaac Newton's Laws of Motion is this an example of?*

**1ST LAW** **2ND LAW** **3RD LAW**

## Puzzle Tables

Find the puzzle called The Tower of Hanoi. Try to solve it and then repeat the puzzle. *Did you solve it faster on the first attempt or second attempt?*

Find the puzzle called Circle Packing and try to solve it. *What is the practical application of this puzzle?*

Try at least one other puzzle. *Which one did you try?*

## Catenary Arch

Follow the directions carefully to build and raise the red tabletop arch.

*Does the arch stand?* **YES** **or** **NO**

*If not, describe what went wrong.*

*What force keeps the arch together?*

## Giant Arch

With a partner follow the directions to build the Giant Arch (make sure the numbers on each brick face inward).

*What is the number of the last piece you used? What is that called?*

## Sky Bridge

Climb the Sky Bridge as high as you can. *How many panels did you climb to get there?*

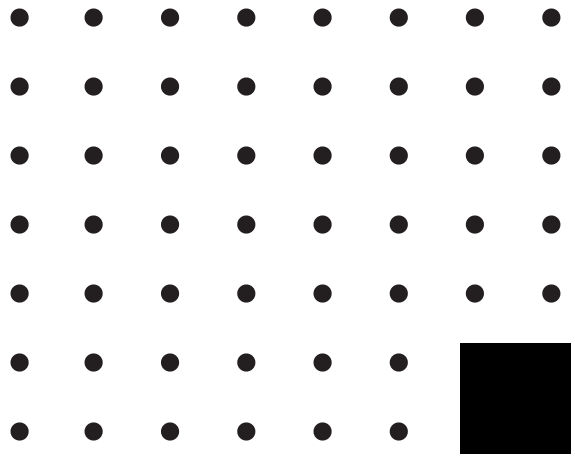
*Does the Sky Bridge touch the ground?* **YES** **or** **NO**

*How many panels does the Sky Bridge have?*

*If you made it to the top, what did you notice about the photos on each panel as you climb?*

## Circuit Bench

Use the metal bars and crank to power one of the devices or rows of lights.
*Use the dot grid to draw the circuit you created.*



*What is the particle responsible for energy?*

## Magnetic Sculpture

Stack the hex nuts on the horn magnet. *How many could you get to stick together? (hint: try stacking them vertically)*

*Are the hex nuts magnetic?* ***YES or NO***

*As you stack the hex nut, does the magnetic for grow stronger or weaker the higher you go?*

***STRONGER OR WEAKER***

## Duck Under Kaleidoscope

Duck into the Kaleidoscope. *How many mirrors are there?*

*What shape is the Kaleidoscope?*

*The mirrors are set at a _____ angle.*

## Sand Pendulum

Follow the directions to create a pattern with the pendulum. *Draw what you see:*

Repeat this experiment with the other pendulum and try to make the same pattern.
*Could you do it? Why or why not?*

## Shake Table

On the building side of the Shake Table, build a skyscraper and test it with an earthquake.
*Does your building shake?* **YES or NO**

*What shape reinforcements will give your building stiffness?*

*What shape reinforcements will give your building flexibility?*

*On the bridge side of the Shake Table, build a suspension bridge including a road goring across both sides. Test it with an earthquake. Does your bridge survive?* ***YES or NO***

## Laser Harp

Press the buttons to select a tone (there are lots to choose from). Stand at the side of the harp and "pluck" the lasers to hear the music. *How many laser lights are there?*

*How is a laser light different than sunlight or lamps?*

## Xylophone

Pick one of the songs to play with the mallet. Practice it few times and see if you can play it faster. *Was it easier to play after you practiced a few times?* **YES or NO**

# Congratulations, you're finished!

Take your finished paper up to the front desk to get a prize!