

## **EXHIBIT DESCRIPTION**

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Enter the wonderfully puzzling world of *Mindbender Mansion*, an eclectic place full of brainteasers and interactive challenges guaranteed to test the brain power and problem solving skills of even the most experienced puzzlers. Visitors to this fun and quirky mansion are invited to join the Mindbender Society by gathering hidden clues and secret passwords scattered throughout the various thematic rooms of the house. The clues and passwords are revealed by solving select brainteasers and group challenges. Visitors are encouraged to think outside the box and collaborate with their fellow mansion guests to meet individual and group challenges, which include manipulating a tilt table, forming patterns in rolling chairs, keeping up with a conveyer belt, maneuvering a flying machine, and disco hopscotch spelling.

Math, science, and technology educational content are woven into the puzzles, videos, and group challenges found inside *Mindbender Mansion*. At the heart of the exhibit is the essential scientific task of problem solving and critical thinking. The puzzles are an excellent tool for explaining mathematical and physical science concepts. In order to solve these puzzles, visitors must identify patterns, think ahead, use logical reasoning, and look at the problems from different perspectives, setting aside preconceived ideas. The videos in each of the four Clue Vaults explain neuroscience-based principles, and tell the story of several inventors who have used problem solving skills to come up with new solutions to old problems. Additionally, the popular group challenges require communication, collaboration, leadership, and teamwork skills – skills that are critical in solving the challenges facing today's businesses and communities.

### ***Mindbender Mansion* is:**

- So incredibly engaging and hands-on for everyone that it's **fun for families of all ages and generations**. Grandparents, parents and children of all ages learn from each other as they work together to solve the various brainteasers and group challenges.
- A **perfect exhibit for school groups** as it provides teachers with an opportunity to engage their students in inventive, out-of-the classroom problem solving that requires mathematics, builds on prior knowledge, inspires teamwork and demands creativity. *Mindbender Mansion* is especially popular with middle and high school-aged groups.
- **Ideal for supplemental programming, promotions, and marketing activities** such as a Brainteaser Contest, Mensa Testing Day, and Game Days (Scrabble®, Crossword Puzzles, Sudoku, Rubik's Cube, and Spelling Bee competitions).
- Just the **right thing for breaking the ice at evening events and corporate parties** as adults enjoy being a kid again and getting to know each other by playing and collaborating in the team-building activities inherent in the exhibit.
- Helpful in **driving repeat attendance and increasing membership** as visitors get so caught up in solving the brainteasers and group challenges that they typically **spend an average of 2-3 hours** in *Mindbender Mansion* and **frequently come back**.

Adults, families, children and school groups alike will enjoy exercising their minds as they try to master each of the 40 individual brainteasers and the five large-scale group activities in this fun and unconventional exhibit!

## THEMATIC AREAS AND EXHIBIT COMPONENTS

### **ENTRY**

Start at the Entry and watch a large media screen which introduces the wacky Mr. E., master brainteasers, puzzler extraordinaire, and current curator of the Mindbender Society. He will explain some key features of *Mindbender Mansion* and how to unlock the puzzle to become a member of the Mindbender Society. There are 40 individual brainteasers and five large-scale group activities. To become a member, visitors must solve a total of eight-to-eleven select brainteasers and one large-scale group activity. Clue cards are available at the Entry to help keep track of clues and passwords from the puzzles that lead to membership in the Mindbender Society.

### **PARLOR**

In the Parlor, there are 10 individual Brainteasers—three of them provide clues toward the final challenge that determines eligibility into the Mindbender Society.

#### **(10) Brainteasers:**

- **Make a Yellow Square**  
Arrange puzzle pieces to make a yellow square.  
**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Parlor Vault*.
- **Tricky Triangles**  
Start with 16 sticks arranged to form eight triangles. Remove four sticks to leave only four equal-sized triangles.  
**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Parlor Vault*.
- **Every Line Adds to 18**  
Insert the numbers 1-11 so that the sum of the three numbers in any straight line is 18.  
**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Parlor Vault*.
- **Six Pegs That Don't Line Up**  
Place six pegs in holes on a square board so that no peg lines up with another peg along a vertical, horizontal or diagonal line.
- **Make a Green Square**  
Arrange puzzle pieces to make a green square.
- **Move the Ring**  
Move one of the rings on the rope from one side of the knot to the other, without untying the knot.
- **15 Sticks**  
Starting with 15 sticks arranged in a pattern on the exhibit board, remove six of them to leave 10.
- **String Houses**  
Use a rope to trace the outline of two houses without crossing or retracing your path. One house is impossible to trace. Which one is it?

- **10 Pegs, Even Lines**  
Starting with 10 pegs in a pattern, move two pegs so that every row and column has an even number of pegs.
- **Four Equations**  
Arrange the numbers 1-9 on the board so that four different equations are mathematically correct.

### **Parlor Vault**

Set the dials of the *Parlor Vault* to the three clues that were revealed after successfully solving the three Parlor Brainteasers: *Make a Yellow Square*, *Tricky Triangles*, and *Every Line Adds to 18*. If successful, a video plays of Mr. E., who discusses how teamwork helps in problem solving. Visitors are then entertained by a short, zany animation introducing real-life inventor, Mary Anderson, who invented the windshield wiper blade in 1903. At the end of the animation, Mr. E. reveals a password that is needed to unlock the *Wall of Fame Vault* that determines eligibility into the Mindbender Society.

### **LIBRARY**

In the Library, there are six individual Brainteasers—three of them provide clues toward the final challenge that determines eligibility into the Mindbender Society.

### **(6) Brainteasers:**

- **Make a T**  
Arrange four puzzle pieces to make a capital T.  
**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Library Vault*.
- **Color Match**  
Arrange six hexagons around a central hexagon so that all adjacent colors match.  
**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Library Vault*.
- **Every Line Adds to 15**  
Insert numbers 1-9 so that the sum of the three numbers in any straight line (vertical, horizontal and diagonal) is 15.  
**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Library Vault*.
- **Square or Triangle**  
Arrange four puzzle pieces to form a square or triangle.
- **Horse & Rider**  
Place the puzzle pieces so that there is one rider riding each horse correctly (right side up and facing forward).
- **Take Away**  
In this game of strategy for two players, players take turns removing pegs from the game board. The player who takes the last peg loses.

### **Library Vault**

Set the dials of the *Library Vault* to the three clues that were revealed after successfully solving the three Library Brainteasers: *Make a T*, *Color Match*, and *Every Line Adds to 15*. If successful, a video plays of Mr. E., who discusses how problem solving involves approaching things from a new or different angle. Visitors are then entertained by a short,

zany animation introducing real-life inventor, Marion Donovan, who invented the leak-proof diaper cover, the "boater," in 1946. At the end of the animation, Mr. E. reveals a password that is needed to unlock the *Wall of Fame Vault* that determines eligibility into the Mindbender Society.

## **KITCHEN**

In the Kitchen, there is one large-scale group activity (*Feeding Frenzy*) and four individual Brainteasers. Visitors must be successful at the *Feeding Frenzy* activity and two of the Kitchen Brainteasers to receive clues toward the final challenge that determines eligibility into the Mindbender Society.

### **Feeding Frenzy**

In this large-scale activity, teamwork is necessary to successfully meet the challenge: to fill a minimum of 10 T.V. dinner trays (with five kinds of food) on a moving conveyer belt within the specified amount of time. Visitors can select a level of play (slow, medium, or fast) which determines the speed of the conveyer belt. Points are given for each TV dinner tray successfully filled but no points are given for trays partially filled.

**Clue reveal:** If a team scores enough points and the minimum number of trays has been filled, a clue is revealed onscreen—write down this clue on the clue card to be used to unlock the *Kitchen Vault*.

### **(4) Brainteasers:**

- **Shifting Squares**

Start with 16 sticks arranged to form five squares. Move only two sticks to make four squares using all 16 sticks.

**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Kitchen Vault*.

- **Disorder**

Arrange the numbers 1-8 on the board so that no two consecutive numbers touch.

**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Kitchen Vault*.

- **Balancing Nails**

Balance 14 nails on the head of one nail.

- **Make a Cube**

Put seven puzzle pieces together to make a cube.

### **Kitchen Vault**

Set the dials of the *Kitchen Vault* to the three clues that were revealed after successfully solving the *Feeding Frenzy* activity and two Kitchen Brainteasers: *Shifting Squares* and *Disorder*. If successful, a video plays of Mr. E., who talks about healthy foods rich in nutrients for the brain. Visitors are then entertained by a short, zany animation introducing real-life inventor, Elisha Otis, who invented the elevator safety brake in 1854. At the end of the animation, Mr. E. reveals a password that is needed to unlock the *Wall of Fame Vault* that determines eligibility into the Mindbender Society.

## **MAP ROOM**

In the Map Room, there is one large-scale group activity (*Amazing Maze*) and four individual Brainteasers—three of the Map Room Brainteasers provide clues toward the final challenge that determines eligibility into the Mindbender Society.

## Amazing Maze

In this large-scale activity, up to four visitors work together to tilt a table in different directions, guiding a ball into six holes as quickly as possible in the allotted time. A scoreboard keeps tally and counts down the remaining time left in the game.

### (4) Brainteasers:

- **Six Blocks in a Box**

Fit six blocks together so they fit perfectly into a box and the lid can be closed.

**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Map Room Vault*.

- **10 Pegs in Each Line**

Place pegs in each of eight boxes so there are 10 pegs in each line.

**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Map Room Vault*.

- **One Shape Fits All**

From a group of differently-shaped blocks, find the one block that completely fills all three differently shaped holes as it passes through.

**Clue reveal:** When the puzzle is solved a clue is revealed—write down this clue on the clue card to be used to unlock the *Map Room Vault*.

- **Build a Pyramid**

Using two identically shaped blocks, put them together to form a pyramid.

## Map Room Vault

Set the dials of the *Map Room Vault* to the three clues that were revealed after successfully solving the three Map Room Brainteasers: *Six Blocks in a Box*, *10 Pegs in Each Line*, and *One Shape Fits All*. If successful, a video plays of Mr. E., who discusses how neuroscientists can see what part of the brain is active when doing or thinking certain things. Visitors are then entertained by a short, zany animation introducing real-life inventor, Elijah McCoy, who invented the steam engine lubricator in 1872. At the end of the animation, Mr. E. reveals a password that is needed to unlock the *Wall of Fame Vault* that determines eligibility into the Mindbender Society.

## DISCO ROOM

### Spelling Fever

In this large-scale, full-body activity, teamwork is necessary to successfully meet the challenge: to correctly spell answers to trivia questions within a limited amount of time by hopping on letter squares. Start the game by touching the small screen at one end of the dance floor. Instructions are given on a large screen above the floor and the game begins when a randomly generated question appears on the large screen. The challenge is to think of the answer to the question (with help from anyone nearby) and spell it out by plotting a course down the floor and hopping on the correct letters. Visitors must land at the far end of the floor to submit their answer. If the answer is correct, they score points and then hurry back to the starting point to spell another word, or a team member can start spelling the next answer to save time and increase total points.

## DINING ROOM

### Move and Match

In this large-scale, full-body activity, teamwork is necessary to successfully meet the challenge: to maneuver dining room chairs into a correct pattern by pushing off of other players and the pen walls. Four players each sit in a different colored chair in an enclosed pen. A pattern is revealed on-screen and the four teammates work together to maneuver

their chairs into the correct pattern by using their arms to push off of one another and the pen walls. There is a second pen, so a total of eight people can play.

Note: There is a moderated and non-moderated version for this activity. Although it is recommended that *Move and Match* be moderated by a facilitator, it can be played without one.

## **REC ROOM**

In the Rec Room, there is one large-scale group activity (*Flying Machine*) and 18 individual Brainteasers.

### **Flying Machine**

In this large-scale activity, teamwork is necessary to successfully meet the challenge: to move a mechanical “flying machine” around a large game board hitting six targets in sequence within a specified amount of time. Four players work together by maneuvering pulleys to move the flying machine so it lands on each of the six targets. If a target is successfully hit, it lights up and the next target in the sequence begins to flash.

### **(18) Brainteasers:**

- **Four Blocks in a Box**  
Fit four blocks together in one box so that none of the blocks stick out above the top. Then try it with the other box.
- **Triangle or Hexagon**  
Arrange six puzzle pieces to form a triangle or hexagon.
- **Take-Apart Cross**  
Separate a seemingly solid cross into two pieces and then put them together again.
- **Make a Blue Square**  
Arrange the puzzle pieces to make a blue square.
- **Five Room House**  
On the exhibit board is a plan of a five-room house and a rope. Pass the rope through each and every door only once without crossing the rope over itself or over a wall. (NOTE: This puzzle is impossible to solve—can you figure out why?)
- **Tie the Knot**  
Tie or untie the knot that is in the center of the rope.
- **Linked Hearts**  
Separate two linked hearts and then put them back together again.
- **Make a Square**  
Starting with four puzzle pieces arranged in a pattern, move only one piece to make a square.
- **Six Sticks**  
Arrange six sticks so that they form eight equilateral triangles of any size.
- **A Perfect Fit**  
Fit four T-shaped puzzle pieces so that they lie flat within a large frame. Then fit them into an even smaller frame.

- **Horseshoes**  
Remove a ring from a pair of linked horseshoes, and then put the ring back on.
- **Galloping Horse**  
Put three puzzle pieces together to make a galloping horse.
- **Handcuffs**  
Untangle the ropes without removing the "handcuffs" from your wrists.
- **Crossing the River**  
Help a farmer transport a fox, a chicken, and a bag of corn across a river in a small boat—without any casualties.
- **10 Disk Triangle**  
Invert a triangle made up of 10 disks by moving only three disks.
- **Two Balls in a Rocker**  
Move two balls that sit near the center of a rocker to opposite corners.
- **Tower of Brahma**  
Move a pile of disks from one peg to another peg, following some simple rules.
- **Jumping Pegs**  
Start with four white pegs and four black pegs at opposite ends. Jump or move the pegs one space at a time to switch the positions of the white and black pegs.

### **WALL OF FAME**

Now it's time for visitors to see if they are eligible to become a member of the Mindbender Society and possibly add their portrait to the "Mindbender Society Wall of Fame." Several framed portraits of esteemed members of the Mindbender Society decorate this area and there is room for new members too!

To join, visitors must enter at least three passwords they have gathered from the four rooms of the mansion (Parlor, Library, Map Room, and Kitchen) into the final vault at the *Wall of Fame*. If they are successful, they are officially an expert problem-solver and invited into the Society! If they are not successful, visitors are told to keep trying and check out the areas of the mansion that provide the clues and passwords.

If a visitor is invited to join the Mindbender Society, they can have their picture taken and personalize their portrait with a background, outfit, funky hat, funny hair etc. Once they've finished their portrait, they can print out their official Mindbender Society certificate with their personalized portrait and take it home. In addition, their portrait will go up on the Wall of Fame for all to see, in one of the four monitors available to highlight the newest members of the Mindbender Society!

*Mindbender Mansion* is produced and toured by the Oregon Museum of Science and Industry, Portland, Oregon. © 2009.