Lake Compounce proudly presents “Discovery in the Park.” This is an exciting adventure in which students in Grades 4-7 can explore the subject areas of art, English/language, science, social studies, psychology and math.
The Lake Compounce Time Line:

1684  A group of settlers, including John Norton, band together to purchase land from the Tunxis Indians. The lake is named “Lake Compounce” in honor of the Tunxis’ Chief Compound.

1846  Local resident families begin arriving at daybreak to witness an explosion of the lake. Botsford gives a lecture on the “Movements of Electricity in Heaven and Earth,” followed by a series of experiments that are to culminate in the explosion. Despite several attempts, the explosion does not occur, and Botsford is run out of town never to be seen again.

1875  The Crocodile Club Banquet tradition is born to thank the legislature for changing the boundaries of the communities of Southington and Bristol.

1896  The Bristol & Plainville Trolley initiates service to Lake Compounce, traveling four miles to the Park from the center of Bristol.

1911  The current carousel is purchased and a new building is constructed. The carousel features 47 horses, one goat, and two chariots carved by Loof, Carmel and Stein & Goldstein.

1914  The Green Dragon, the first roller coaster at the Park, is built.

1927  The Wildcat Coaster is built by the Philadelphia Toboggan Co. to replace the Green Dragon.

1944  The Gillette miniature railway is purchased from the estate of William Gillette, the actor best known for portraying Sherlock Holmes. The Gillette train circles the lake on a mile of track.

1979  The Carousel is named to the National Register of Historic Places.

1987  Construction is completed on the Big Splash Log Flume.

1996  Kennywood Entertainment Corp. takes over the park.

1997  Ten Major rides are added including the Thunder Rapids Raft Ride, the Mt. Southington (Compounce Mt.) Skyride, the Zoomerang Coaster, the Flying Scooters, the Bumper Cars, the Rotor, the Ferris Wheel, the Top Spin, the CP Huntington Train (replaces Gillette railway), and the Lakeside Trolley, an original 1911 trolley that once brought patrons to Lake Compounce from New Haven, CT.

1998  Splash Harbor, an exciting family water park featuring a sixty-foot lighthouse and an array of slides, sprays, pools, and water fun for all ages; and the Skycoaster, offering guests a high flying, free fall type adventure, are opened.

1999  Ghost Hunt, an interactive dark ride incorporating animation, black lights, and sound is introduced. Two person vehicles equipped with booblasters transport guests through a 15 room three story mansion, complete with water spouting gargoyles. The Mark Twain, a 70 ft authentic sternwheeler that can carry 65 passengers, now cruises the Lake replacing the classic Lakeboat tour vessel. Youngsters are treated to their own Kiddie Bumper Cars, and the Big Splash Log Flume is renamed Saw Mill Plunge.
2000  The amazing Boulder Dash welcomes the new century at Lake Compounce! This one of a kind wooden mountain roller coaster, also billed as the largest and fastest in the East, carries guests over 4500 ft of track at a speed of approximately 60 mph. It races between boulders and trees from the north end to the south end of the Park, across the Bristol and Southington town lines, and back again.

2001  Mammoth Falls, a 551 foot long family raft ride, debuts at Lake Compounce. This Splash Harbor attraction transports guests in 4 person rafts through twisting chutes and tunnels, under a waterfall and down a 50 foot drop. The Flying Scooters are taken out of service. Boulder Dash is voted #1 world’s best wooden coaster by the National Historic Parks Association.

2002  Guests enjoy season passes and unlimited free soft drinks. The Crocodile Club tradition ends with what is to be its final banquet.

2003  Clipper Cove, an interactive splash and play adventure area, adds to the enjoyment of wet family fun. The Carousel receives handsome new housing. The Top Spin is retired and the Flying Scooters return as the American Flyers.

2004  Downtime, a 185 foot drop tower, joins the thrill rides at the park.

2005  Splash Harbor expands with the addition of Anchor Bay, an 800 ft lazy river complete with its own special water activities and slide.

2006  Thunder N’ Lightning, a two arm, 32 passenger “screaming swing” takes guests soaring to new heights and angles. Garfield’s Drop tower is added to Circus World.

2007  On Zoomer’s Gas N’ Go, a 1956 corvette ride, guests experience and enjoy a scenic blast from the past. Rainbow Riders allow children and parents to share an uplifting experience together. The Compounce Cabana Boat replaces the Mark Twain.

2008  Ghost Hunt was remodeled with larger cars to accommodate more people per car, allowing them to enjoy the ride together.

2009  New additions included Wipeout replacing the Musik Express, Jolly Jester, a miniature “pirate ship” ride for kids, replaced the Arctic Express, and a new set of slides known as Tunnel Twisters were added to Splash Harbor.

2011  The Rotor is removed and the Rev-O-Lution is brought in to replace it, rocking, rolling and spinning riders at a full 360 degrees on a giant platform traveling on a track 50 feet high.
Use the Lake Compounce Time Line to answer these questions.

1. How many years ago did each of the attractions open at Lake Compounce?
   - Lakeside Trolley
   - The Wildcat Coaster
   - Ghost Hunt
   - The Carousel
   - Green Dragon
   - Mammoth Falls
   - Saw Mill Plunge (Big Splash)
   - Gillette Railway
   - Zoomerang Coaster
   - Sky Coaster
   - The Mark Twain

2. How much older is the Carousel than the Wildcat Coaster?

3. What attractions were built in the first half of the 20th century?

4. Choose three dates listed on the Lake Compounce Timeline and identify who was President of the USA at that time.

5. How long was Lake Compounce in existence as a park before the Crocodile Club Banquet tradition was born?

6. Calculate how long the Crocodile Club tradition lasted and compare it with how long the park has existed. What percent of time have they shared this unusual bond?

7. When was the Gillette Train retired?

8. How many rooms are in the Ghost Hunt mansion?

9. Assuming everyone meets the height requirement, could your entire class swing on Thunder N’ Lightening together? Don’t forget your teacher!

10. Approximately how many miles long is the unique mountain coaster that ushered in the 2000 season at Lake Compounce?

11. About how many years before the Civil War was the Park land purchased from the Tunxis Indians?

12. What is the potential number of guests that can ride the 551 ft family raft ride when it’s run at full capacity, if up to 15 rafts can be accommodated?
13. How long was Boulder Dash in existence before being named #1 wooden roller coaster in the World?

Extra! Extra! Read All About It!

***Construct a time line to note important milestones in your life (ex. birth, first steps, entering school, learning to ride a bike).

***Construct a time line to commemorate important events in the history of your school.

My Timeline
Lake Compounce enjoys a unique importance in terms of its **geological features** and its **historical background**. Some 20,000 years ago, the New England area was facing the end of the last **Ice Age**. In its wake, a mile thick **glacier** created our body of water when large pieces of ice slowly melted and sediment was deposited around them. Lake Compounce is therefore considered a **glacier kettle**. Compounce Mountain was also created at this time, with its large boulders dropped by the glaciers as they melted.

Amazingly, some of the rock formations that were created made ideal shelters where prehistoric peoples and **Native Americans** could live. Historians believe several tribes of Native Americans lived near the Lake and in the surrounding hills for 7,500 years.

In the 1600s, a tribe of **Tunxis Indians** and their **chief, Jon a Compound**, lived on the land bordering the Lake. Historical records show that the chief’s name appears on **three original deeds**, along with several other tribal names. Through these deeds, a group of white settlers who had migrated to central Connecticut from Massachusetts, were given title to Compound’s Lake and the surrounding land. This area was then known as Farmington and Waterbury (also called Mattatuck).

The Tunxis Indians affixed their **waxed fingertip marks** or totems to the deeds to serve as their signatures. In the written part of the deeds, Chief Compound’s name appears with different spellings. At times it may be Compas, Compaus, Compowne, Compounce, or Compound. Here’s a brief summary of deeds.

**May 22, 1673 deed:** Confirms previous grants of land made to the settlers (33 years after Farmington was first settled); includes a map of the land, which is said to have covered 165 square miles of central Connecticut, and the names and marks of 26 Tunxis Indians, arranged into 2 columns, one headed by Nesaheagun who was the Sachem of Poquonock, and one headed by Jon a Compaus. The chief’s squaw and other women also signed, indicating that Native American women shared an important part in the process.

**August 26, 1674 deed:** Conveyed a large tract of land in Mattatuck (Waterbury) to the first settlers for 38 pounds; records the names and marks of Nesaheagun, John a Compowne, and 12 other Tunxis Indians.

**December 2, 1684 deed:** Original found in one of the oldest homes in Waterbury in 1890; gives another tract of land in Mattatuck to the settlers for 9 pounds. The mark of Chief John a Compound is listed first. This deed also includes the signatures of famous men from Connecticut’s early history, including Thomas and Benjamin Judd, John and Timothy Standly, John Wadsworth, and John Hopkins. They were representatives for the 84 proprietors of early Farmington, which encompassed over 10 of our current towns.

The Native American word **“acompown-tuk”** reportedly meant “falls of water on the other side.” Therefore, it is believed that Chief Compound was named because of his connection with the
body of water on the other side of the mountain. Other writers suggest that John a Compaus could mean John at Long pond (Compo).

Whatever the exact derivation of the name, the lake connection is very strong. **Legends** even tie Chief Compound’s death to water. Several versions of the legend are floating around. One of the earliest recorded by Alice Norton in her 1902 book *Compound* tells that his cave was near the shore and that he drowned while crossing the lake in an iron kettle. Other versions embellish the story by adding that he was celebrating after the land exchange and was dared to cross the lake either in the kettle or carrying it as he swam. Interestingly, some of Compound’s signature marks resemble the shape of a kettle. This has caused many to wonder whether the marks inspired the legends or whether they foreshadowed the tragic end of Chief John a Compound. A glacial kettle lake, kettle signature marks, a kettle caused demise…coincidence or creative tale? What do you think?

You are invited to view the Lake Compounce **Display** of historical and geological artifacts and materials related to the park. They are located in the foyer above the Croc Pot.

**Decipher the Deed**

Here is a portion of the deed that sealed the future of Lake Compounce. Note the original Old English script. Can you decipher what it says?

“This indenture made this second December in the yere of our lorde one the six hundred eighty four betwene John a Compowne hackatowsucke manto warun compowno atumtuckco spinning squaw patuckoos squaw: one the on party and Thomas Judd and John Standly order and in the name and behalfe of propiators of Mattatucke in New England of the other party witnessath that we the aforesaid John a Compound for the summe of nine pounds have by these presnets frely fully souly absolutely given granted agerred and soald unto the aforesaid Standly and Judd with the rest of there asosiats their heirs execketors adminestrators and asigns parsell of lands of Mattatucke situate on the east side of nagatucke or Mattatucke river. The said John Compounce dos clerly fuly holy remitt releas relinquish all there formor title claime pour intrest and intrests the land and emunitys…for ever more:”

Now that you’ve made the Native American connection, challenge yourself to remember what you have discovered without looking back for the answers.
**Who Wants To Be a “Wampum” Illionaire?**

For 100 in wampum: Mattatuck was another name for which of the following towns?

- a. Farmington
- b. Southington
- c. Waterbury
- d. Bristol

(Is that your final answer?)

For 200 in wampum: When were Compounce Mountain and Lake created?

- a. 2000 years ago
- b. 20,000 years ago
- c. 300 years ago
- d. 1000 years ago

For 500 in wampum: How many Tunxis tribal members “signed” the deed of May 22, 1673?

- a. 33
- b. 12
- c. 26
- d. 15

For 1000 in wampum: Who was the Sachem of the Tunxis tribe in 1673?

- a. Poquonock
- b. Compaus
- c. Nesaheagun
- d. Atumtucko

For 5000 in wampum: Which of the following was NOT a deed spelling of Chief Jon’s name?

- a. Compas
- b. Compaus
- c. Compowne
- d. Compo

For 10,000 in wampum: In what year was Alice Norton’s book *Compound* published?

- a. 1902
- b. 1890
- c. 1875
- d. 1908

For 20,000 in wampum: Which is another name for the waxed fingertip marks of the Tunxis tribe?

- a. autographs
- b. signs
- c. totems
- d. sachems

(Is that your final answer? Are you sure?)

For 50,000 in wampum: When was the original Dec. 2, 1684 deed found in a Waterbury home?

- a. 1902
- b. 1890
- c. 1980
- d. 1875

For 100,000 in wampum: What was the purchase price of the land deeded on December 2, 1684?

- a. 12 pounds
- b. 38 pounds
- c. 9 pounds
- d. 10 pounds

For 200,000 in wampum: Which of the following men was NOT a proprietor of early Farmington?

- a. John Wadsworth
- b. John Standley
- c. John Hopkins
- d. John Judd

For 500,000 in wampum: What does the Native American word *acompown-tuk* mean?

- a. falls on the other side
- b. long pond
- c. from Compound’s lake
- d. over the mountain

For 1,000,000 in wampum: How many years total do the three land transfer deeds cover?

- a. almost 10
- b. almost 11
- c. almost 15
- d. almost 20

(Is that your final answer? Have you thought this through? Are you positive?)

If you’ve answered all of the questions correctly

**CONGRATULATIONS!** You’re officially a “WAMPUM”ILLIONAIRE!
Search a Word: There are at least 25 Lake Compounce words here. Can you find them?


Here are some words to look for:

- Clipper Cove
- Boulder Dash
- Mammoth Falls
- Wildcat Roller Coaster
- Family Fun
- Bumper Cars
- CP Huntington Train
- Mt. Southington Skyride
- Zoomer's Gas N' Go
- Thunder Rapids
- Saw Mill Plunge
- Ferris Wheel
- Zoomerang Coaster
- Twister
- Pirate Ship
- Wave Swinger
- American Flyers
- Revolution
- Carousel
- Lakeside Trolley
- Enterprise
- Crocodile
- Cotton Candy
- DownTime
- Anchor Bay

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The Lake Compounce Adventure Crossword!!
Take the Challenge!

Across

2. Specialty at Harborside
4. Swinging gondolas that take riders upside down at a height of 65 feet
5. 1910 antique, assembled in Savin Rock (CT), work of 4 master carvers
7. Zoomer’s 1956 corvette ride
9. Pontoon type boat replaces the Mark Twain
10. Large gondola which turns and flips forwards, reverse, and upside down; retired for 2003.
11. Vehicles designed for safe collisions with other drivers
15. Group of closely related people of many ages
18. Chairlift that travels up and down the steepest mountain terrain on the eastern seaboard
19. Chieftain John, park namesake
21. Has riders clinging to the walls; replaced in 2011 with the Revolution
22. Offers a breathtaking view of Lake Compounce, Bristol and Southington from almost 100 feet in the air
23. An “above average backyard swing” which features the thrill of nearly free falling from the top of its arc (plural)
24. Raft ride which gives the illusion of traveling through raging rapids
25. Fifteen room mansion, Boocifer’s haunt

Down

1. Family water park
3. Authentic replica of a steam train
6. 1911 antique open air streetcar
8. Price paid in pounds for 1684 land
12. Generated by the anticipation of visiting Lake Compounce and by the thrills once you are there
13. 1927 classic wooden roller coaster
14. High speed steel roller coaster which takes riders upside down, in loops, forward, backwards
15. Riders control sideward direction of travel, gives sensation of diving and flying; renamed the American Flyers in 2003
16. Sixty foot high feature of Splash Harbor
17. Over 4500 ft. long, races between boulders and trees
18. Circular ride along a track, with small peaks and valleys, replaced with the Wipeout in 2009
20. An award
Capturing Your Creativity

1. Write a newspaper article telling when and why families first started coming to Lake Compounce. Use the Park Timeline.

2. Chief Compound deeded the Park property to a group of settlers on December 2, 1684. According to legend, he drowned rowing a kettle across the lake shortly thereafter. Expand the legend with your version of what happened.

3. Conduct a survey among your friends to discover their favorite rides at Lake Compounce. Create a line, bar, circle, or pictograph to show your findings.

4. Observe the reactions and behavior of guests of different ages as they exit Boulder Dash. Describe what they might be experiencing.

5. As a reporter for an historical digest, write a descriptive article on The Lake’s famous Carousel. Remember the timeline, your observations at the park, and other research on carousels if desired.

6. Pretend you were one of the first people to ride the Wildcat Coaster when it opened in 1927. Describe what it was like to experience such a thrilling ride you had never seen before.

7. You are promoted to General Manager of Lake Compounce. What are your plans for the future of the park? What new rides would you add? Write a letter to the guests who will visit The Lake in the year 2020 describing what the park looks like.

8. Imagine you are an employee at Lake Compounce. Write about what a day working in the park would be like.

9. Create your own song lyrics about Boocifer, Prof. Phearstruck, and what you discover in the many rooms of Ghost Hunt’s haunted mansion. Put the words to the music of a favorite tune.

10. Picture yourself transported to another time and place as you cruise on the Compounce Cabana Boat. Where is this watercraft taking you? What will you do when you get there? Is anyone traveling with you? How do you feel about this adventure?

11. Can you really learn about math and science at an amusement park? Remembering the how, what, when, and why (or why not), write a convincing statement that answers that question.
A very important characteristic of poetry is that it tries to involve us in experiences, emotions, moods, attitudes, or ideas rather than just telling us about them. It appeals directly to the senses, (sound, smell, taste, touch) so we can feel and share what the poet wishes to convey. To do this, the poet relies on imagery or word pictures to get the idea across.

One special type of poem that uses imagery is the haiku. It is a Japanese poem of three lines (usually having 5, 7, and 5 syllables) that creates a picture which arouses an emotional response and some further insight or thought.

1. **Look at the examples and compose a haiku that paints a word picture of an experience or feeling that you have during your visit to Lake Compounce.**

   Examples:
   
   Gray clouds float over
   bringing children time to rest
   from splashes in the waves.

   On the dragon swift
   I gasp breathless and hold tight
   senses, soul, fire of life.

2. **Use the following fantastic figures of speech to describe some of the things you notice while at the Park.**

   **Onomatopoeia:** the effect when words are made to sound like the thing they mean
   (ex. the “buzz” of bees, the “whirr” of the motor)

   **Personification:** animals, things, ideas are given human qualities (ex. The gourmet ice bit my tongue).

   **Simile:** a comparison of two things using “like” or “as” (ex. The coaster flies like a bird).

   **Alliteration:** first letter of words are the same (Silly Suzie Sunshine sang six songs while sitting on the Wave Swinger).

3. **Choose your favorite poet and try to imitate his/her style as you compose a Park poem. Pay attention to the use of verb forms, adjectives, nouns, adverbs, figures of speech, and the poem’s setup.**

4. **Create an illustrated poetry book that goes along with each ride you go on while at Lake Compounce.**
Psychology: the study of the mind.

Are you afraid to ride?

Are you sometimes afraid to ride a ride for the first time? Part of the fun of riding is the excitement and even the bit of fear that you feel. Which rides do you fear? Why? How do these rides affect your body? What can you do to control your fears?

1. Name a ride that you are afraid of: ___________________________

2. Which of these symptoms do you feel when you ride the ride or think about riding the ride?
   - Dizzy
   - Weak knees
   - Sweaty Hands
   - Dry Mouth
   - Cold Hands and Feet
   - Trembling
   - Big Eye Pupils
   - Fast Breathing
   - Stomach Butterflies
   - Tense Muscles
   - Pounding Heart
   - Nausea

3. Now try to cure your fear by trying one of these methods. Check the one that made you feel less tense.
   - Identify what seems to cause your fear (like seeing the roller coaster). Try to think of something other than your fear when you see the object (like looking at the beautiful landscaping in the park).
   - Relax. Take a deep breath. Hold it for 7 seconds. Release the air slowly while thinking of a pleasant scene. Think about relaxing your muscles as you breath.
   - Gradually build up to the feared event (like riding the Saw Mill Plunge before riding the Zoomerang).
   - Force yourself to feel the fear again and again until you are much less afraid (like riding the Wildcat over and over again until you have very little fear).
   - Copy the behaviors of someone who does not fear the ride and behave as though you are not afraid.
   - Ignore your fear by keeping your mind busy with other thoughts (like watching the motions and forces on the roller coaster instead of thinking about the feelings you might have).

4. If you are afraid to ride a ride, you are not alone! Most people, however, find that once they ride a ride they have been afraid of, they are no longer afraid of it. In fact, they are often surprised by how much fun it is!

Match the following rides to one or more of the fears that someone might feel while on that ride.
FEARS
A. Claustrophobia (confined places) ______ Ferris Wheel
B. Demophobia (crowds) ______ Compounce Mt. Skyride
C. Semaphobia (flashing lights) ______ Saw Mill Plunge
D. Barophobia (gravity) ______ Enterprise
E. Acrophobia (heights) ______ Revolution
F. Tachyphobia (high speeds) ______ Zoomerang
G. Phonophobia (sounds) ______ Wipeout
H. Roundaphobia (circular rides) ______ Boulder Dash

Bonus: Whether you have no fear of phobias or phobia fever, see if you can match up the following:

Phobias: Fear of:
A. Agoraphobia ______ Cliffs
B. Amasophobia ______ Mechanical objects
C. Anemophobia ______ Roller Coasters
D. Chremnophia ______ Open places
E. Epistemophobia ______ Movement
F. Gephyrophobia ______ Narrow places
G. Kinesophobia ______ Places of learning
H. Mechanophobia ______ Being in vehicles
I. Stenophobia ______ High winds
J. Updownaphobia ______ Bridges

RIDE EFFECTS

Try any three rides on for size, noting your body’s responses. Record them in the table below.

<table>
<thead>
<tr>
<th>Ride Name</th>
<th>Motion: Vertical, horizontal, circular, other</th>
<th>1. Pulse rate (beats/min) while waiting</th>
<th>2. Pulse rate on exiting ride</th>
<th>Difference in rate (1-2) Include + or -</th>
<th>Body symptoms see Q #2 above</th>
<th>Emotions you experienced on the ride</th>
</tr>
</thead>
</table>

1. Which ride in the table did you enjoy the most? Why?
2. Which ride in the table did you enjoy the least? Why?
3. Is there a correlation between the data you collected and how well you enjoyed the ride?
Science is FUNdamental

THE FIVE SENSES

SIGHT

What you see affects how you feel. Experiment by riding part of a ride with your eyes closed and part with your eyes open. Record the difference:

__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________

Your eye has difficulty seeing colors in low light levels. Notice the bright colors of clothes outside. Then notice how much harder it is to see these colors when you are in a dimly lit area of the park.

Look for a red flower surrounded by dark leaves or a yellow flower with light green leaves. Anyone who has difficulty telling the difference in color between these flowers and the leaves may be red/green color blind. Most color blind people are males.

Because you have two eyes, you can judge distances and shapes of objects better. Try riding a motion ride with both eyes open and then with one eye open. What is the difference?

__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________
__________________________________________________________________________________________________

How fast are your eyes? When you observe the rides, notice the speed of each ride. Are there rides which go too fast for you to see clearly without just seeing a blur? Do your eyes have trouble focusing when you are accelerating rapidly? Name the rides that look blurry to you.

__________________________________________________________________________________________________
__________________________________________________________________________________________________

The colored iris of your eye contains a pupil which closes to a small dot in bright sunlight. Watch a friend’s eyes and notice any changes that occur when the light level changes. Which eyes seem to be more sensitive to light?

Brown eyes ___________ Blue eyes ___________
Your sense of touch can tell you the strength and direction of any force you feel. By the feel of the wind against your face, for example, you can guess the speed of a ride.

Notice the downward pressure that you feel against your body when you ride a fast ride and are pressed into the seat.

1. What force is acting upon you to cause this pressure?

________________________

2. The pressure you feel tells you how strong the force is. What ride has the strongest force of this kind? What ride has the weakest force?

Strongest force  ________________________

Weakest force  ________________________

3. Notice the pressure of your body on the seat when you are riding the Zoomerang loop. Your sense of touch tells you that you are right side up. Your eyes tell you that you are up side down. The result of this is a sensation that the world is upside down.

Do you agree with this statement?  _____________

Why?  ____________________________________________

_________________________________________________________________________________________
Listen to the Wildcat Coaster as it speeds by. Does the sound change pitch from higher to lower?

Yes_________  No_________

This sound change tells you how fast the ride is moving. The change in pitch (from higher to lower sounding) is called the **Doppler Shift**.

When the Wildcat Coaster rider feels the most force, the coaster is also pushing hardest on the track. Most tracks creak, squeak, or groan more at this time. Listen for track sounds from a walkway near the roller coaster and see if the strong forces and the loud noises come at the same places. Where is the train (cars) on the Wildcat when you hear the loudest sounds?

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Light waves travel in straight lines, but sound waves can go around corners. Pick a loud park noise and listen to it all around the park. Mark the noise maker and the places where you can hear it on the park map.

List 5 sounds you hear in the park and where you hear them.

<table>
<thead>
<tr>
<th>Sound</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
TASTE

When you have your lunch today, take two bites of food and notice how the food smells as you eat it. Next, eat two bites of your food while you pinch your nose closed with your fingers. Does the food taste different when you cannot smell it?

What are the differences?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Search through the various food and snack items and find something from each of the taste categories: salty, sweet, bitter, sour.

Salty ______________
Sweet ______________
Sour ______________
Bitter ____________
Smell

Your sense of smell is one that your brain uses to gather much information about your environment. Oftentimes, however, we do not think of smell as one of our most valuable senses.

When you are in the park, sniff for the following scents. Record where you find them. See if you and your friends have the same sense of smell. Can you smell some things better than others?

<table>
<thead>
<tr>
<th>Item</th>
<th>Location Found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamburgers</td>
<td></td>
</tr>
<tr>
<td>French Fries</td>
<td></td>
</tr>
<tr>
<td>Flowers</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
</tr>
<tr>
<td>Pine Trees</td>
<td></td>
</tr>
<tr>
<td>Popcorn</td>
<td></td>
</tr>
<tr>
<td>Gasoline</td>
<td></td>
</tr>
<tr>
<td>Cotton Candy</td>
<td></td>
</tr>
</tbody>
</table>
REV THOSE CRANIAL ENGINES!

Amusement Parks conjure up visions of chills and thrills and moments of magic and excitement – breathtaking speed, hanging upside down, plunging to earth, or facing the heavens. Who masterminds such marvels! Would the answer surprise you? Architects, engineers, designers, planners, surveyors, geologists, carpenters, electricians, plumbers, sound technicians, mechanics, construction crews, landscapers, artists, marketers, accountants, personnel directors, and yes, even educators --- all of the inventive, creative, problem solving men and women who rely on science and math (the queen of all sciences) for their inspiration and know-how are the brains and brawn behind creating and operating a wonderful park. Now, will you ever again ask your teacher “what is math good for anyway?” Not if love for amusement park fun is your cup of tea! Consider using math and science to help strengthen your mental muscle.

Want something different to help you get started? Put on your thinking cap, rev those cranial engines, and warm up YOUR problem solving skills with these mental barbells.

Warning! Decode at your own risk. May promote serious synaptic activity, including but not limited to inventive outbursts, spontaneous creative combustion, and feigned mental anguish characterized by murmurs of “oh brother, geez, yeah sure, I’m working on it, leave me alone, oh no, haha, aha, and I knew that.”

Hi GOOD!

You’ve had your Twink Twink Twink Twink, now it’s time to T E G O.

No more Z Z L J O B. This THING US US. Math and science are involved in every aspect of life as we know it.

Studying and exploring math and science could be somet bi

Build your brain power little by little, and soon you’ll see the
. Reach for the \( S^\pi KY \) and surely you’ll

and be \( \text{TUNNEL} \text{ U CROWD} \). Now let’s not \( \text{BE BUSH AT} \). If you want to experience math and science in action, make

for Lake Compounce. It’s \( \text{JUST} \).

The Zoomerang will put you \( \text{track} \) to discovering why the shape of the curve for a looping coaster is not a circle. Take a crash course in how not to drive on the \( \text{Bumper Cars} \), where Newton’s Law of Motion will seem like \( \text{spuds} \) by the time you’re done. Put \( \text{TOTOO} \) and decipher the Pirate’s pendulum action. And, if you’ve ever wondered what it’d be like on \( \text{NINE CUMULUS} \), head for the

Compounce Mt. Skyride. Millions of years of geologic processes will flash before your eyes as you ride the upthrown face of a normal fault and literally be \( \text{TREK} \). Water is your passion, check out force and motion on the Saw Mill Plunge or on the Thunder Rapids
Raft ride. But there’s more. The absolute will be Boulder Dash, the longest wooden roller coaster in the East and, from, the only one ever built into the side of a mountain. , this unique terrain coaster will garner a huge as it races between boulders and swishes through trees in its boundary line hopping journey from Bristol to Southington and back again. , we can even offer you to keep you in gear for all of this excitement. Shhh! , there’s an awful lot of fun to be had exploring math and science! ! We’ll try to out your hands-on educational experience, bring you in your studies, help bridge the as students and teachers begin and reach a , provide
and generally encourage you to feel .

? You’ll be with The Lake and with learning. Are you still with me bright eyes? If you’re

about now, you’re .

and for new times sake, we love our park and think you’ll give it too. It’s an . The E in education stands for excellent. , get that science and math thing going. There’s . Put your . Face the music. Take your medicine. And

wipe that grin into your face!! Okay, Okay, now that our fest is over and you’re pleading cranial overload,

I’ll sign off with a to in all the old and young familiar places at Lake Compounce. Farewell...au revoir...auf wiedersehen...adios...arrivaderci...zaijian...

Roger !

Agent M alias 00 3.14
Science Behind the Rides

What do you like best about amusement parks? Perhaps it’s the exciting rides that take your breath away, send you streaking down steep hills, or turn you completely upside down. Have you ever wondered just how fast that roller coaster goes or why you don’t fall out when a ride has you standing on your head?

Here’s a chance to “unmask” the magic and discover how science and math are the real secrets behind the chills and thrills of a fun park!

Let’s begin by investigating the “g,” a common unit to describe the forces we feel. **One g is equal to the force of Earth’s gravity.** The force of gravity causes falling objects to accelerate at 9.8 meters per second squared. This means that the downward velocity (speed and direction) of a falling object increases 9.8 meters per second for each second it falls.

Living on Earth, you normally experience 1 g of acceleration vertically. In comparison, the astronauts feel about three g’s of force when the space shuttle takes off. Three times the force of Earth’s gravity makes them feel three times heavier than normal.

You can make a “g” meter to measure the forces you feel while on your bicycle, on the playground swings, in a car, or on an amusement park ride if permitted (dependent on park or attraction). Here’s how it’s done.

**Construction:**

1. Cut out the g meter on the next page.

2. Glue the g meter to a thin piece of cardboard and trim to size if needed.

3. Take about 15 cm (6 inches) of heavy black thread and tie one end to a weight such as a washer, a fish sinker, or a key. Tie the other end through the hole and the top of the g meter.

4. Holding the g meter in front of you, let the thread hang down so that it lines up with the 0 g mark.

5. For the g meter to work properly, the top edge must be held horizontal or level with the horizon.

6. When the line formed by the string and weight move in the direction of the arrows, you will be able to read the force in g’s.
When your g meter is done, try it out.

* While you are on a swing in your yard, hold the g meter so that the arrows point in the direction you will be moving. How many g’s do you feel as you swing?

* Use the g meter on the “merry-go-round” at the playground. While sitting on the outside edge of the ride, point the arrow toward the center. How many g’s do you feel? Does the number of g’s change if the ride moves faster? Does the number of g’s change if you sit closer to the center of the ride?

* When you are riding in the family car, hold the g meter in front of you as your parent drives around a corner. How many g’s do you feel? Is there a difference between going slowly around a corner or going quickly around it?

* If permitted to use the g meter to investigate g forces on any rides at the amusement park, try to determine how the ride creates the force and whether speed or turns are used to create large forces. **Important safety note:** Your g meter should be attached to you by some type of wrist tether so that it will not fall off the ride and cause injury or damage.
Lake Compounce

Discovery in the Park

**The Wildcat**

One of the first amusement park rides invented, the roller coaster operates because of **gravity**—the force of attraction which the Earth exerts on all objects on or near it.

**As you ride The Wildcat, you will be the experiment.** Notice when you feel increased and decreased forces. They may push you into your seat or lift you off of it. They may push you left or right. After the ride is over, try to answer the following questions.

1. Describe what happens to the size of the hills during the ride? Why do you think this is so?

2. When you are at the top of a hill, are you moving faster or slower? Why?

3. When you are at the bottom of a hill, are you moving faster or slower? Why?

4. Do you gain or lose speed as you go up a hill? Why?

5. Do you gain or lose speed as you go down a hill? Why?

6. Do you feel heavier, lighter, or the same as usual when you go up a hill? Why?

7. Do you feel heavier, lighter, or the same as usual when you go down a hill? Why?
8. Are you pushed inward or outward when you are in a turn? Why?

9. On the curves, do the tracks tilt inward, outward, or are they flat? Why?

10. Can you identify where you:

   Are accelerating or speeding up? ________________________
   Are decelerating or slowing down? ________________________
   Are feeling weightless? ________________________
   Have the greatest speed? ________________________
   Have the slowest speed? ________________________
   Have the most potential or stored energy? ________________________
   Have the most kinetic or energy of motion? ________________________
   Are in a backward leaning zone? ________________________
   Are in a forward leaning zone? ________________________

11. How fast do you think the coaster goes?

12. What simple machines are used on the roller coaster ride (ex. lever, wheel and axle, pulley, inclined plane)?

Math Link

Measure the time it takes for the coaster to make one trip by using a watch with a second hand or a digital watch with a stopwatch mode. If the coaster track is about 800 meters long, what is the average speed of the trip? For linear or straight line motion, to find the average speed divide the distance traveled by the time for the trip. Give your answer in meters per second. (Try converting your answer to kilometers per hour.)

time for trip__________ seconds

average speed = \frac{\text{distance}}{\text{time}}
An Explanation

The Wildcat Roller Coaster works because of gravity and the **Law of Conservation of Energy**. The Law of Conservation of Energy says that energy can change from one form to another, but it cannot be created or destroyed.

Think of using a playground slide. After climbing up the steps to the top of the slide, you have **potential energy**. It is called potential energy because it is a stored energy that can be used later. As you get on the slide’s surface and start to slide down, your movement shows **kinetic energy**. Kinetic energy is the energy of motion, energy that is being used.

The Law of Conservation of Energy says that energy cannot be created out of nothing. It has to come from someplace else. It comes from changing some of the potential energy into kinetic energy. The farther you slide, the more potential energy you convert into kinetic energy. By the bottom of the slide, just before your feet touch the ground, all of the potential energy is changed into kinetic energy and you have the greatest speed.

A roller coaster is similar to a slide, except you ride in a vehicle with wheels that reduce **friction**, a force that resists motion. (It’s easier to roll an object than to drag or slide it.) You also don’t have to climb to the top of the first hill. A motor does that work for you. At the top of the hill you have potential energy. It is stored energy because gravity wants to pull you down to the ground. This potential energy is changed into kinetic energy as gravity pulls you down the first hill. The farther you go down the hill, the more potential energy changes into kinetic energy, which you feel as speed. Therefore you will be going fastest at the bottom of the hill. Going up the next hill, your kinetic energy will change back into potential energy. More energy is changed the higher you go. The conversion of kinetic energy to potential energy continues as you go up and down hills. Your total energy will not increase or decrease. It will just change from one form to another.

Wind resistance, the rolling of the wheels, and friction in the coaster ride will use some of the kinetic energy. Therefore, to make sure there is enough kinetic energy to reach the starting point for the ride, coaster designers must build each successive hill on the ride lower than the first hill.

When you make a turn, the force you feel is called **centripetal force**. This is a force on an object that acts toward the center of a circular path. So all rides that move in a circle generate centripetal force.

Think of using a playground slide again, but this time one that is curved. On a curved playground slide, your body still tries to go down in a straight line. You think you are being thrown to the outer edge of the slide, but you are just trying to go straight.

On a coaster, when you make a turn it feels like you are being forced to the outside of the car. To account for centripetal force, coaster designers “bank” the turns, tilting the track and therefore the car, so that you are forced down into your seat rather than being thrown out.
The Zoomerang

Many people find a roller coaster ride that loops and goes through a corkscrew very exciting. It gives the thrill of speed and a feeling of falling from great heights while being turned upside down. The Zoomerang has the added feature of repeating this process while taking riders backwards.

After riding the Zoomerang roller coaster, see if you can answer the following questions.

1. On the loop or corkscrew part of the ride, do the “circles” get wider, narrower, or stay the same as you go through the ride?

2. Are you pushed down in the seat or lifted off the seat when you are turned upside down in the corkscrew part of the ride?

3. Do you feel heavier or lighter at the bottom of a loop?

4. Do you feel heavier or lighter when you reach the top of the loop?

5. Does the force feel greater at the top or at the bottom of the loop?

6. Does the car slow down or speed up when you move up a loop?

7. What design in the ride keeps you from being thrown out when it turns?

8. What forces do you feel on the Zoomerang?

Math Link

The distance traveled on the Zoomerang is 286 meters one way. Measure the time it takes for the Coaster to complete the ride from start to finish. What is the average speed of the trip in meters per second?

time for complete trip __________ seconds

average speed = distance/time
An Explanation

The shape of the curve for a looping roller coaster is not a circle. It’s more like a teardrop shape called a clothoid loop. First described by Swiss mathematician Leonard Euler in the 18th century, it is the perfect shape for somersaulting riders on a roller coaster without having them fall out.

Over the years, coaster designers have discovered that a perfect circle is not a good choice for a loop. Centripetal force is generated by all rides that move in a circle. This force presses riders into their seats in a vertical loop on a coaster. When the coaster and its riders are upside down at the top of the loop, the centripetal force has to be greater than the force of gravity or the riders will fall out of their seats.

Designers first thought that making the ride faster and the circle just large enough to create about one g of centripetal force to counteract the one g of gravity at the top of the circle would solve the problem. But that would mean that riders would have to face over eight g’s when entering the loop!

This would not work considering that at six g’s many people get nosebleeds and at nine g’s they can black out and lose consciousness. (Space shuttle astronauts only experience about three g’s of force.)

The clothoid loop, on the other hand, levels or smooths the forces on the riders and still keeps them safe because its radius keeps decreasing on the upward swing. The decrease in the radius produces a higher centripetal force, permits vertical loops to be very large, and allows riders to undergo only three to four g’s when entering the loop. Wow! All of this because of math and physics!
The Bumper Cars

When riding the bumper cars, do you try to bypass being hit or are you looking for the crash? Do you drive calmly around the perimeter or do you bang into everything? Actually, the bumper cars offer a fun, hands-on experience in learning **how not to drive**. Try to answer the following questions as you investigate the crashes!

1. While you are waiting in line, look at the bumper cars. In what ways are they different than normal cars?

____________________________________________________________________________________

2. Which way are you pushed when you first start up your car?

____________________________________________________________________________________

3. Which way are you thrown when your car stops?

____________________________________________________________________________________

4. If you were in a head on crash, which way do you think you would be thrown?

____________________________________________________________________________________

5. Which way are you thrown when hit from behind by another car? Why?

____________________________________________________________________________________

6. What happens to you when your car is hit from the side?

____________________________________________________________________________________

7. When you crash into someone else’s car, in which of these situations do you feel the greatest force?
   
   You are moving and they are stopped ________
   
   You are moving and they are moving away from you ________
   
   You are moving and they are moving towards you ________

   Why?____________________________________________________________________________________

8. What form of energy is used by the cars to make them move?
   
   How do you know this?

____________________________________________________________________________________
9. From what you have discovered, explain why it is important to wear a shoulder harness and seat belt when riding in a vehicle during your real world travel.

________________________________________

Math Link

If you are traveling in a Bumper Car at 2 meters per second, what is the distance you can cover in one minute under the following conditions: you have ten collisions which result in a loss of 5 seconds four times, 4 seconds three times, and 3 seconds three times?

An Explanation

The bumper cars follow Newton’s Three Laws of Motion.

Newton’s first law of motion states that an object remains in a state of rest unless an unbalanced force causes it to move, and that an object continues in motion along a straight line unless a force stops it or causes the object to change direction.

Newton’s second law of motion states that the acceleration of an object (the rate at which the velocity or speed and direction of an object changes) depends on the size of the force that produces the acceleration and on the mass (amount of matter) of the object.

Newton’s third law of motion states that for every force there is an equal and opposite force.

According to Newton’s first law of motion, objects want to keep traveling in the direction they are going. When you are riding in your bumper car and it hits someone else’s car and stops, your body follows the first law of motion and keeps going forward. When you are stopped and someone else hits your car from behind and moves it forward, your body tries to remain stopped. So it feels like you are being thrown backwards.

Newton’s second law of motion relates to impulse and momentum. Simply put, it says that when you crash into another bumper car that is stopped, some of your momentum will be transferred to the other car from yours. This is the reason that the other car moves. To keep riders safe, it is important that energy is transferred from one car to the other slowly. The rubber bumpers that surround the cars cause the collision between the two cars to take more time. Energy is then transferred more slowly and insures safer collisions.