



Teachers Resource Guide (Curriculum Guide) Grades: 5-8

Welcome to Clifton Hill Fun by the Falls!

Arrival and Entry to all the attractions

Please allow ample time for parking and obtaining tickets.

Safety

To have the best adventure possible, please abide by all safety precautions posted and given by our staff. If you have any questions during your experience, please speak to any member of our team.

Additional Information

- Read through all grades. Different grades have activities that are useful and transferable to other grades in this package.
- For information on all the attractions on the Clifton Hill Fun Pass please visit www.Cliftonhill.com.
- A Scavenger Hunt is available for the Movieland Wax Museum.
- Bus parking is complimentary when you book our attractions and/or restaurants.

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Educational Objectives:

- Learn the educational benefits of the Student Group Package and how the attractions tie in with the curriculum of grades 5, 6, 7, & 8.
- Provide a correlation between class activities and an end of the year field trip that includes relations to Science, Math, Physical Education, and Visual Arts classes.
- Some components are taken from Niagara/Ontario school board to directly correlate student's curriculum.

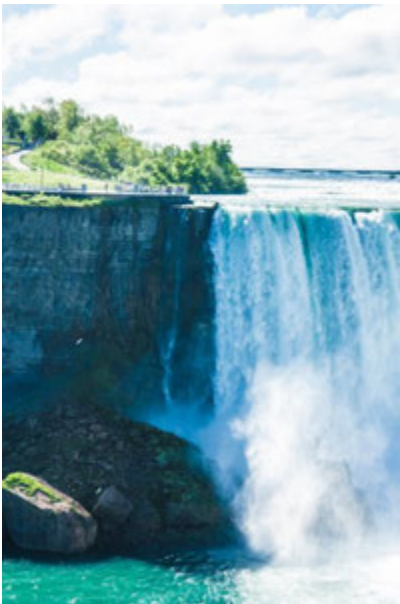
Geography of Niagara Falls (All Grades):

Evaluating Niagara Fall's geography can be experienced first hand from Clifton Hill. The great lakes that surround Niagara Falls hold 20 percent of the world's fresh water. A trip on the Niagara SkyWheel provides students with a phenomenal view of all of Niagara Falls. Students can assess Niagara Falls and the process of melting glaciers that created the rivers, lakes and the waterfall that we see today.



Temperatures:

The temperatures in Niagara Falls on average by season are: spring (5° to 19° degrees Celsius), summer (25° to 21° degrees Celsius), fall (22° to 8° degrees Celsius) and winter (2° to -0.9° degrees Celsius). (Niagara Falls Geological History | Geography of the Niagara Area - Niagara Falls Canada & USA. (2017, February 03).



Niagara Falls leading industry:

Students of all grades are also able to view and understand the tourism industry in Niagara Region. Tourism has led Niagara Falls to be one of the top destinations in the world. A trip to Clifton Hill can allow students to assess firsthand all the tourist attractions, hotels, souvenir stores and restaurants that attract millions of tourist every year.

Population:

The population of Niagara Falls has steadily increased over the past 20 years. From on top of the Niagara SkyWheel students are able to overlook all of Niagara Falls and see the disbursement of settling places for the people of Niagara Falls.

	1996	2001	2006	2011	2016
Niagara Falls Population over 20 years	76,917	78,815	82,184	82,997	88,071

** Niagara Region Population 1996-2011. (2017, February 21). Retrieved from <https://www.niagararegion.ca/about-niagara/statistics/population-and-maps.aspx>

Health and Physical Education (All Grades):



Being able to take part in activities that emphasize healthy competition with themselves and others, having access to play spaces that are clean and attractive, as they participate in a wide variety of individual and small-group activities and lead-up games. Target activities: choose an appropriate distance from the target to maximize level of challenge and opportunity for success; work on accuracy by maintaining eye contact with the target and following through in the direction of the target. Playing 18 holes of mini-putt will create healthy competition between students as they embark on a day of walking and some outdoor activities.

Demonstrate an understanding of factors that contribute to their personal enjoyment of being active (applying fun and physical activities). All this while still receiving their daily physical activity (DPA). It allows students to participate in sustained moderate to vigorous physical activity, with appropriate warm-up and cool-down activities, to the best of their ability for a minimum of twenty minutes or more each day.

Establish an understanding of the components of physical activities (e.g., movement skills, game structures, rules and guidelines, conventions of fair play and etiquette). This can be done through learning the rules and guidelines of all the attractions. Set guidelines must be set in order for all attractions ride and play etiquette to be completed in a safe manner.

Display an understanding of proactive measures that should be taken to minimize environmental health risks that may interfere with their safe participation in and enjoyment of outdoor physical activities (e.g., drinking fluids to avoid dehydration, before, during, and after vigorous activities; applying sunscreen and wearing a hat and sunglasses to protect the skin and eyes from sun damage; checking weather reports for the humidex, wind chill, and air quality index. All these can be done before, during, and after your trip through the attractions on Clifton Hill.



Actively participate in a wide variety of program activities (e.g., lead-up games & recreational activities) according the students capabilities, while applying behaviors that enhance their readiness and ability to take part (e.g., being engaged and moving throughout the activity, using time effectively, being open to new activities, displaying fair play by

taking turns and sharing, listening to others, not blaming or taking advantage of others). Many aspects of Golf or the Ghost Blasters Dark Ride teach kids the value of recreational physical activities. Golf provides a firsthand movement through an activity, while all the attractions ensure they are using their time effectively.

Grade 5

Niagara SkyWheel:

Science:

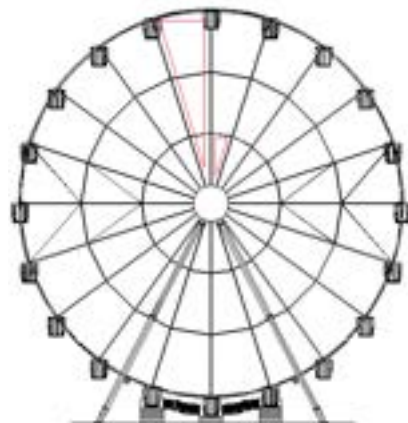
In science grade 5 students will have to identify and describe forces acting on and within structures. As they measure and compare external forces (natural or human) acting on structures and their effects on different materials, they will develop a more sophisticated understanding of the concept of force and of ways in which structures respond to forces acting upon them. This connects the students learning perfectly with the structure of the Niagara Skywheel and its freestanding structure, with the forces that guide the motion of the Niagara Skywheel.



Students have the ability to compare the force required to move a load, using different mechanical systems. This can best be seen in the Niagara SkyWheel by analyzing the force and movement required to make one complete revolution occur. Teachers can use this opportunity to teach students Newton's three laws of motion. For example: the first law can be determined by understanding that the Niagara SkyWheel's gondola will not move unless it is acted on by an outside force. The mechanics of the SkyWheel can illustrate first hand to your students how forces work. Teacher's can explain the dynamics of gears and motors pulling the wheel in a circular motion while gravity ultimately guides the wheel into a full circle.

Math:

Identify and classify acute, right, obtuse, and straight angles; – measure and construct angles up to 90° , identify triangles (i.e., acute, right, obtuse, scalene, isosceles, equilateral), and classify them according to angle and side properties; – construct triangles. The Niagara Skywheel is made up of many different shapes and sizes including lessons about angles covered in the grade 5 curriculum.



Fractions:

SkyWheel Number Facts:

Understanding and identifying fractions in the real world. Students can assess the Niagara SkyWheel by the number of gondolas with people in them compared to the total number of gondolas. By doing this, students can make connections between their class work with fractions and relate it to everyday activities.

Gondolas: 42

Gondolas Capacity: 8

Ride time: 10 Minutes

Revolution in 10-minute ride: 3

Students can figure out a fraction by stating how many students there are in their class, divide it by 8 (the capacity of each gondola) to see how many they can fill, while creating a fraction of the amount of gondola's there are in total (42). Example: 32 students, divide that by 8 = 4. Your class would fill up $\frac{4}{42}$ of the Niagara SkyWheel.

Number Sense:

Students can compute how many revolutions the Niagara SkyWheel does in a single ride (3). The average ride would be 10 minutes long. Teachers can have their students calculate the amount of revolutions the Niagara SkyWheel does in an hour (18), 6 hours (108), 12 hours (216), 24 hours (432).

Proportion:

Objects of proportion can be perfectly tied with the size and weight (180,000 Pounds) of The Niagara Skywheel compared to all its surroundings.

Movieland Wax Museum of the Stars:

Media Literacy:

A large part of the Ontario curriculum focuses on students responding to and creating several media texts, and understand how the conventions and techniques associated with them are used to create meaning. Movieland Wax Museum of the Stars allows your grade 5 students to view numerous media outlets and various fonts, colours, videos, and artistic forms. With over 100 different wax figures, students are able to assess different wardrobes, movie/ television settings, and embark on the process of wax making and its history. A part of the grade 5 curriculum states that students should know and understand literary texts. A trip through the Movieland Wax Museum will teach students various text styles while also incorporating stories of some of the actors in the museum (through videos or incorporating games). **Activity:** There is a biography of Walter Elias "Walt" Disney (Walt Disney) inside the Wax Museum. Students can be



asked to read the biography and provide a summary of the reading. Students are also able to use the Clifton Hill brochures to assess the various attractions, restaurants, and shops that are on our location. With the brochure students are able to identify designs, logos, and advertisements while reading about the Clifton Hill operations. **Activity:** Have students design their own advertisement for one of the Clifton Hill attractions (they can use the brochure as an example).

Visual Arts:



Elements of Design

Students will develop understanding of all elements of design, which can be actively seen in the Movieland Wax Museum..

- **Line:** Linear and curved hatching and cross-hatching that add a sense of depth to shape and form; gesture drawings; chenille stick sculptures of figures in action; implied lines for movement and depth. All of these can be seen in the Movieland Wax Museum where various wax figures can be seen in all shapes and sizes with different depth perceptions.

- **Shape, form and space:**

Symmetrical and asymmetrical shapes and forms in font and image; positive and negative shapes that occur in the environment; convex, concave and non-objective shapes. Whereas space is shown through shading and cast shadows that create the illusion of depth; atmospheric perspective; microscopic and telescopic views. Movieland Wax Museum shows facial content that portrays convex and concave features to best illustrate for students shape and forms.

Principles of Design

Students will develop understanding of all principles of design (that is, contrast, repetition and rhythm, variety, emphasis, proportion, balance, unity and harmony, and movement), but the focus in Grade 5 will be on proportion.

Proportion

The relationship of the size and shape of the parts of a figure to the whole figure; the scale of one object compared to its surroundings, with indications of how close and how large the object is (e.g., figures with childlike proportions that are approximately “five heads high” and adult figures that are approximately “seven or eight heads high” and the use of improbable scale for imaginary settings and creatures.

Dinosaur Adventure Golf & Wizards Golf:

Math:

Also when playing either our outdoor Dinosaur Adventure Golf or indoor Wizards Golf there are many different angles and shapes that are required to make each shot.

Number Sense:

Dinosaur Adventure Golf has 50 life size dinosaurs for your students to interact with and play mini-putt around. This can test grade 5's ability to keep track of exactly how many Dinosaurs they see around the course. Activity: to have students count how many life size dinosaurs there is in the Dinosaur Adventure Golf. Choosing between our outdoor Dinosaur Adventure Golf or the indoor Wizards Golf provides a great understanding of data management and probability. This includes collecting and organizing data and displaying data in relative frequency tables with scorecards.

Proportion:

The relationship of the size and shape of the parts of a figure to the whole figure; the scale of one object compared to its surroundings, with indications of how close and how large the object is (e.g., figures with childlike proportions that are approximately “five heads high” and adult figures that are approximately “seven or eight heads high” and the use of improbable scale for imaginary settings and creatures). All these are perfect when entering into our indoor glow in the dark Wizards Golf which offers objects of all sizes and creates an imaginary setting that are perfect for students.



✧ **FUN FACT: The Falls at Niagara are about 12,000 years old.**

Niagara Speedway

Science:

In the grade 5 science curriculum students learn about Structures and the Functions that surround them. This includes the mechanisms in our



environment and the forces that act on these structures. Students can gain knowledge from the forces that these structures provide. The Niagara Speedway can break down all these fundamentals by showing your students natural resources being used to create a structure. This shows the development and design of such a big structure. Your class can identify the many complex and intermediate designs that the Niagara Speedway has.

Students are able to understand the change and continuity over time. A perfect example can be seen from the development of the Niagara Speedway. The Niagara Speedway land used to be the Comfort Inn Clifton Hill. Below you can see progress pictures how over time the Comfort Inn became a unique attraction.

Picture 1: Comfort Inn



Picture 2: Construction of the Niagara Speedway



Picture 3: Niagara Speedway finished product.



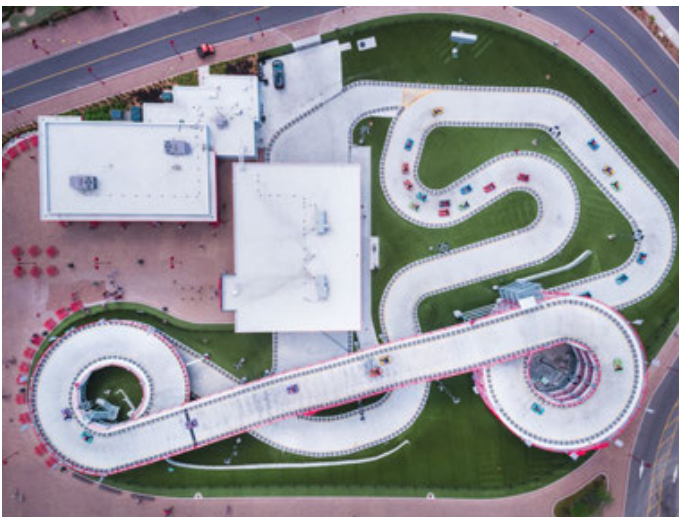
The curriculum states that the number one goal is to relate Science and technology to society and its environment. The Niagara Speedway is perfect to explain to your students the various science properties of matter, mass, volume, speed, velocity and many more science terms.

Understanding societal structures and how structures and the building of these structures have changed over time is important to know. When knowing this grade 5 students will need to know the transitions from the Agricultural Revolution to the Industrial Revolution and now in the digital revolution. From here there is further understanding of these revolutions. More specifically knowing the breakdown of the First Industrial Revolution (IR). In the first IR, this is where industries started the milling of iron and textile work. The second IR was the advancement of steel, oil and electricity. The third IR is where we see progress into the Digital Revolution (DR). Lastly the fourth IR is the time from now onto the future where robotics and artificial intelligence starts to develop. Your class can understand each one of these revolutions through the development of the Niagara Speedway. Knowing the knowledge behind all the revolutions and the developments that came from them is important. Iron, steel, oil, electricity and controls of the Niagara Speedway all can be expressed through its structures and go-karts.

You can also take your time on Clifton Hill to understand the structures and mechanisms behind such an enormous attraction. Students can take the time to develop an understanding for the safety required making this attraction behind the construction and mechanics of making it all work as a unit. It is important to know that building a structure with external elements that use gravity, speed, velocity and mass.

Math

Students are able to use many examples from their math classes to correlate with the Niagara Speedway. Several math elements can be learned such as number sense, measurement, and geometry.



Number sense: Number sense can be broken down into

What is the circumference (C) for the circle spiral on the Niagara Speedway when Diameter (d) is 27 metres?

$$d = 27\text{m} = r = d/2 = r = 27/2 = 13.5\text{m}$$
$$C = 2\pi r = C = 2\pi(13.5) = C = 84.82$$

Grade 6

Niagara SkyWheel:

Science:

The use of flight technologies has substantial effects on both society and the environment. In order to understand the principles of flight, students must first learn about the properties of air that make flight possible. This can be seen firsthand by the views of The Niagara Skywheel, and the dynamics the revolution of getting on and going around in a complete circle.

Students will understand the elements of electricity that makes The Niagara Skywheel rotate. This electricity is a form of energy that students encounter every day. Students will already be familiar with many of the uses of this convenient source of energy. Building on their prior learning, students will explore devices that convert electricity to other forms of energy. The building of circuits should further strengthen students' understanding of how electrical systems work. This can be applied directly to the electrical forces that make The Niagara Skywheel work. It can also be seen by the various signs and structures of Clifton Hill.

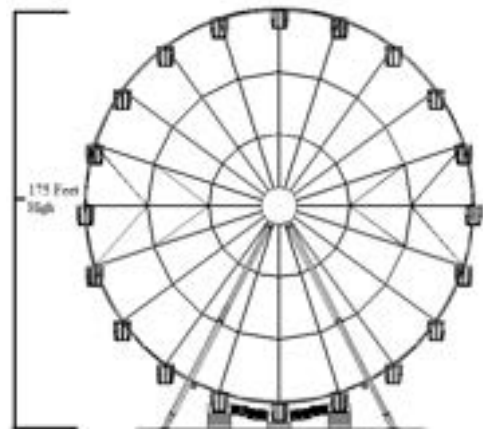
From up top on the Niagara SkyWheel students are able to assess Niagara Falls water and how it is redirected from traveling over the Falls in order to drive large hydro-electric turbines that produce electricity for Southern Ontario and some of Western New York.

✧ **Fun Fact: The Niagara River flows at approximately 56.3 kilometers/hour.**

Math:

Measurement:

Measuring quantities using metric units; converting from larger to smaller metric units, including square metres to square centimetres; developing and applying area relationships for a parallelogram and a triangle; developing and applying the volume relationships for a triangular prism; determining and applying surface area relationships for rectangular and triangular prisms; relating square metres and square centimetres. The measurements of The Niagara Skywheel can be seen in the picture to the right.



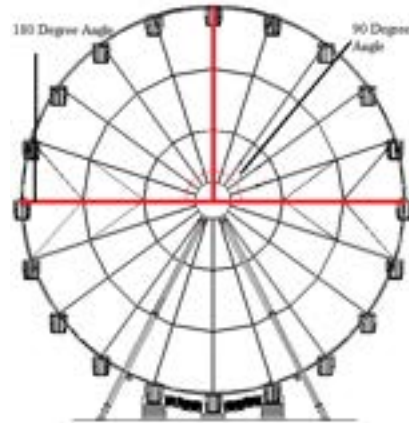
The Niagara SkyWheel stands 53 metres tall. With this, students are able to decipher different units of measure. Show the different measurements of the height of the Niagara SkyWheel from feet to metre to cm, and mm.

Niagara SkyWheel is 53 Metres tall.

Conversions: 0.53 Hectometres/ 530 Decimetres/ 5300 Centimetres/ 53000 Millimetres.

Geometry and Spatial Sense:

Classifying quadrilaterals by geometric properties; sorting polygons by lines of symmetry and by rotational symmetry; measuring angles to 180° with a protractor; constructing polygons; representing figures using views and isometric sketches; performing and describing rotations; plotting points in the first quadrant. The Niagara Skywheel is a full circle, and can be used as a perfect example for measuring angles to 180° , while understanding lines of symmetry, and one full rotation being 360° .



Number Sense:

Number sense can engage students with real world problem solving questions. Questions such as how many tickets can a student purchase for the Niagara SkyWheel (tickets are \$7.90 including tax for students under 12) if they had \$50.00? How much change would they have left over? **Or** How many tickets would it take to fill up all of the Niagara SkyWheel (42 gondolas X 8 people a gondola = 336 people) and how much would it cost for all the tickets ($\$7.90 \times 336 = \$2,654.40$).

Movieland Wax Museum of the Stars:

Media Literacy:

A part of the grade 6 curriculum states that students should develop knowledge and understanding of a variety of literary texts. A trip through the Movieland Wax Museum will teach students various text styles while also incorporating stories of some of the actors in the museum (through videos or incorporating games). In the wax museum students are able to assess different texts patterns, styles, and elements. Media literacy, from the grade 6 is addressed by teachers showing their students various advertisements on Clifton Hill. This can teach them the reasons behind logos, images, colors, slogans and various videos to appeal to certain age groups. Activity: Grade 6 students can assess Clifton Hill's mass advertisement appeal and state the different messages that they got from certain ads. Teachers can have





students explain why certain ads are more powerful than others. Students are able to understand different conventions and techniques through understanding old fashion movies to new movies. They have a chance to understand different camera angles, slow motion scenes and freeze-frame images and can analyze how and when techniques are utilized. Students are also able to use the Clifton Hill brochure to assess the various

attractions, restaurants, and shops that are on our location. With the brochure students are able to identify designs, logos, and advertisements while reading about the Clifton Hill operations. **Activity:** Have students design their own advertisement for one of the Clifton Hill attractions (they can use the brochure as an example).

Dinosaur Adventure Golf & Wizards Golf:

Math:

Number Sense:

Student will be able to apply number sense, with the Clifton Hill Fun by the Falls attractions, by estimating the heights of the Dinosaurs and volcano in Dinosaur Adventure Golf. Answer: Volcano stands 15 metres tall. The largest dinosaur such as the tyrannosaurus rex stands 9 metres tall. This allows students to estimate real world objects height compared to their own height.

Choosing between our outdoor Dinosaur Adventure Golf or the indoor Wizards Golf provides a great understanding of data management and probability. This includes collecting and organizing data and displaying data in relative frequency tables with scorecards based on how many shots they take each hole.

Zombie Attack, Toy Store 4D & Ghost Blasters Dark Ride:

Math:



Number Sense:

The Zombie Attack 6D ride and Ghost Blasters Dark Ride allow students to keep track of their scores while experiencing a team building activity. Grade 6 students are able to use scoreboards to help accumulate points and have friendly competition between class mates.

Niagara Speedway

Science:

Grade 6 teaches students the many things needed to know about electric circuits and how we control electricity in a controlled manner. Within this controlled electricity we see the many dynamics of how this form of energy can be used in our everyday lives. Electricity provides a establishing building block for how our cities, provinces, countries and world interconnects and is able to sustain and work.



The Niagara Speedway uses electricity in order to run its safety functions throughout the track. This includes the safety signs around the track to inform all drivers the safety messages and instructions throughout the Speedway experience. The track operates 36 karts each race. To make sure the whole experience is safe, especially with so many karts some electric loop wires are put into place. These loop wires are put into places on the track to slow down the carts to ensure a safe ride. The procedure of loop wires:



- The wires and electric boxes in the track send a signal to each individual kart.
- Sends a spark into the engine, which slows down the pistons.
- This controls the engines cycle that the kart uses to run.
- When the pistons slow down the kart will run at a slower speed.
- This can be done on several intervals all the way to slowing down the kart completely.

You can use this knowledge to express to students the electrical systems that are used in our everyday lives. A wonderful example is to express how a circuit can work on such a big level with a 40-foot go-kart track.

Grade 7

Niagara SkyWheel:

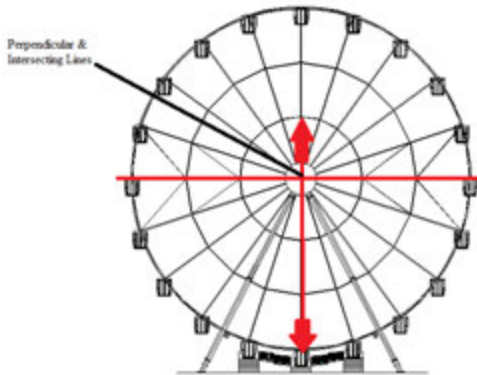
Science:

Students will be able to evaluate human built structures to meet specific needs. In doing so, they must consider many factors, including not only the functions the structures must perform but also the resources available to build them, the intended lifetime of the structures, and the impact of the structures on the environment. In Grade 7, students will continue to learn about the effects of forces that act on and within different structural forms. They will investigate how different structural forms support or withstand loads by designing, building, and testing structures. When analyzing The Niagara Skywheel the students can evaluate the functions, structure, building, testing, and the design needed to make the 53 metre high Niagara Skywheel. Students can evaluate how the Niagara SkyWheel is created to withstand all seasons and the weathering of those seasons.



- ✧ **FUN FACT: The Horseshoe Falls are 57 metres high and allow 6 million cubic feet (168,000 cubic meters) of water over the falls every minute during peak daytime tourist hours (that is about a million bathtubs full of water every minute!).**

Math



Students can use their knowledge from geometry to understand constructing parallel, perpendicular, intersecting lines, sorting and classifying triangles when analyzing and riding The Niagara Skywheel.

Area and Volume: Grade 7's will have an opportunity to test their class work by finding out the area of the Niagara SkyWheel. Teachers can use this as a lesson for math to teach grade 7's

why area is measured in square units (²) and volume is in cubic units (³). To find the area (A) of the Niagara SkyWheel as a 2D object:

$$A = \pi r^2$$

$$A = 3.14(26.5)^2$$

$$A = 2205.065 \text{ m}^2$$

$$\pi = 3.14$$

$$r = 26.5 \text{ m (To figure out how we got r, please refer to Grade 8 Mathematics)}$$

Movieland Wax Museum of the Stars:

Media Literacy:

Grade 7 students can make personal connections between curriculum and how it relates to advertisement found throughout Clifton Hill. Students can assess the purpose and targeted audience when analyzing media outlets on Clifton Hill and identify its intentions. By evaluating certain advertisements and logos, grade 7 students can answer the questions such as why advertisements are made, and why companies use certain logos to create a brand/identity. Activity: Have your class enter the Movieland Wax Museum of the Stars to directly associate the making inferences and interpreting messages portion of their curriculum. They can do this by understanding themes of movies, popularity of films, understanding how standards of beauty are established and view different movie settings with various costumes. Students are also able to use the Clifton Hill brochure to assess the various attractions, restaurants, and shops that are on our location. With the brochure students are able to identify designs, logos, and advertisements while reading about the Clifton Hill operations. Activity: Have students design their own advertisement for one of the Clifton Hill attractions (they can use the brochure as an example).



Dinosaur Adventure Golf & Wizards Golf:

Math:

Number Sense:

Choosing between our outdoor Dinosaur Adventure Golf or the indoor Wizards Golf provides a great understanding of data management and probability. This includes collecting and organizing data and displaying data in relative frequency tables with scorecards based on how many shots they take each hole.

Zombie Attack, Toy Store 4D & Ghost Blasters Dark Ride:

Math:



Number Sense:

The Zombie Attack 6D Ride and Ghost Blasters Dark Ride allow students to keep track of their scores while experiencing a team building activity. Grade 6 students are able to use scoreboards to help accumulate points and have friendly competition between class mates.

Niagara Speedway

Science:



Grade 7 students are able to identify and break down human built structures and how each structure on Clifton Hill, especially the Niagara Speedway have several factors that make up its structure. Your class is able to express their interests in how the Speedway was constructed. You can take the time with your class to try and identify all the layers in the track. Some components include:

- 1) **Designing:** this is compiling data and research to developing an appealing yet safe design for a go-kart track. Students need to understand the starting point required for all structures to be built. When building such a complex structure, a lot is required.
- 2) **The Physical Materials:** this is the physical materials that are required to put the structure together. Comes down to the raw materials that are able to develop the overall strength of the structure but need to withstand the test of time and ultimately be the safest material.
- 3) **Electronic Component:** This component can be assessed strongly in the Grade 6 Science component of this document.

The Niagara Speedway uses electricity in order to run its safety functions throughout the track. This includes the safety signs around the track to inform all drivers the safety messages and instructions throughout the Speedway experience. The track operates 36 karts each race. To make sure the whole experience is safe, especially with so many karts some electric loop wires are put into place. These loop wires are put into places on the track to slow down the carts to ensure a safe ride. The procedure of loop wires:

- The wires and electric boxes in the track send a signal to each individual kart.
- Sends a spark into the engine, which slows down the pistons.
- This controls the engines cycle that the kart uses to run.
- When the pistons slow down the kart will run at a slower speed.
- This can be done on several intervals all the way to slowing down the kart completely.



- 4) **Building:** This is the actual physical assembly of the track itself. This is an important for students to understand. This compiles all components listed above along with some other components to construct the structure itself.
- 5) **Karts:** Specific go-karts were chosen ultimately to ensure safety of all drivers while ensuring each kart could be controlled manually.



- 6) **Testing:** Which is one of the most important components. Students need to be aware of all the levels of testing that go into place to make such a structure possible. Safety is essential in all structures to ensure that you and your class have nothing to worry about when you come visit places

like Clifton Hill and the Niagara Speedway. This testing involves all initial tests to allow the attraction to open but this all of Clifton Hill structured attractions are checked daily upon opening to sure everything is safe and secure for the day ahead.

Overall, multiple science elements can be taken from the structure of the Niagara Speedway and be assessed into the student's curriculum. Things to note are techniques required to design and ensure safety on measures of a 40-foot tall ramp, spirals that are in place and ultimately building the ramp on a slope that provides a safe speed and velocity for the overall experience. From here your class can discern and evaluate the purpose of structures as noted in your curriculum.

While structures are being built it is great to note the dynamics of ergonomics in structures and how like some science experiments the use of tools and materials (safely and securely) are very important.



Class to real life example:

Teachers are able to discuss some of the components listed above and how these are required when building all structures, whether it be a house, or places like the CN Tower. We are surrounded by structures of all shapes and sizes and it is important to know no matter how big or small, they will require full safety and structure design measures are taken.

Grade 8

Niagara SkyWheel:



Science:

The smooth functioning of society depends on a great number and variety of systems. The needs of society can influence the evolution of established systems or demand the introduction of new ones. Whether large or small, human, mechanical, or natural, all systems consist of many components that can be studied and improved. Students will learn to

calculate the mechanical advantage of mechanical systems, and will learn about the overall safety, efficiency, and effectiveness of a variety of systems. This can be learned first hand when entering all the rides and attractions on Clifton Hill Fun by the Falls. Especially The Niagara Skywheel, which provides safety, messages before and during the ride. Students can gain an understanding of the mechanical systems in the Wild West Coaster, which offers a 6-dimension experience with moving seats.

More than 70 per cent of the earth's surface is covered with water. In learning about the earth's water systems, students will develop an understanding of the important role that water systems play in global ecosystems. This can be seen perfectly from The Niagara Skywheel, which offers a perfect view of Niagara Falls. This view of the falls will show how Lake Erie falls into Lake Ontario to make Niagara Falls, and then flows into the St. Lawrence River.



- ✧ **FUN FACT: Water that flows over the Falls at Niagara ultimately ends up in Lake Ontario - from there, water drains by way of the St. Lawrence River in to the Atlantic Ocean.**

Students will understand the elements of electricity that makes The Niagara Skywheel rotate. This electricity is a form of energy that students encounter every day. Students will already be familiar with many of the uses of this convenient source of energy. Building on their prior learning, students will explore devices that convert electricity to other forms of energy. The building of circuits should further strengthen students' understanding of how electrical systems work. This can be applied directly to the electrical forces that make The Niagara Skywheel work. It can also be seen by the various signs and structures of Clifton Hill.

Students will be able to evaluate human built structures to meet specific needs. In doing so, they must consider many factors, including not only the functions the structures must perform but also the resources available to build them, the intended lifetime of the structures, and the impact of the structures on the environment. In Grade 7, students will continue to learn about the effects of forces that act on and within different structural forms. They will investigate how different structural forms support or withstand loads by designing, building, and testing structures. When analyzing The Niagara Skywheel the students can evaluate the functions, structure, building, testing, and the design needed to make the 53 metres high Niagara Skywheel. Students can evaluate how the Niagara SkyWheel is created to withstand all seasons and the weathering of those seasons.



Math:

Grade 8 students can use their knowledge in geometry and spatial sense to show the sorting of quadrilaterals by geometric properties involving diagonals, constructing circles, investigating relationships among similar shapes, and determining angle relationships for parallel and intersecting lines. All these factors can be shown while looking directly at the Niagara Skywheel or while on the ride you can see the metal structure, which holds up the Skywheel (and the shapes that construct the wheel).

Student can analyze the circumference in relation to real world objects. The Niagara SkyWheel has a circumference (C) of 157 Metres. This number allows students to find the diameter (d) and radius (r) of the observation wheel.

$$C = \pi d$$

$$(d) 3.14 = 157$$

$$d = 50 \text{ Metres}$$

To further analyze mathematics for the Niagara SkyWheel students can find the radius.

$$d = 2r$$

$$r = d/2$$

$$r = 50/2 \quad (\text{Insert Diameter found above})$$

$$r = 25 \text{ Metres}$$

Movieland Wax Museum of the Stars:



Media Literacy:

Grade 8's media literacy curriculum can be directly associated with the Movieland Wax Museum. Students are able to view and understand various movie themes, issues and points of view. While Clifton Hill itself can explain media form by showing the elements of various advertisements and why certain forms of advertising are used to draw the attention of consumers.

Activity: Have your students

evaluate a media outlet on Clifton Hill and have them express the different themes that were used to give meaning. This will teach students the different forms of advertising such as print ads, signs and videos and why they are used with certain images, fonts and colours. Grade 8 students can then understand the importance of why it is helpful to understand your audience's point of view before creating an advertisement. Teachers can use the Clifton Hill attractions to express different listening, reading, and understanding techniques with the Clifton Hill attractions (scavenger hunts for the Movieland Wax Museum are available). Students are also able to use the Clifton Hill brochure to assess the various attractions, restaurants, and shops that are on our location. With the brochure students are able to identify designs, logos, and advertisements while reading about the Clifton Hill operations. **Activity:** Have students design their own advertisement for one of the Clifton Hill attractions (they can use the brochure as an example).

Dinosaur Adventure Golf & Wizards Golf:

Math

Number Sense:

Choosing between our outdoor Dinosaur Adventure Golf or the indoor Wizards Golf provides a great understanding of data management and probability. This includes collecting and organizing data and displaying data in relative frequency tables with scorecards based on how many shots they take each hole.



Niagara Speedway

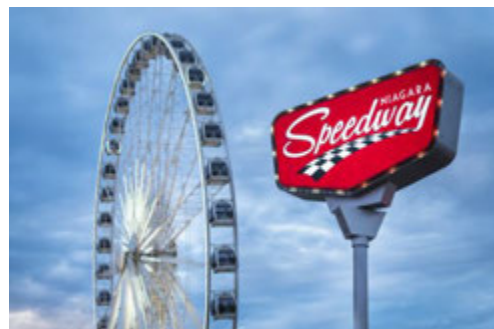
Science:

Grade 8 students are able to identify and break down human built structures and how each structure on Clifton Hill, especially the Niagara Speedway have several factors that make up its structure. This can directly be correlated with the grade 8 curriculum



when assessing systems in action. As we move through time there tends to be high societal demands for new types of structures to be built. This has been determined through the technological advancements that we are seeing in the world. Structures, like products are slowly being obsolete. New, unique structures are needed to create interest. When understanding this, your class can take the time to identify all the layers that are required into making the track. Some components include:

- 1) **Designing:** this is compiling data and research to developing an appealing yet safe design for a go-kart track. Students need to understand the starting point required for all structures to be built. When building such a complex structure, a lot is required.
- 2) **The Physical Materials:** this is the physical materials that are required to put the structure together. Comes down to the raw materials that are able to develop the overall strength of the structure but need to withstand the test of time and ultimately be the safest material.
- 3) **Electronic Component:** This component can be assessed strongly in the Grade 6 Science component of this document.



The Niagara Speedway uses electricity in order to run its safety functions throughout the track. This includes the safety signs around the track to inform all drivers the safety messages and instructions throughout the Speedway experience. The track operates 36 karts each race. To make sure the whole experience is safe, especially with so many karts some electric loop wires are put into place. These

loop wires are put into places on the track to slow down the carts to ensure a safe ride. The procedure of loop wires:

- The wires and electric boxes in the track send a signal to each individual kart.
- Sends a spark into the engine, which slows down the pistons.
- This controls the engines cycle that the kart uses to run.
- When the pistons slow down the kart will run at a slower speed.
- This can be done on several intervals (speed levels) all the way to stopping the kart completely.

- 4) **Building:** This is the actual physical assembly of the track itself. This is an important for students to understand. This compiles all components listed above along with some other components to construct the structure itself.
- 5) **Karts:** Specific go-karts were chosen ultimately to ensure safety of all drivers while ensuring each kart could be controlled manually.



- 6) **Testing:** Which is one of the most important components. Students need to be aware of all the levels of testing that go into place to make such a structure possible. Safety is essential in all structures to ensure that you and your class have nothing to worry about when you come visit places

like Clifton Hill and the Niagara Speedway. This testing involves all initial tests to allow the attraction to open but this all of Clifton Hill structured attractions are checked daily upon opening to sure everything is safe and secure for the day ahead.

Also, it is important to note that all systems and structures require and input and output. For example, the go-karts on the Niagara Speedway. The 'input' just like cars are the road is the gasoline that is put into the gas tank. This liquid energy is placed into your car with other components when started is the conversion of energy into motion. Students are able to assess this notion in the Niagara Speedway on a smaller scale from a car.

Overall, multiple science elements can be taken from the structure of the Niagara Speedway and be assessed into the student's curriculum. Things to note are



techniques required to design and ensure safety on measures of a 40-foot tall ramp, spirals that are in place and ultimately building the ramp on a slope that provides a safe speed and velocity for the overall experience. From here your class can discern and evaluate the purpose of structures as noted in your curriculum. While structures are being built it is great to note the dynamics of ergonomics in structures and how like some science experiments the use of tools and materials (safely and securely) are very important.

Math

Students are able to use many examples from their math classes to correlate with the Niagara Speedway. Several math elements can be learned such as number sense, measurement, and geometry.

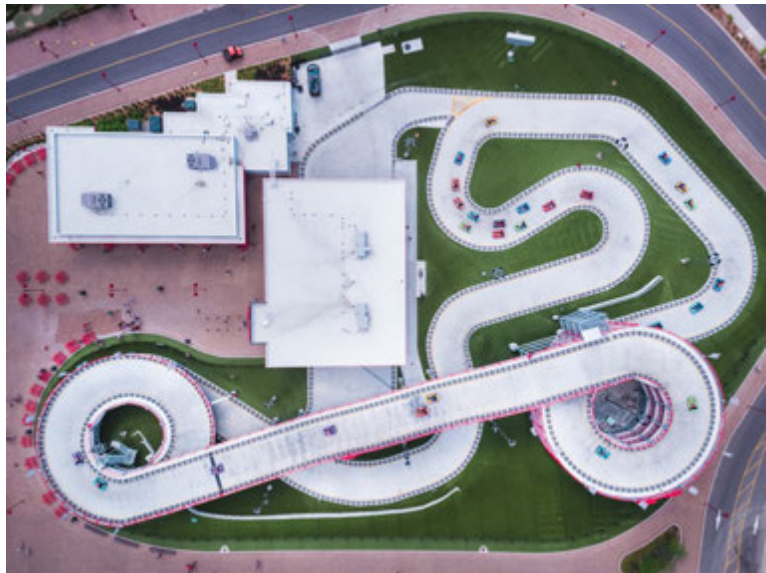
Number sense:

Number sense can be broken down into

What is the circumference (C) for the circle spiral on the Niagara Speedway when Diameter (d) is 27 metres?

$$\begin{aligned}d &= 27\text{m} = \\r &= d/2 = \\r &= 27/2 = \\13.5\text{m}\end{aligned}$$

$$\begin{aligned}C &= 2\pi r = \\C &= 2\pi(13.5) = \\C &= 84.82\end{aligned}$$



Geometry and Spatial Sense



Grade 8 students are able to assess Geometric properties through quadrilaterals. You and your class can assess these concrete and metal properties and evaluate them through diagonals and the various shapes and sizes that are used to create its structure. This includes the components of metal that hold the ramp in place. Assessing the overall shape of these beams to provide support is important to understand. Students can assess the spiral as a cylinder with 2 circle components on the top and bottom. This can further explain real-life examples with a starting point on a circle, the radius (the centre) and the full diameter of each circle. An important aspect to math is ensuring that students are not only learning in school but correlating them to real-life examples in the real world.

Location



Parking

Resources:



Resources:

All Fun Facts were taken from:
Facts about Niagara Falls - City of Niagara Falls. (n.d.). Retrieved from
<https://niagarafalls.ca/living/about-niagara-falls/facts.aspx>