

Zoology Day

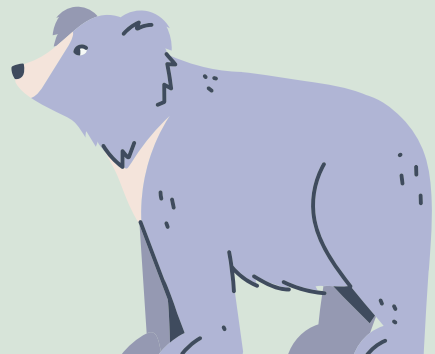
ZooAmerica admission is free with your admission to Hersheypark. The Zoo entrance is located next to the Frog Hopper and Convoy kiddie rides.

Hersheypark Groups is excited to present "Zoology Day" in partnership with ZooAmerica!

On this special Education Day we invite you to:

- Browse the animal exhibits on your own time
- See the educational "Our Friends From the Sea" show at the Aquatheatre featuring California sea lions & Atlantic harbor seals (Check the Hersheypark app for show times.)
- Complete the ZooAmerica scavenger hunt. (Worksheet located on the Hersheypark Groups website.)

For a more immersive experience, please check out the "Programs and Events" page on the Zooamerica.com website to book a small group behind the scenes tour with 72 hours advance notice.



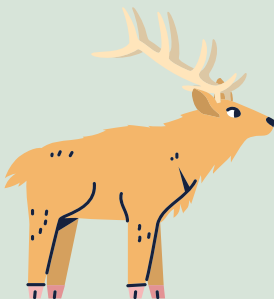
Match the animal found at ZooAmerica with its diet

1. Eastern Diamondback Rattlesnake
2. Snowy Owl
3. White-Tailed Deer
4. Mountain Lions
5. Common Vampire Bat
6. American Alligator
7. Chuckwalla
8. Black Bear
9. Barn Owl
10. Thick-billed Parrot
11. Florida Gar
12. Coati
13. Bald Eagle
14. River Otter
15. Roadrunner
16. Gray Wolf
17. Peregrine Falcon
18. Gila Monster







- A. Leaves, flowers, cactus fruit & buds
- B. Grubs, small reptiles, fruits, nuts, eggs & variety of invertebrates
- C. Rodents like voles, mice & small rats
- D. Fish, turtles, crayfish crabs, other invertebrates
- E. Rabbits, rodents, birds
- F. Large hoofed animals like elk, deer, bison, moose & caribous
- G. Birds including a variety of shorebirds, waterfowl, pigeons & songbirds
- H. Grasses, fruits, nuts, acorns, skunk, cabbage, insects, fish, mammals & carrion
- I. Herring, salmon, carp & catfish
- J. Lemmings
- K. Zooplankton, insect larvee & small fish
- L. Vegetation
- M. Fish, turtles, snakes, small mammals
- N. Pine nuts, buds, acorns & juniper fruits
- O. Deer
- P. Insects, spiders, small birds & mammals, lizards & snakes
- Q. Blood of Mammals & Birds
- R. Eggs & Nestlings of birds, rabbits, rodents & reptiles









Answers can be found
on zooamerica.com



After spotting the animal at ZooAmerica, write the name of the species next to its picture.

 <p>Track star</p>	
 <p>Cat of many names</p>	
 <p>Mousetrap with ears</p>	
 <p>Town-dwellers</p>	
 <p>Spotted phantom</p>	
 <p>Eats with a spoon</p>	

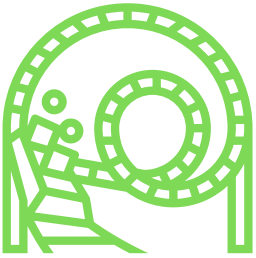
 <p>Water weasel</p>	
 <p>Underground nester</p>	
 <p>Symbol of America</p>	
 <p>Masked mammel</p>	
 <p>Grinning reptile</p>	
 <p>Prairie speedster</p>	



STEM ACTIVITY SHEET

1. Storm Runner has two separate loading platforms. If each train has 60% of its seats filled, how many total riders are on Storm Runner?

2. If every seat on Jolly Rancher Remix is filled, and a train departs every 2 minutes, how many riders will ride it in a span of 10 minutes?



3. If each row on Tidal Force can hold up to 4 riders, how many riders can ride in one boat if 2 of the rows are half filled?

4. If there are 6 riders in each gondola on the Ferris Wheel, and only 80% of the gondolas are being filled, how many riders are on the Ferris Wheel at one time?

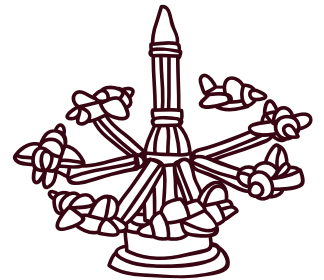


5. If each seat on the Frontier Flyers has 2 riders per seat, how many riders total will ride after 4 ride cycles?



6. Skyrush has 2 trains that operate on it at once. If every row on each train is 75% filled, how many total riders are on Skyrush?

7. Each seat on the Scrambler can hold up to 3 riders. How many riders will ride after 3 ride cycles if each seat is full?



8. Tilt-A-Whirl can seat up to 4 riders per car. If each car is 50% filled, how many riders are on the ride at one time?



9. Candymonium has 3 trains. If one row on each train is empty, how many total riders are on Candymonium?

SPEED ACTIVITY



Materials Needed: Stopwatch, Calculator

Directions:

For each of the roller coasters on the next page, time each of them from when the train leaves the lift hill (or launches, in the case of Storm Runner) to when the train hits the final brakes at the end of the ride.

- For *Cocoa Cruiser*, time only one lap around the circuit.
- For *Jolly Rancher Remix*, only time one of the directions (forward or backward).
- For *Lightning Racer*, you can do either side.

Use the formula **$S = d/t$** to calculate the average speed of each roller coaster in feet per second. The lengths of each roller coaster are listed in the table on next page.

$$\begin{aligned} S &= \text{speed} \\ d &= \text{distance} \\ t &= \text{time} \end{aligned}$$

Convert the average speed from feet per second to miles per hour.

$$1 \text{ mile} = 5280 \text{ feet}$$

Compare the average speed (in mph) to the maximum speed (in mph) of the roller coaster. How do they differ? Is this what you expected?

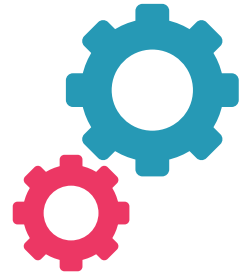




Coaster	Track Length (ft)	Time of Rollercoaster (seconds)	Average Speed (FT/SEC)	Average Speed (MPH)	Maximum Speed (MPH)
Candymonium	4636				76
Cocoa Cruiser	279				18
Comet	3360				50
Fahrenheit	2700				58
Great Bear	2800				61
Jolly Rancher Remix	935				47
Lightning Racer	3393				50
Skyrush	3600				75
sooperdooperLooper	2614				45
Storm Runner	2600				72
Trailblazer	1874				45
Wildcat	3183				48
Wild Mouse	1213				28



10. Observe the support systems on each roller coaster. Why are some supports larger in some spots and smaller in others? How do the supports differ between wooden coasters and steel coasters?

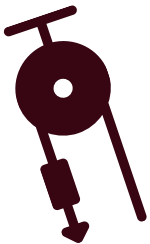


11. Why is each roller coaster's first drop at a different angle? What factors help determine this?

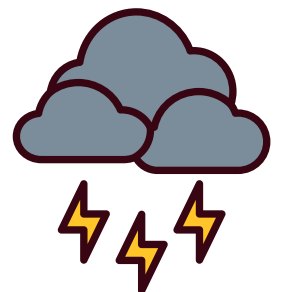


12. What kinds of systems are used to move roller coaster trains in and out of the station, as well as throughout the ride? How does this affect the potential and kinetic energies of the trains?

13. Skyrush uses a cable lift system to pull the train to the top of its lift hill faster. What are the advantages and disadvantages to using a cable lift instead of a standard chain lift?



15. Why is it unsafe to operate roller coasters during a thunderstorm? Why can smaller rides continue to operate when a storm is closely approaching?





PHYSICS ACTIVITY SHEET

Note: *These questions are designed to engage students in some qualitative and quantitative analysis of the application of physics concepts at an amusement park. Since each question requires them to essentially design a methodology for developing a solution to the question, students may approach any particular question differently. As a result, there may be several different solutions to the same question and there may be more than one right answer.*

What if?

Tidal Force is a 100-foot tall splashdown ride that creates massive waves that soak our guests, as well as those standing in the designated "Splash Zone" in the midway!

- What factors determine the size of the splash?
- What happens if the boat is half full versus completely full?
- How does the capacity of the boat affect how far the water makes it into the "Splash Zone"?

Watch a few boats as they go around the ride and record any observations you notice.



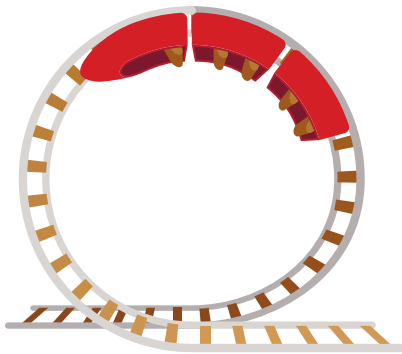
Why do they do that?

Some of our roller coasters have multiple inversions, which are elements where the train goes upside down. One of these coasters is Fahrenheit, which has 6 inversions. Observe each of the inversions on Fahrenheit.

What factors determine the size of each of the inversions, as well as their location along the ride?

Vertical loops are a common element on many roller coasters. The loop on sooperdooperLooper is circular in shape, while the loop on Great Bear is an oval-shape, more commonly known as clothoid.

Why do you think most loops are clothoid-shaped? Why do you think circular loops are not very common?



Our faster, more intense roller coasters have steeper banked turns than those that are slower and gentler.

What is the purpose of banked turns on the faster roller coasters? Think about the energy and distribution of forces.

How do they do that?

Gravitational potential energy is a major factor in determining how much energy a roller coaster train will have in order for it to make it all the way through its course.

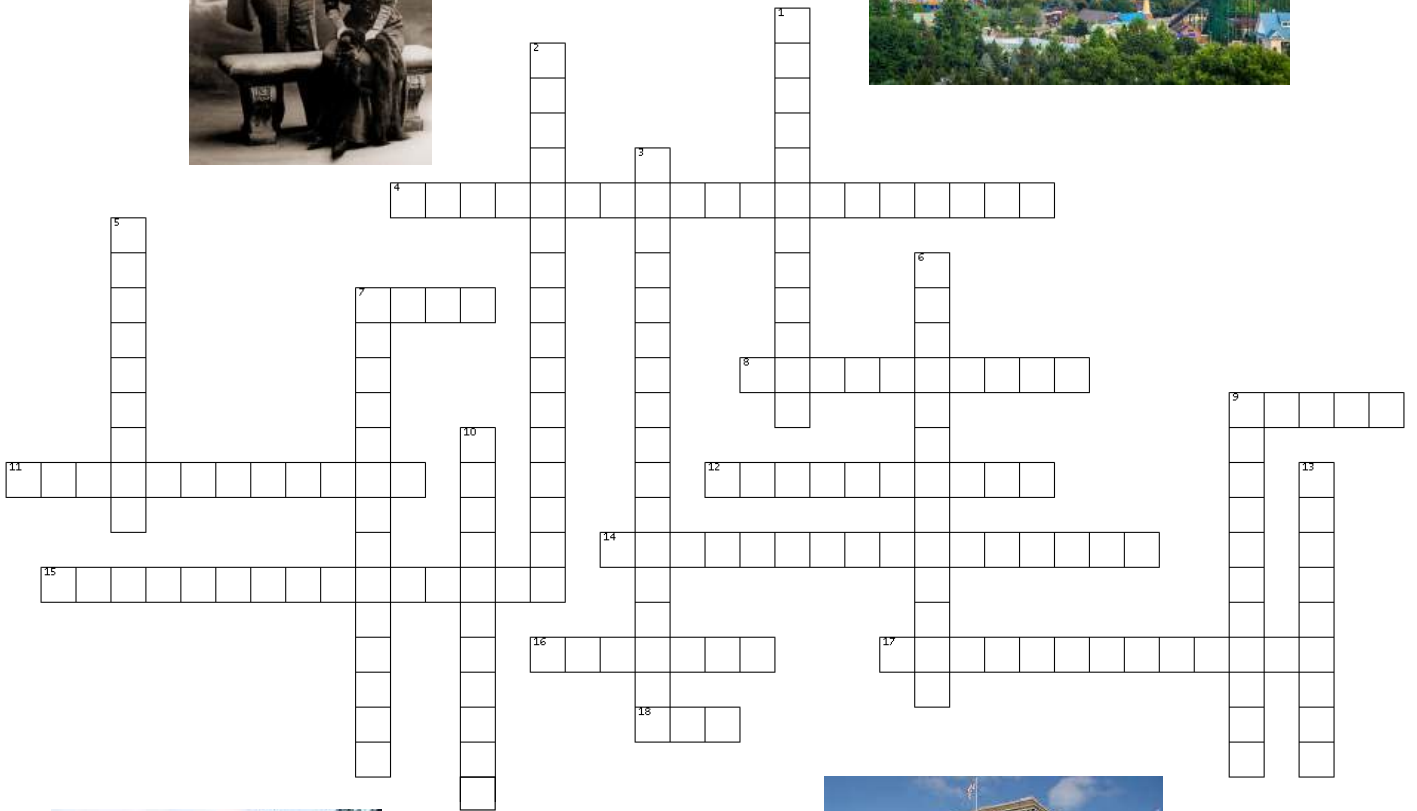
What factors contribute to a greater gravitational potential energy? What formulas would you use to calculate this data? Which of the roller coasters at Hersheypark do you think has the greatest gravitational potential energy?

The Claw is a pendulum-style ride that swings its riders up to 65 feet in the air.

What kinds of systems do you think are necessary to get the pendulum to swing so high? What do you think would happen if gravity was the only way to slow it down? Would it take a short amount of time to stop, or a long amount of time? Think about the forces and energies involved.



HISTORY ACTIVITY SHEET



DOWN

1. This museum in Hershey will take you into a deep history of Milton S. Hershey and the town he built.
2. The original Hershey _____ was built in 1905 in the heart of the Hershey community. Although it no longer serves its original purpose, it still proudly stands today as the corporate offices of The Hershey Company.
3. In 1967, Hershey, PA became more of a tourist destination. As a plan to welcome even more guests to stay in Hershey, this was built as a way to accommodate any guests the Hotel Hershey could not.
5. This is the home of Milton & Catherine Hershey.
6. Mr. Hershey wanted the Hotel Hershey to look like a hotel he visited in what area?
7. In 1973, this attraction opened to provide guests an insight to how Hershey's chocolate is made.
9. In 2020, we added our 15th roller coaster and it is our tallest, longest and faster roller coaster to date.
10. Set on 150 acres of land, this location served as leisure grounds for Milton S. Hershey's model community.
13. The name of Milton Hershey's wife, and also the name of the school on top of the hill across from Hersheypark.

ACROSS

4. One of Milton Hershey's greatest achievements was creating this school, which helps students live happy, healthy, and fulfilling lives, and continues to be supported by the Hershey Entertainment & Resorts properties.
7. Where did Milton S. Hershey acquire land to help ensure he had a steady supply of sugar for his chocolate?
8. When the Zoo first opened after breaking ground in 1903, which animal did Mr. Hershey acquire first?
9. This wooden roller coaster opened in May, 1946 and was the last coaster added to the park by our founder, Milton S. Hershey.
11. This building has an illuminated glass rotunda that helps shape the Hershey skyline. Built in 1970, it is a tribute to Milton and Catherine Hershey.
12. In 1975, this Hershey attraction re-opened under this name. The attraction now houses 200 animals representing 70 different species.
14. This Hersheypark attraction will take you back to the 1860s, and is an authentic scale replica of an actual railroad locomotive.
15. Built in 1933, this buildings construction stimulated the economy and provided employment to over 800 workers.
16. This roller coaster was a gift to the town from Milton S. Hershey for Hersheypark's 20th anniversary in 1923. In 1946, this roller coaster was replaced by The Comet, but its name lives on with a current roller coaster in Midway America.
17. In 1930, this building, which sits overlooking the park, opened as the Hershey Park Golf Course Clubhouse. It was renovated in 1970 to house corporate offices for Hershey Entertainment & Resorts.
18. In 1913, this statue was purchased and placed at the original entrance to Hersheypark but was later moved to its current location outside ZooAmerica. What animal is the statue?