

**ATTENTION:**  
Educators

**2016-2017 SCHOOL YEAR**

# STEM

MIDDLE SCHOOL EDUCATIONAL

## FIELD TRIPS *at Sparkles of Kennesaw*

**CALL  
770.595.3003  
to Reserve  
YOUR School  
TODAY!**



### ▶ A UNIQUE EDUCATION EXPERIENCE

When participating in one of our S.T.E.M. Tastic adventures (field trips) students will learn that Science, Technology, Engineering and Math can be found in everyday experiences, even in **FUN EXPERIENCES** like **ROLLER SKATING**.

### ▶ PLUS PHYSICAL FITNESS!

1 Hour of S.T.E.M. Education, 2 Hours of Physical Fitness through Roller Skating!

### S.T.E.M. FACTS

The United States Ranks 27<sup>th</sup> in developed nations in the proportion of College Students receiving Undergraduate Degrees in Science or Engineering!

1 in 5 S.T.E.M. College Students decided to study S.T.E.M. in Middle School or Earlier!

Students will learn S.T.E.M. concepts in an Interactive and entertaining way, enhancing learning at United Skates!

1000 McCollum Parkway, Kennesaw GA • 770.428.3941  
[www.SparklesKennesaw.com](http://www.SparklesKennesaw.com) • [www.facebook.com/SparklesKennesaw](http://www.facebook.com/SparklesKennesaw)

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DEVELOPED BY  
Professional  
Educators  
NATIONWIDE!

MIDDLE SCHOOL EDUCATIONAL

# FIELD TRIPS

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770.595.3003  
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ALL  
S.T.E.M.  
LESSONS  
Meet State  
Standards!

## MIDDLE SCHOOL S.T.E.M. LESSONS!

### LESSON 1: SCIENCE OF ROLLER SKATING

Students will learn the parts of a roller skate by assembling a pair of skates. They will also study how distance and spatial relationships play a role in the operations of a roller rink. Students will also design a roller rink and compare their design with their classmates.

**TOPICS LIKE:** Design, Geometry, Open-Ended Design Program

### LESSON 2: MOTION & RINK DESIGN

Students will learn about basic parts of a skate and their function. They also will be taught how to calculate the average speed of a skater. Students will then design training tools for a beginner skater.

**TOPICS LIKE:** Ratio And Proportion, Calculating Distance, Design (Functional & Physical Attributes)

### LESSON 3: MUSIC, MATH & ROLLER SKATING

Students will learn how the DJ schedules music selections using math. They will also study how to schedule music formats for an entire week of skating sessions.

**TOPICS LIKE:** Waves, Calculation of Beats per Minute, Frequency and Speed

### LESSON 4: ACOUSTICS & ROLLER SKATING DESIGN

Students will learn why it is important for the DJ to monitor the sound levels in the roller rink. They will also learn how the volume of the music plays a vital role in the operations of the facility. Students will explore how the materials used to make wheels affects the sounds made while skating.

**TOPICS LIKE:** Sound System Design, Frequency, Path of Sound

### LESSON 5: SCIENCE OF LIGHTING

Students will learn about the different types of lights used in a roller rink. They will then study how to apply the Pythagorean Theorem to the design of a Roller Rink. In particular they will use the Pythagorean Theorem to determine the proper placement for lights using a person's height.

**TOPICS LIKE:** Pythagorean Theorem, Lights, X,Y,Z, Axis

### LESSON 6: PHYSICS OF ARTISTIC ROLLER SKATING

Students will learn how science, math, and the arts blend together in artistic roller skating. They will study the physics behind jumps and spins, and how the skater uses music, dance, and precision to create art. Students will participate in an interactive lab on projectile motion.

**TOPICS LIKE:** Angular Momentum, Center of Mass, Projectile Motion

### LESSON 7: HEART, HEALTH AND FITNESS

Students will learn about the functions of the cardiovascular system through fun and interactive activities such as calculating their average heart rate at rest and during physical activity. The students will discuss the importance of healthy food choices and calorie intake by identifying various food's nutritional information.

**TOPICS LIKE:** Cardiovascular system, heart health, and the importance of exercise.

### LESSON 8: FORMULAS, FRACTIONS, AND FUN; THE RELATIONSHIP BETWEEN MATH & ROLLER SKATING

Students will learn how math concepts can be found all over the skating rink. Students will measure, compare, and average the speed of several skaters, discover how engineers use geometry in the rink, and how statistics relates to roller skating.

**TOPICS LIKE:** Averages, Geometry, and Statistics

