

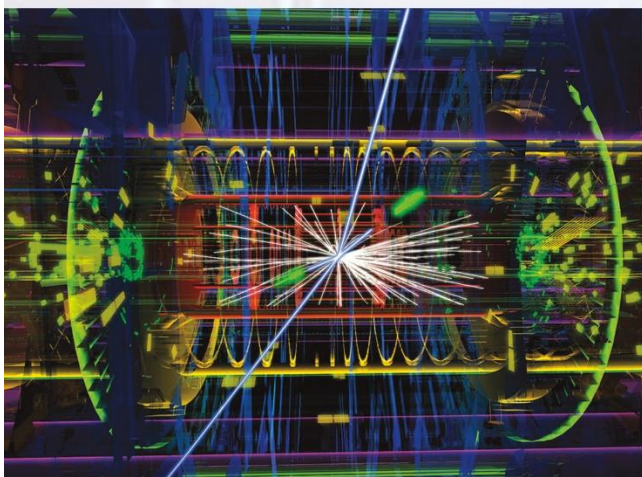
STEM

Science, Technology, Engineering and Math!

FIELD TRIPS



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MIDDLE SCHOOL STEM LESSONS!

LESSON 1: THE SCIENCE OF ROLLER SKATING

Students will learn the parts of a roller skate by reverse engineering a skate. They will discuss types of friction and how different materials affect a skate in motion. Students will design their own skating rink using geometric shapes.

Topics Like: Friction, Geometry, Design

LESSON 2: MOTION & RINK DESIGN

Students will discuss the parameters of motion, relative motion, and frame of reference. They will learn how to calculate the speed of a skater and convert units of measurement. The students will then engage in a design activity.

Topics Like: Calculating Distance, Relative Motion, Functional Design

LESSON 3: MUSIC, MATH & ROLLER SKATING

Students will learn about sound waves and frequency. They will learn how to calculate beats per minute and discuss how that affects the speed and mood of the skater.

Topics Like: Waves, Frequency and Speed, Beats per Minute

LESSON 4: SUPER SOUND! ACOUSTICS & RINK DESIGN

Students will gain a concrete understanding of sound waves and how they travel. They will complete a demonstration of different types of waves, frequencies and pitch.

Topics Like: Wave Explorations, Frequency and Sound Travel

LESSON 5: SCIENCE OF LIGHTING

Students will learn about how the wavelength of light determines color. They will discuss how refraction and Snell's Law affects the way light travels. Students will use the Pythagorean Theorem to calculate the height of lasers on the skating rink ceiling.

Topics Like: Speed of Light, Refraction, Pythagorean Theorem

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 and about leading a healthy lifestyle. They will make predictions and then calculate their average heart rate through physical activity.

Topics Like: Cardiovascular System, Heart Health, Importance of Exercise

LESSON 8: FORMULAS, FRACTIONS, AND FUN

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, Statistics

LESSON 9: NEWTON ON ROLLER SKATES

Students will learn that each one of Newton's Three Laws of Motion are present in the skating rink. They will experiment with force and mass and discuss the importance of physics and roller skating.

Topics Like: Physics, Laws of Motion, Inertia

