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# STEM Lab – 8<sup>th</sup> Grade

Science – Technology – Engineering - Math

## Collisions & Creations

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Students apply the concepts of physics, chemistry, and nanotechnology to STEM activities and projects, including making ice cream, launching things through the air, and dropping things from the sky. Students will also investigate the nervous system, including brain anatomy and how the brain is affected by trauma. Students use the Robotics platform to design, build, and program real-world objects such as robotic arms and robots for exploration. Apps have become a big part of our lives, students will learn the basics of computer programming and will discover the process of creating apps.

### Knowledge and Skills

*It is expected that students will:*

- Describe how salt affects the melting point of ice; Apply science and engineering skills to make ice cream.
- Describe how an adhesive bond holds two items together.
- Describe why STEM is important to them.
- Describe the role computer science has on developing students' computational and critical thinking skills and explain how to create, not simply use, new technologies.
- Describe the relative size of a nanometer.
- Describe engineering and engineering technology careers related to the advancement of nanotechnology.
- Identify the six simple machines: the lever, pulley, wheel and axle, inclined plane, wedge, and screw.
- Identify a machine as something that helps use energy more efficiently.
- Determine mechanical advantage from assembled simple machines.
- Predict the relative kinetic energy based on the mass and speed of the object.
- Identify major regions of the human brain.
- Identify the difference between tension and compression.

### Activities and Projects

Science of Ice Cream

Truss-Me Free-Fall

App Creation

Mobile Robots

Effects of Concussions

Glue Challenge

Roller Coaster Mania

Trebuchet

Zip Lines

### Grading

A = 90%-100%

B = 80% - 89%

C = 70% - 79%

D = 60% - 69%

U = 59% and lower

### Grading Breakdown

Activities 25%

Projects 40%

Tests 25%

Initiative 10%

**S** ~ Stay Positive

**T** ~ Think Critically

**E** ~ Embrace the Challenge

**M** ~ Manage your time appropriately