



powered by **BASF**

**Speedway STEAM** offers student-friendly learning experiences evolving around all things Motorsports. Students will explore the NASCAR world; testing new ideas, forming motor skills, and gaining self-confidence. All STEAM options consist of 90-minute classroom sessions, prior to a lap around the NASCAR Oval and tour of the Charlotte Motor Speedway Infield.

**School groups may pick 1 of the following A, B or C options; Options may not be combined (i.e. Option B, Build-A-Car session cannot be mixed with Option A, STEAM Stations, which cannot be mixed with Option C, Career Opportunities).**

### OPTION A - STEAM STATIONS

Suggested for elementary & middle grades.

Students will rotate through 3 interactive STEAM stations. [3 rotations; 90 total minutes]

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*The grade levels listed are suggested levels.*

*NC & SC Standards are not limited to those listed.*

### OPTION A - GRADES 1-2

#### 1. Grips & Slips

NC: 1.P.1, SL.1.1, 2.E.1 / SC: 1.S.1A.2, ELA.OE.4, 2.P.4A.3

Test different racing surfaces to determine how to create the most friction and gain the most traction while racing down a slope!

#### 2. Speed & Acceleration

NC: NC.1.MD.1, NC.2.MD.3, NC.2.MD.4 / SC: 2.MDA.1, 2.P.4A.3

Force vs. Gravity; test your racing skills down 4 different racetrack bankings without wrecking or going too slow!

#### 3. Energy Moves

NC: NC.2.MD.1, 1.P.1 / SC: 1.S.1A.2, ELA.OE.4

Learn all about the basics of energy moving while competing to cross the finish line first in our very own mini drag cars on our 2 or 4-lane dragstrip!



#### 4. Sound Energy

NC: SL.1.1, 2.P.1 / SC: 2.S.1A.1, 1.S.1A.2, ELA.OE.4

Did you know the NASCAR logo revolves around Sound Energy?! Sound plays a big part in all types of racing - learn with your ears; not just your eyes!

#### 9. Chutes & Ladders

NC: NC.1.MD.1, 2.E.1.3, / SC: 2.P.4A.1, 2.MDA.1, 2.S.1A.1

Students will learn about air resistance by using different materials to measure time and distance.



#### 10. Playful Polymers

NC: / SC: 1.P.1, 2.P.1 / K.P.4A.1, K.P.4A.3, 1.S.1A.2, 2.S.1B.1, ELA.OE.4

Students will learn about chemical bonds by forming their own polymer. From safety equipment to reducing air resistance: Polymers are everywhere!

### OPTION A - GRADES 3-5

#### 1. Grip & Slip

NC: 3.P.1, 3.P.3, 4.P.1, 5.P.1, NC.SMD.1 / SC: 4.MDA.2, 5.P.5A.5

Test different racing surfaces to determine how to create the most friction and gain the most traction while racing down a slope, using gravity!

#### 2. Speed & Acceleration

NC: 3.P.1.3, NC.4.OA.5, 5.P.1, NC.SMD.1 / SC: 4.MDA.2, 5.P.5A.1

Force vs. Gravity; test your racing skills down 4 different racetrack bankings without wrecking or going too slow!

#### 3. Energy Moves

NC: NC.3.OA.9, 3.P.1, 3.P.3, 4.P.1, 5.P.1 / SC: 3.P.3A.1, 5.P.5A.1, 5.NSBT.4

Learn all about the basics of energy moving while competing to cross the finish line first in our very own mini drag cars on our 2 or 4-lane dragstrip!

#### 4. Sound Energy

NC: 3.P.3, 4.P.1, 3.P.3A.1, ELA.OE.4 / SC: 3.S.1A.4, 4.S.1A.3, 5.P.5A.5

Did you know the NASCAR logo revolves around Sound Energy?! Sound plays a big part in all types of racing - learn with your ears; not just your eyes!

#### 5. Crank up the Heat

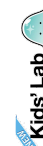
NC: 3.P.2, 3.P.3, 5.E.1, 5.P.3 / SC: 3.P.3A.1, 3.P.2A.4, 4.MDA.2

After forming a hypothesis, students will experiment with how heat transfers and what effect it has in racing from the fires to the drivers.

#### 6. Safety

NC: 3.P.1, 4.P.1, SL.5.1 / SC: 4.S.1A.3, 5.P.5A.4

Test your safety skills by building a mini-car with recycled materials, all while keeping your driver safe when racing down Charlotte Motor Speedway's 24° of banking!



#### 7. We Dig Soil

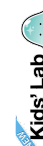
NC: 4.P.3, 5.E.1, 5.P.2 / SC: 4.S.1A.3, 5.P.5A.3

Students will become a Soil Scientist by recognizing the quality and composition of multiple soils and how they can be important in many activities including racing.

#### 9. Chutes & Ladders

NC: 3.P.1, 4.P.1, 5.P.1, NC.SMD.1 / SC: 4.MDA.2, 5.P.5A.3

Students will learn about air resistance by using different materials to measure time and distance.



#### 10. Playful Polymers

NC: 3.P.2, RL.3.1, 4.P.1, 5.P.1, SL.5.1 / SC: 3.S.1B.1, ELA.OE.4, 4.S.1B.1, 5.S.1A.3

Students will learn about chemical bonds by forming their own polymer. From safety equipment to reducing air resistance: Polymers are everywhere!

## OPTION A - GRADES 6-7

### 1. Grip & Slip

NC: 6.P.3, NC.6.EE.7 / SC: 6.S.1A.3, 6.P.3B.1, SL7.1, 7.GM.1

Test different racing surfaces to determine how to create the most friction and gain the most traction while racing down a slope, using gravity!

### 2. Speed & Acceleration

NC: 7.P.1, 7.P.2 / SC: 6.S.1A.3, 7.GM.1, 7.S.1A.8

Force vs. Gravity; test your racing skills down 4 different racetrack bankings without wrecking or going too slow!

### 3. Energy Moves

NC: 6.P.1, 6.P.3, 7.P.1, 7.P.2 / SC: 6.P.3A.2, 6.P.3A.3, 7.GM.1

Learn all about the basics of energy moving while competing to cross the finish line first in our very own mini drag cars on our 2, 3 or 4-lane dragstrip!

### 7. We Dig Soil

NC: 6.P.2, 6.S.1A.3, ELA.OE.4 / SC: 7.GM.1, 7.S.1A.3

Students will become a Soil Scientist by recognizing the quality and composition of multiple soils and how they can be important in many activities including racing.

### 8. Hydration Station

NC: SL.6.1, SL.7.1, 7.HF.3 / SC: N-6.1.6, 6.P.3A.3, N-7.1.6

In racing, staying hydrated with the correct balance of electrolytes is key to fueling the perfect amount of energy needed to win the race! Measure and experiment with your hydration knowledge to make the perfect mixture for your racer!

### 10. Playful Polymers

NC: / SC: 6.P.2, SL.6.1, RI.7.4, SL.7.1, 8.P.1 / 6.P.3A.2, 7.S.1A.8, ELA.OE.4

Students will learn about chemical bonds by forming their own polymer. From safety equipment to reducing air resistance: Polymers are everywhere!

### 11. Horsepower

NC: 6.P.3, 7.P.2.3 / SC: 6.P.3A.3, 7.S.1A.3

Students will see how their horsepower stacks up to a race car's HP via a series of trials, using formulas of distance and force.

### 12. Crack the Code

NC: 6.P.3, 7.P.2.3 / SC: 6.P.3A.3, 7.S.1A.3

Using a binary number system, students become math sleuths as they decipher the secret code.

**END OF OPTION A.**

## OPTION B - BUILD-A-CAR

Suggested for all grade levels.

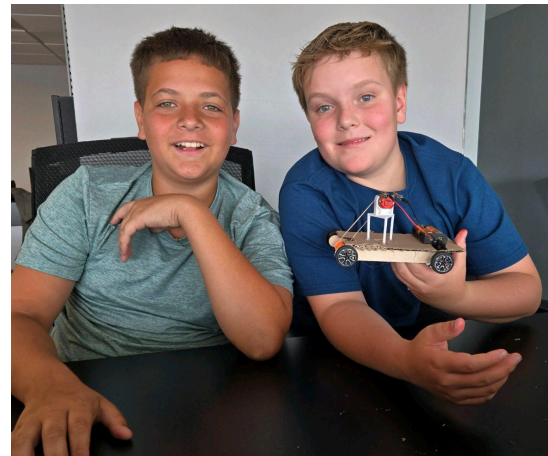
Students will work in teams to design, build and race their cars in a race showdown! The principles of traction and friction along with types of energy and motion will be explored. This PBL promotes problem-solving skills, collaboration, and communication.

[1 session; 90 total minutes]

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## OPTION B - GRADES K-2

### Gravity Car

NC: 1.P.1, SL.1.1, NC.2.MD.1 / SC: 1.S.1A.3, 1.MDA.2, 2.P.4A.3, 2.MDA.1

Students design and build a gravity-powered car that can accelerate by itself, using force.

## OPTION B - GRADES 3-5

### Gravity Car

NC: 3.P.1, 3.P.3, 4.P.1, 5.P.1 / SC: 3.P.2A.4, 3.P.3A.1, 4.S.1A.3, 5.P.5A.5

Students design and build a gravity-powered car that can accelerate by itself, using force.

### Balloon Car

NC: 3.P.3, 4.P.3.1, 5.P.1 / SC: 3.P.2A.4, 3.P.3A.1, 4.S.1A.3, 5.P.5A.5

Students will construct a balloon car and use the force of air to cross the finish line.

## Slingshot Car

NC: 3.P.3, 4.P.3.1, 5.P.1 / SC: 3.P.2A.4, 3.P.3A.1, 4.S.1A.3, 5.P.5A.5

Students will build a car powered by Elastic Energy.

## OPTION B - GRADES 5-8

### Propeller Car

NC: SL.5.1, 5.P.1, 6.P.3, 7.P.1, 8.P.2 / SC: 5.P.5A.5, 6.P.3A.2, 7.S.1A.1, 8.P.2A.3

Students will build a battery-powered car frame with a propeller.

### Pulley Car

NC: SL.5.1, 5.P.1, 6.P.3, 7.P.1, 8.P.2 / SC: 5.P.5A.5, 6.P.3A.2, 7.S.1A.1, 8.P.2A.3

Students will build a battery-powered car frame with a pulley.

## Slingshot Car

NC: SL.5.1, 5.P.1, 6.P.3, 7.1, 8.P.2 / SC: 5.P.5A.5, 6.P.3A.2, 7.S.1A.1, 8.P.2A.3

Students will build a car powered by elastic energy.

## OPTION B - GRADES 9-12

### Pulley Car

NC: available upon request / SC: available upon request

Students will build a battery-powered car frame with a pulley.

### Drag Car

NC: available upon request / SC: available upon request

Students will build a battery-powered dragster.



**END OF OPTION B.**

## OPTION C - CAREERS

Suggested for high school grades.

This is a career-based session and best suited for upper middle and high school students.

[1 session; 90 total minutes]

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## OPTION C - GRADES 9-12

### Career Opportunities

*NC: available upon request / SC: available upon request*

Students will take a brief "personality test" to best determine one of several categories that match a career that can be found at and around the track. Each category will be tasked with a STEAM challenge. After completion of their challenge, students will participate in a final focus session highlighting their accomplishments.

## END OF OPTION C.

