



Are you a NASCAR fan? If you are, you’re not alone. Millions of people watch NASCAR races each year. But there’s more to the sport than high-speed driving.

What’s NASCAR?

NASCAR stands for the National Association for Stock Car Auto Racing. A stock car has a body similar to a passenger car in stock at a regular car dealership.

There are about 1,500 NASCAR races each year. They take place at about 100 tracks in 30 states, Canada and Mexico.

Many scientists and engineers* work on race teams. It is impossible to win a NASCAR race and stay safe without using math and science.

Energy

Energy is the ability to do work or make something happen. There are different forms of energy. A moving car has motion energy. The faster a car is going, the more energy it has.

When a crash stops a car suddenly, all this energy has to go somewhere.

In a crash, there is very little time to spread the energy around. A lot of energy hitting at once can crumple the car.

No one wants that energy to crumple the driver, too. So engineers for NASCAR and passenger vehicles have designed cars so that energy is spread around the car rather than into the driver.

* An engineer is someone who uses science and math to design something.

Mini Fact:

The average NASCAR tire has to be replaced every 50 miles.

Even when a driver slows down, the brake parts might be so hot that they glow. The brake pads might squeal. The motion energy has changed to heat, light and sound.

Friction

When two things move against each other, there is friction. Friction is a force that can slow or stop the movement.

In racing, friction is both good and bad. It’s good because you can’t go fast unless you have a lot of friction between the car and the track. Without friction, it would be like driving on ice. There wouldn’t be enough grip on the tires. Friction also helps the car stop when the driver puts on the brakes.

NASCAR tires grip the road much better than tires on passenger cars. NASCAR tires are softer and are totally smooth because they have no treads.

But friction can be bad because it creates heat. For example, when you rub your hands together, friction makes them warm. The friction of tires against the track causes a lot of heat, which can destroy the tires.



A pit crew changes a tire during a NASCAR race.

NASCAR safety

A big worry for NASCAR engineers is safety. NASCAR safety features include:

- A “crush zone” is made by using weaker tubing in the area engineers hope will crumple first. Slightly smaller tubing is put in the front and rear of the car. Thicker tubes are placed closer to the driver. That way, if there is a crash, the crush zone with the smaller tubing will crumple easier.



Driver Carl Edwards climbs from his car after a crash in 2009. He was uninjured.

In race cars, tubes form a cage that surrounds the driver’s compartment. These tubes protect the driver from getting smashed.

- Drivers wear protective suits similar to what firefighters wear. The material does not burn or melt easily. When the suit gets hot, it forms a layer of carbon on the outside. That carbon blocks the fire.

The suits are not totally fireproof, but they give the driver time to get out of the car.

- The walls around the track have foam that absorbs energy. When a car hits a wall, the energy goes to damage the wall instead of the driver.

Resources

On the Web:

- nascar.com

At the library:

- “The Math of NASCAR” by Ian F. Mahaney

Try ‘n’ Find

Words that remind us of NASCAR are hidden in this puzzle. Some words are hidden backward or diagonally, and some letters are used twice. See if you can find:

CAGE, CRASH, CRUSH, DRIVER, ENERGY, ENGINEER, FRICTION, MOTION, NASCAR, RACING, SAFETY, SCIENCE, SPEED, STOCK, SUIT, TIRES, TRACK, TUBING, ZONE.

C U H S R A C I N G W R L Z I
S B U M O T I O N N U B E K C
H S U R C Z I H S A R C V R C
Y T E F A S R E E N I G N E R
T U B I N G A S D E E P S V K
T Z I D S T O C K E G A C I C
I Z V O F R I C T I O N D R A
R O E C N E I C S I Y C E D R
E N X P R A C S A N U I E I T
S E J K Y G R E N E R S Y F S



Cook’s Corner
Kooky Couscous

You’ll need:

- 1 1/2 cups water
- 1/2 cup couscous (whole-wheat or regular)
- Sprinkle of salt
- 1/4 cup dried apricots, chopped

- 1/4 cup dried cranberries
- 1/2 cup chickpeas (garbanzo beans)
- 2 tablespoon orange juice
- 2 tablespoons sliced almonds



What to do:

1. Bring water to boil. Add couscous and stir. Reduce heat to low and simmer for 2 minutes. Remove from heat. Allow to stand for 5 minutes to absorb all water.
2. Fluff couscous with fork; sprinkle with salt to taste.
3. Add dried fruit, chickpeas and orange juice; stir gently.
4. Top with sliced almonds. Makes 4 servings.

* You’ll need an adult’s help with this recipe.

Mini Jokes



Ned: What happens to old tires?
Nancy: They retire!

Eco Note



During the COVID-19 pandemic, many people have lost jobs, making it harder to pay for food. It’s a good idea at anytime, though, to think about cutting down on food waste. How can you help? Help cook and eat foods you already have on hand, including leftovers. Vegetables that are not quite perfect can be used in soups and sauces. Freeze foods you won’t be able to prepare right away for use later. Make a list at home so you won’t buy foods you already have.

adapted from EPA.gov

For later:

Look in your newspaper to see when the next NASCAR race takes place.

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1. A machine that uses energy from fuel to move (6-letter noun)

□ □ □ □ □ □

2. A round frame that turns on an axle (5-letter noun)

□ □ □ □ □

3. How fast a thing is moving (5-letter noun)

□ □ □ □ □

4. Protection from danger or harm (6-letter noun)

□ □ □ □ □ □

1. Tony looked at a huge _____ under the hood of the car.
2. Charles turned the steering _____ to go around the curve.
3. A driver used extra _____ to catch up to other race cars.
4. For _____, Marion always wears a seat belt in any car.

ROOTONYM®
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Study the definition. When you know the missing word, fill in the letter boxes and the sentence blanks.

Answers: Engine, Wheel, Speed, Safety.