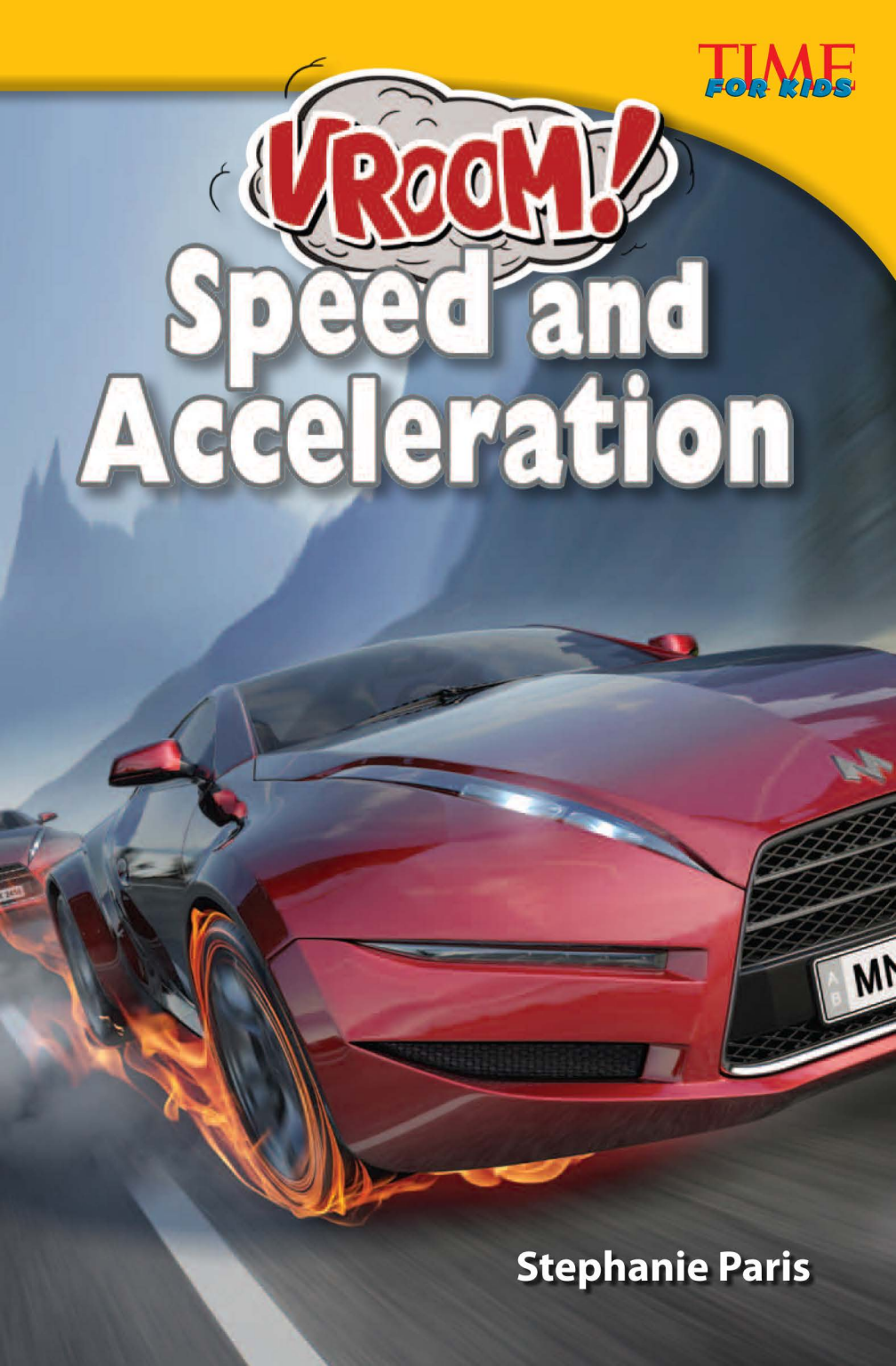
TIME FOR KIDS



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Consultants

Timothy Rasinski, Ph.D.
Kent State University

Lori Oczkus
Literacy Consultant

Katie McKissick
Physical Science Consultant

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What Is Speed?

Race cars zoom across the finish line, soccer balls whiz down the field, and dancers throw themselves through the air in leaps and bounds. Moving fast feels exhilarating, but how fast is fast? Kyle Petty, a record-winning race-car driver, sums it up well. "**Speed** is **relative**. Does it feel fast going 70 miles per hour down an 8-lane highway? No, probably not, but I bet it does if you are going down some single-lane dirt road. It's the same in a race car. It depends on the track." In other words, how fast something is moving depends on what it's being compared to. The fastest car appears as slow as a turtle when it's being compared to the fastest jet, but how fast is a jet when it's compared to the speed of light?

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Bicycle: 81 miles per hour



Car: 267 miles per hour

The Fastest



Airplane: 2,200 miles per hour



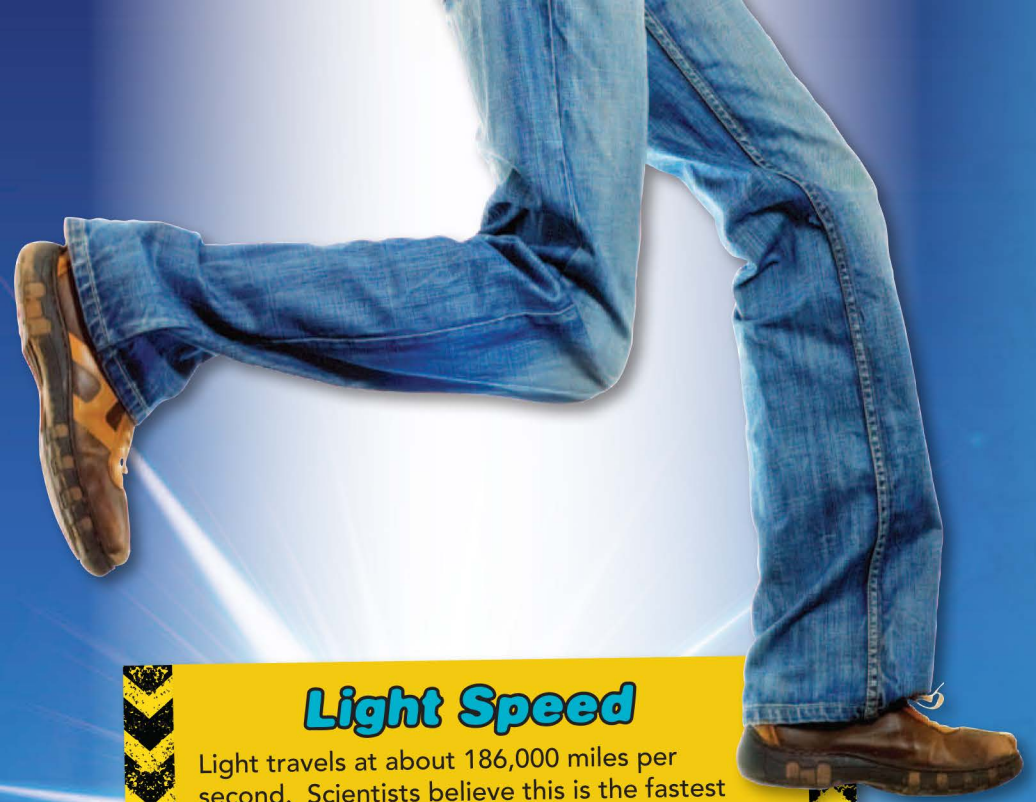
Spaceship: 39,000 miles per hour







- What does it mean to go fast?
- What affects how fast or slow an object moves?
- How can we speed up or slow down a moving object?



Light Speed

Light travels at about 186,000 miles per second. Scientists believe this is the fastest anything in our universe can travel.

How long does it take you to walk to school? The answer depends on two things: the distance you need to travel and how quickly you are moving. Speed is a way to measure how fast something is going. It is defined as a change of position over time. It describes how long it takes for something to get from one place to another.

Physics Facts

Physicists are scientists who study the universe. They use math to understand and explain why things move and change the way they do.



Stargazer

Physicist Amy Mainzer is an expert on asteroids and galaxies. She's the deputy project scientist for the Wide-Field Infrared Survey Explorer (WISE) mission, which uses an advanced telescope. She's a Harry Potter fanatic and loves math, skating, and most importantly, her job.

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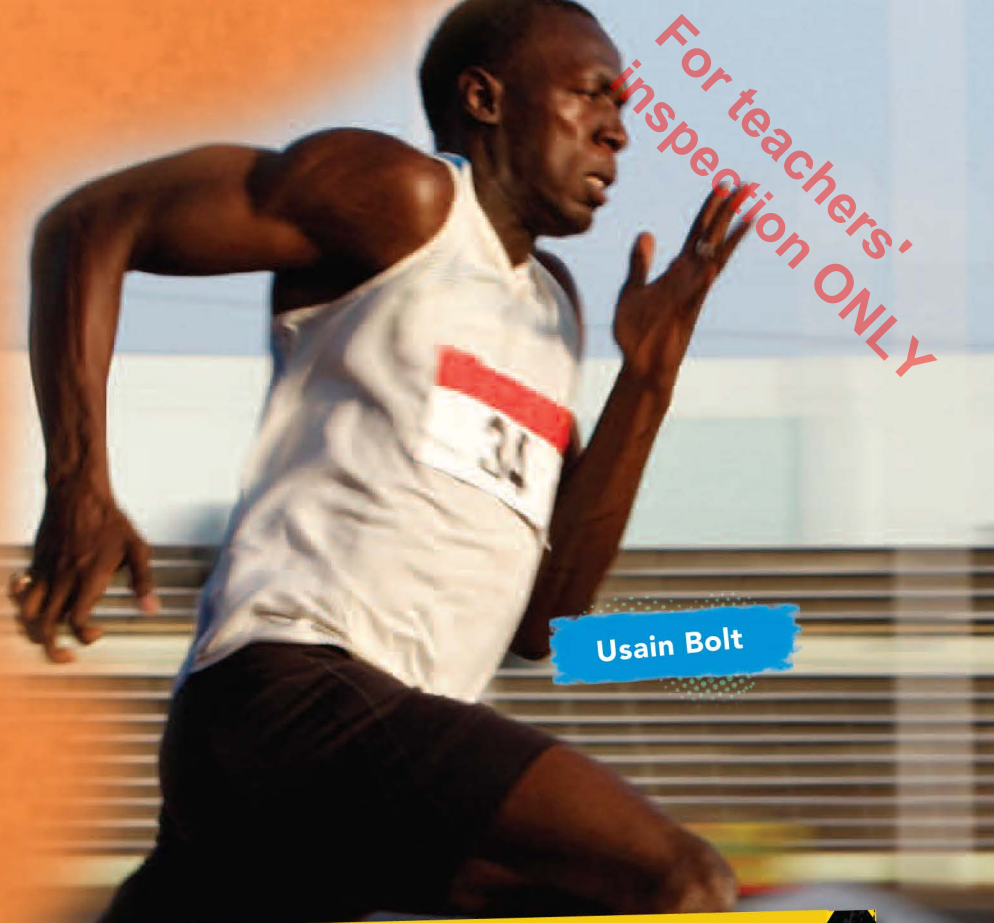
Measuring Speed

The point of a race is to determine who or what moves the fastest. That's exactly what some kids do each year in derbies. In these races, participants start with the same materials. They begin with a block of wood, an **axle**, and wheels, or they might use a small plastic model car. Either way, only one car can win the race.

In a race, each participant's car travels on the same track at the same time. The winner is easy to spot. Just look for the car that crosses the finish line first. But what if you want to compare the race times of your school's winner with another school's winner? You wouldn't need to race them side by side. All you would need to do is compare their speeds.

Speed is described as *distance per time*. This can be measured in miles per hour, meters per second, or millimeters per year. The measurement you use depends on what you are measuring.

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Usain Bolt

Fast Formula

In 2012, Usain Bolt of Jamaica broke a new record by running 100 meters in 9.63 seconds. How many meters can Usain Bolt run in 1 second? Use this fast formula, where *S* is speed, *D* is distance, and *T* is time:

$$S = \frac{D}{T}$$

$$? = \frac{100 \text{ meters}}{9.69 \text{ seconds}}$$

$$\frac{10.3 \text{ meters}}{1 \text{ second}} \times 1 \text{ second} = 10.3 \text{ meters}$$