



## WELCOME

Having students learning how to turn an idea into reality not only impacts their lives and changes the world - it's fun. Scorpio can make this achievable in your classroom.

Remember, we're here to support you, however we can. Contact us at (03) 9802 9913 or email us at [sales@scorpiotechnology.com.au](mailto:sales@scorpiotechnology.com.au)

 Page 1


### Primary STEM: Movement Teacher Conferences & Workshops

 Page 2

### April Specials Product Spotlight

 Page 3

### Humour – Just for laughs

 Page 4

### Feature article: Gripping Formula One Did you know?

#### TEACHER CONFERENCES, WORKSHOPS & EVENTS



Scorpio is attending or supports these teacher activities:

**Design and Technologies Week (merged with Melbourne Design Week) 27-31/05/2024**

**DATTA QLD Conference**, Brisbane Convention & Exhibition Centre, (& online) Brisbane 13-14/06/2024

**Victorian Model Solar Challenge 2024 Final Event**.weekend of the 19th and 20th of October 2024 at Park Hill Primary

**ITE Technology Education Conference**, Sydney Masonic Centre, Sydney 27-29/11/2024.

## PRIMARY STEM: - MOVEMENT

### THE BLUE BROTHERS – THE FAMILY OF 4 KIDS

A great way for primary school students to be introduced to a hands-on approach to STEAM technology & solar projects. All mechanical and electrical components, as well as the platform, are supplied.

These kits have been designed so that the students not only assemble the vehicles, but also provide opportunities to investigate areas of science such as electric circuits, solar energy and velocity.

NAME	DESCRIPTION
<b>BLUEY</b> Code: <i>BLUEY</i>	A basic vehicle that allows for a great deal of fun and learning.
<b>BREEZY</b> Code: <i>BREEZY</i>	A basic four-wheeled vehicle that uses a battery operated motor-driven propeller to make it move. This vehicle can also be used to experiment simple concepts of electric circuits in physics!
<b>BLUEBIRD</b> Code: <i>BLUEBIRD</i>	A four-wheeled belt-driven electric motor powered vehicle at its simplest which can help introduce students to basic electric circuits.
<b>BLUE SKY</b> Code: <i>BLUESKY</i>	A four-wheeled solar powered vehicle at its simplest. This vehicle illustrates a basic electric circuit where electricity is generated from a solar panel to power motor. These cars can be used to perform basic experiments relating to solar energy

**Access catalogues here:**

<https://www.scorpiotechnology.com.au/catalogues>

**LEARN TO MAKE,  
MAKE TO LEARN**

*“The best people know that there are two phases in every crisis: the one where you manage it and the other where you learn from it. To succeed you have to do both.”*

*Mark McCormack (1930-2003)  
American lawyer, businessman, and sports agent.*



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April 2024

# Product Spotlight

A great range of products to use in your classroom.



## Specials for the month of April (7% OFF our Regular Prices)

- Erlenmeyer Flasks (Conical flasks), Narrow Mouth 3.3 Borosilicate Glass
- Volumetric Flasks with polypropylene (PP) stopper, Class A, borosilicate glass

CODE	PRODUCT DESCRIPTION	ORIGINAL PRICE	APRIL DISCOUNT
ARLW2064140-3	Erlenmeyer Flask-Boro GI-50ml	\$3.60	\$3.35
ARLW2064140-4	Erlenmeyer Flask-Boro GI-100ml	\$4.25	\$3.95
ARLW2064140-6	Erlenmeyer Flask-Boro GI-250ml	\$5.25	\$4.88
ARLW2064140-7	Erlenmeyer Flask-Boro GI-500ml	\$7.50	\$6.98
ARLW2064420-10	Volumetric Flask-Boro G-1000ml	\$20.40	\$18.97
ARLW2064420-5	Volumetric Flask-Boro GI-50ml	\$6.85	\$6.37
ARLW2064420-6	Volumetric Flask-Boro GI-100ml	\$7.80	\$7.25
ARLW2064420-8	Volumetric Flask-Boro GI-250ml	\$10.55	\$9.81
ARLW2064420-9	Volumetric Flask-Boro GI-500ml	\$11.75	\$10.93

## PRODUCT SPOTLIGHT

- Remember to check out Scorpio's extensive range of wheels, tyres, solar wheels with tyre material in the [2024 Product Catalogue](#)
- **PHYSICS: Rolling Friction Cars** (Code: PH1120147).

The rolling friction car kit provides four cars with different material "wheels" for exploration into the force of friction.

Each car provides a set of different material wheels (wood, fabric, soft rubber, soft silicone) with a different coefficient of friction. By setting the cars in motion with equivalent velocities, one can qualitatively demonstrate the frictional properties of rolling without slipping. Instruction manual included.

**Click on this link:**

<https://www.scorpiontechnology.com.au/forces-energy-and-motion/rolling-friction-cars>



These are going to be good, wheely good!!

- **I just got a wooden motorcycle. It has a wooden frame, wooden handlebars, wooden wheels, and a wooden seat. Guess what?**  
It wooden start.
- **What happened after the wheel was invented?**  
A revolution
- **Is this fairground big wheel made of iron?**  
Of course it is! It's a ferrous wheel.



# GRIPPING FORMULA ONE RACES

Written by Alex Kapoyanis

**“I think, aesthetically, car design is so interesting - the dashboards, the steering wheels, and the beauty of the mechanics. I don't know how any of it works, I don't want to know, but it's inspirational.”**

Paloma Picasso

The Formula 1 Grand Prix circus has packed up and headed out of Melbourne for the next round following an action packed week. The sounds and smell around the Albert Park circuit have gone for another year and dismantling of the temporary structures has already started.

Formula 1 cars are complex pieces of machinery that must stand up to the rigors of rapid acceleration, blistering speeds for relatively short distances, sharp turns and heavy breaking. In this high-tech sport, a balance between driver safety and maximising performance of the vehicle, within the regulations set out by the governing body, needs to be achieved.

For your standard road cars, you will generally use the same set of tyres for a significant period of time. In contrast, during a F1 race, each driver must make at least one pitstop to change tyres, and they must use two different types of tyres. Each F1 competitor has a set allocation of tyres. Teams have 13 sets of tyres available to use each weekend – during warm ups, qualifying sessions and for the race itself. The tyre supplier will choose which 3 of the 5 possible types of slick tyre compounds (rubber mixtures) will be available for use on the race weekend. When it's raining, teams have a choice of intermediate tyres which have some grooves for driving in damp conditions, or full wet tyres that have deeper treads for very wet tracks.



Andy Hone  
Motorsport Images



William West, AFP  
Getty Images, The Guardian

Slick tyres are generally used in dry conditions and don't have the tread that one sees in your standard car's tyres. They are broken up into three groups:

- soft tyres which degrade the fastest, but are generally best for a blistering lap and have the most road grip,
- medium tyres which are generally considered the best for races as they provide a good trade off that either a soft or a hard tyre would offer; and
- hard tyres which aren't as grippy and tend to last longer than the other two softer options, but are not suitable for short stints or fast single laps such as during qualifying.

So many factors are at play when it comes to tyre choice to maximise a car's performance. The level of degradation on these tyres is dependent on so many factors and a team's (and driver's) race strategy are a key to this equation. Under previous F1 regulations when no mandated tyre change was required, it was not uncommon for a driver to try and go through an entire race without a pit stop. Those of us old enough to remember need only cast back to the 1986 race in Adelaide when Englishman Nigel Mansell, on the

culp of winning the World Championship, suffered a (visually) spectacular tyre blow out that resulted in him not becoming the world champ.

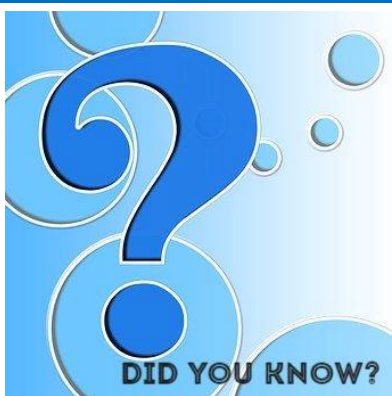
Teams, when setting out their race strategy will take into account factors such as:

- the weather forecast – hot weather will generally result in higher tyre wear while rain means needing to decide whether intermediate or wet weather tyres are required
- the ambient and track surface temperatures
- tyre temperature – cold tyres are not efficient in race conditions and need be warmed either manually (e.g. with electric blankets on the racks or on the starting grid), by spinning the wheels at the start, or even creating friction by swerving left and right when driving behind a safety car on the track
- driving style – some drivers are better at “nursing” their tyres to last longer, while still remaining competitive; some are more aggressive and are more prone to damaging their tyres
- tyre pressure – the lower the pressure the grippier the tyre since the tyre wall can deform (or flex) to maintain the maximum contact patch with the track. But the more the sidewall bends under both lateral (cornering) and longitudinal (braking and accelerating) loads, the greater the possibility that this repeated cycle can result in a stress failure in the sidewall (a circumferential break)
- track layout and conditions (e.g. type of pavement, surface roughness, the number of high speed corners and slow hairpins (where lateral loads play a big role), etc.)
- how a car is set up or configured that affect aerodynamic forces (downforce)

All race conditions are unique, and conditions can change during a race for a variety of reasons. Teams can take advantage of a pit stop to make minor tweaks to mechanical and aerodynamic settings, including changing the type of tyres used, in an effort to improve performance and hopefully provide a more exciting race for the spectators.

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- The wheel is regarded as the greatest invention. Wheels became an essential tool to move things from one place to another. Early wheels were made of wood. Later wheels were not solid allowing them to be used in many different applications.
- Wheels are used for other purposes, such as a ship's wheel, steering wheel, potter's wheel, and flywheels.
- The concept of wheel and axle is used in many mechanical devices.

