Junior Dragster Science



A sport for all ages jam-packed with fun and adrenaline!

Sharon Parsons

Nelson Literacy Directions

JUNIOR Dragster Science

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My sincere thanks to the following people for their time, information, images and enthusiasm for this book:

Leanne Bernhard, Melbourne, Australia

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Ian Macarthur, Calder Park Raceway, Melbourne, Australia

Amy, Kelsey and their family, Auckland, New Zealand

Keiran and Malcolm Price, Hamilton, New Zealand

Arley, Emma, Mike and Jill Ballard, Illinois, the USA

Dear Reader

One day, I watched a TV report about people who drive dragcars. What really grabbed my interest in the story was the enthusiastic group of mothers and grandmothers who raced dragcars, and attended the Drag School at Calder Park Raceway in Melbourne, Australia. I also found out about children who race smaller versions of dragcars, called junior dragsters.

> "'OPERATION DRAG RIGHT' IS ONE WAY WE PROMOTE SAFETY AT DRAG-RACING TRACKS IN MELBOURNE."
>
> A VICTORIAN POLICE OFFICER

I started to research this fascinating sport, and I met three families who were passionate about supporting their kids' interest in racing junior dragsters. You will meet successful junior dragsters in New Zealand – Kieran Price, and sisters Amy Wilson and Kelsey Forbes. From Illinois, the USA, sisters Arley and Emma Ballard, known as Fast Chick Racing, will share their racing secrets.

The final chapter returns to Melbourne, where you'll find out why two friends Leanne Bernhard (a mum) and Leanne Braggs (a grandmother) enjoy competing against each other on the racetrack.

I hope you enjoy the inspiring stories behind the scenes of drag racing and junior dragsters.

Sharon Parsons

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1 What Is Dragcar Racing?

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Dragcar racing is the world's fastest acceleration motorsport on the shortest racetrack. Dragcar racing has many different race classes, based on types of vehicles, and junior dragster racing has just two age-based divisions.

Meet dragcar racer Leanne Braggs in Chapter 8.



Drivers of Dragcars and Junior Dragsters

Dragcar drivers are aged 17 and over, and junior dragster drivers can be from eight to 16 years of age. They are all highly trained competitors who race high-performance, modified vehicles at extreme velocity in races that usually last for less than ten seconds!

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A Junior Dragster

A junior dragster is a less powerful replica of a dragcar, designed for use by younger drivers. But these modified vehicles are still very fast!



Meet junior dragster Kelsey Forbes in Chapter 5.



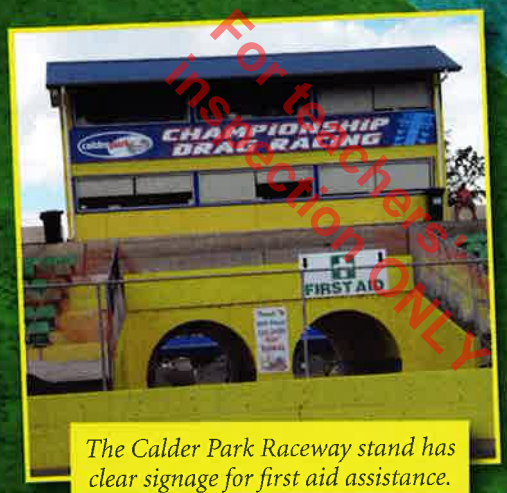
History

Junior Dragsters Start in New Zealand

In 1988, a new kind of drag racing for kids was introduced, first known as midget dragster racing. Soon after, the sport became popular in countries such as Australia and the USA, and then Junior Dragster became an international class of competition.

Racetrack **Safety**

Safety is paramount at every dragcar racetrack. Prior to every race day, track and race officials check the quality and safety of the track.

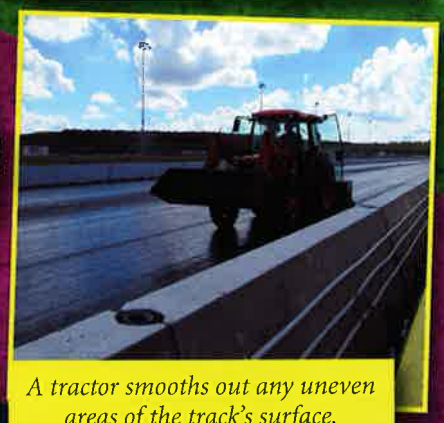


The Calder Park Raceway stand has clear signage for first aid assistance.

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Race officials check the dragcar racetrack.



A tractor smooths out any uneven areas of the track's surface.

The Police in "Operation Drag Right"

A team of police officers race dragcars as part of a drag-racing safety program called "Operation Drag Right". Their presence at the dragcar racing tracks helps to promote the message of safety.



police dragcars



ready to drive to the racetrack



last safety check inside the dragcar

Driver **Safety**

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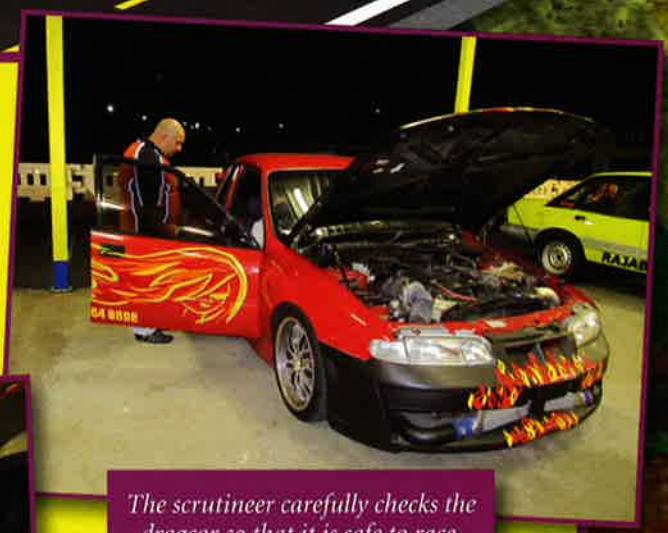




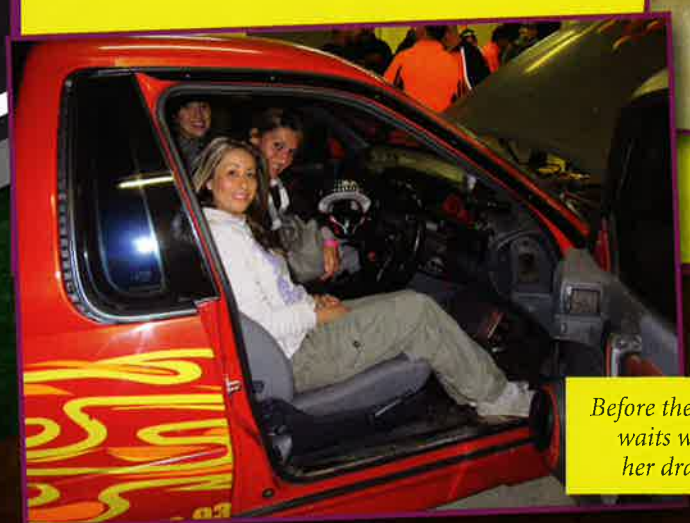
Meet Arley Ballard (left) and Emma Ballard (right) in Chapter 7 – they are junior dragster competitors in the USA.

Dragcars Scrutineered

Drivers must complete training courses, and their cars are carefully checked, or scrutineered, by race officials before and after each race. The rules for all competitors and their dragcars are very strict.



The scrutineer carefully checks the dragcar so that it is safe to race.



Before the race, Datto, the driver, waits with her friends while her dragcar is scrutineered.

2 The Dragcar Racetrack

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1/8 mile: 0.25 miles x 1.61 = 0.4025 km

1/4 mile: 0.125 miles x 1.61 = 0.2013 km



The "Christmas Tree" Lights

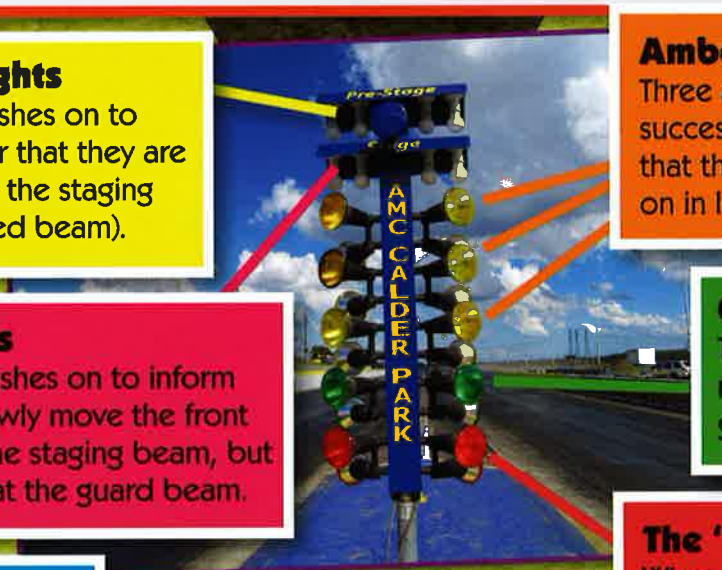
A set of lights, known as "Christmas tree" lights, control each dragcar race, and signal when each of the two competitors can start. The two adjacent columns of lights are linked to a computer system, and they tell each driver what to do in the pre-race stages. Drag-racing drivers concentrate hard on their lights – if they make a mistake, they're disqualified.

Pre-Stage Lights

The first light flashes on to alert each driver that they are getting close to the staging beam (an infrared beam).

Amber Lights

Three amber lights flash in succession to alert the driver that the green light will flash on in less than a second.



Staging lights

The next light flashes on to inform the driver to slowly move the front wheels across the staging beam, but they must stop at the guard beam.

Green Light

The driver can start the race when they see the green light flash on.

Guard Beam

Once the car crosses over this final infrared beam, the race timer starts for each car.

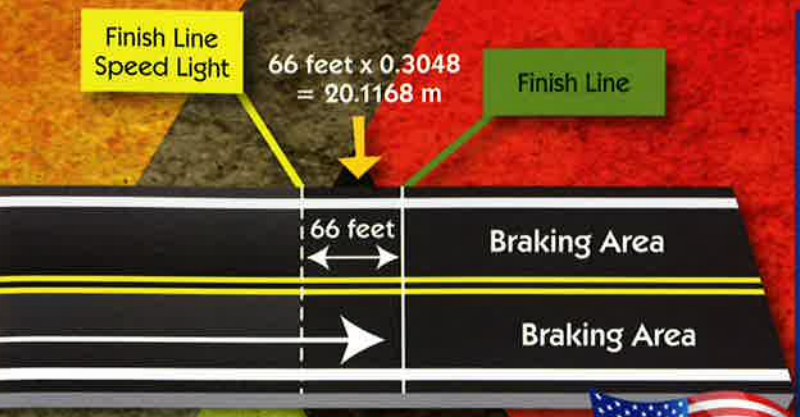


pre-stage beam (left), staging beam (middle), guard beam (right)

The "Cherry" Light

When drivers cross the guard beam while the orange lights are still flashing, a red light, or "cherry" light, flashes and they are disqualified from racing for the day.

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a 1950s modified Chevrolet capable of speeds of up to 289 kilometres an hour

Measurements in Drag Racing

The sport of drag racing began in the USA in the 1950s. The USA uses imperial measurements, and this is a tradition that has remained in drag racing. A drag-racing track is either an eighth of a mile (about 0.201 kilometres) or a quarter of a mile (about 0.402 kilometres) in length. Even outside the USA, dragcar competitors use imperial measurements. Many racers who live in other parts of the world import vehicles or engines from the USA, so they need to think in imperial, rather than metric, terms.

Distance Measurements – Imperial and Metric

SHORT DISTANCE UNITS OF MEASUREMENTS

IMPERIAL	METRIC
↓	↓
FEET	METRES

LONG DISTANCE UNITS OF MEASUREMENTS

IMPERIAL	METRIC
↓	↓
MILES	KILOMETRES

CONVERT FEET TO METRES

To convert feet to metres, multiply the number of feet by 0.3048 to get the equivalent in metres.

1 foot x 0.3048
= 0.3048 metres

CONVERT MILES TO KILOMETRES

To convert miles to kilometres, multiply the number of miles by 1.61 to get the equivalent in kilometres.

1 mile x 1.61
= 1.61 kilometres

3 Maths Is Important

All dragcar and junior dragster drivers recognise the importance of maths in the sport. There are many instances where they must make calculations.





calculating a dial-in time to be put on the car's plate

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1. Calculate

Dial-In Racing Times

Before each race, drivers submit their dial-in time to the race organisers. Junior dragsters only race over an eighth of a mile track. Each driver needs to ensure that they provide race officials with a dial-in time that is close to the car's proven performance times in the past. One method of working out dial-in times is to calculate the average of the driver's last three race times.



Previous Race Times (seconds)



Dragcar Driver 1

1st time: 7.39

2nd time: 7.37

3rd time: 7.35

Total = 22.11

Calculate the average for Dragcar Driver 1 to work out the new dial-in time:

Total divided by 3 = 7.37 seconds



Dragcar Driver 2

1st time: 9.47

2nd time: 9.42

3rd time: 9.66

Total = 28.55

Calculate the average for Dragcar Driver 2 to work out the new dial-in time:

Total divided by 3 = 9.52 seconds



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Based on the calculation below, the Christmas tree lights for Junior Dragster Driver 1 will count down to the green light 2.14 seconds ahead of the green light for Junior Dragster Driver 2.

2. Calculate

Handicap Equations

Drivers try to calculate the right dial-in time because they don't want to give their opponent an advantage when racing in the handicap race system. A simplified example of how the handicap race system works for two competing drivers is given below.

Junior Dragster Driver 2's
New Dial-in Time of 9.51 seconds

Minus

Junior Dragster Driver 1's
New Dial-in Time of 7.37 seconds

Equals

2.14 seconds

Therefore ... at the start of the next race, Junior Dragster Driver 1 gets a 2.14-second head start over Junior Dragster Driver 2.

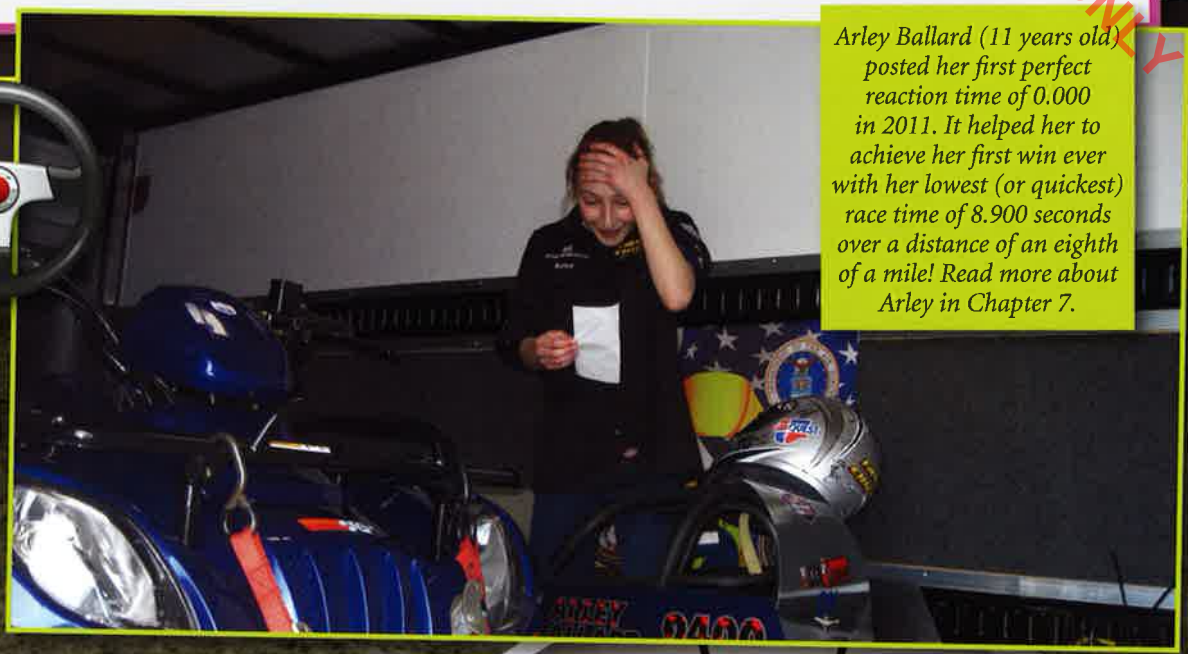
So ... both competitors should reach the finish line around the same time!

And ... if both drivers cross the finish line at their exact dial-in times, the winner is the driver who posted the best reaction time when their green light flashed at the start.

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Reaction Times

In dragcar racing, the reaction time is the time it takes for a driver to react to the green light and start racing hard. A perfect reaction time is 0.000, which means that there was no time between the green light flashing on and the junior dragster starting the race.



Arley Ballard (11 years old) posted her first perfect reaction time of 0.000 in 2011. It helped her to achieve her first win ever with her lowest (or quickest) race time of 8.900 seconds over a distance of an eighth of a mile! Read more about Arley in Chapter 7.

Technology

Elapsed Time (ET) and Speed

At the end of each race, two separate measurements of racing performance are recorded for each driver: elapsed time and speed. The elapsed time is the time it takes for the dragcar to complete the race distance. When a dragster leaves the starting line, the guard beam activates an elapsed-time clock, which stops when the car crosses the finish line. The speed is recorded at two different points along the track.

A Fair Sport for All

The most powerful cars driven by the most experienced drivers don't always win dragcar races. This is because each competitor must finish their race as close to their own dial-in time as possible. The dial-in time is the amount of time the driver estimates they will take to complete the race. Minutes before every race, dragcar drivers calculate their dial-in time and give it to race officials. For example, a driver who estimates a dial-in time of nine seconds, and then completes the race in nine seconds, can still beat a competing driver with a faster dial-in time of seven seconds, but who completes the race in eight seconds.

