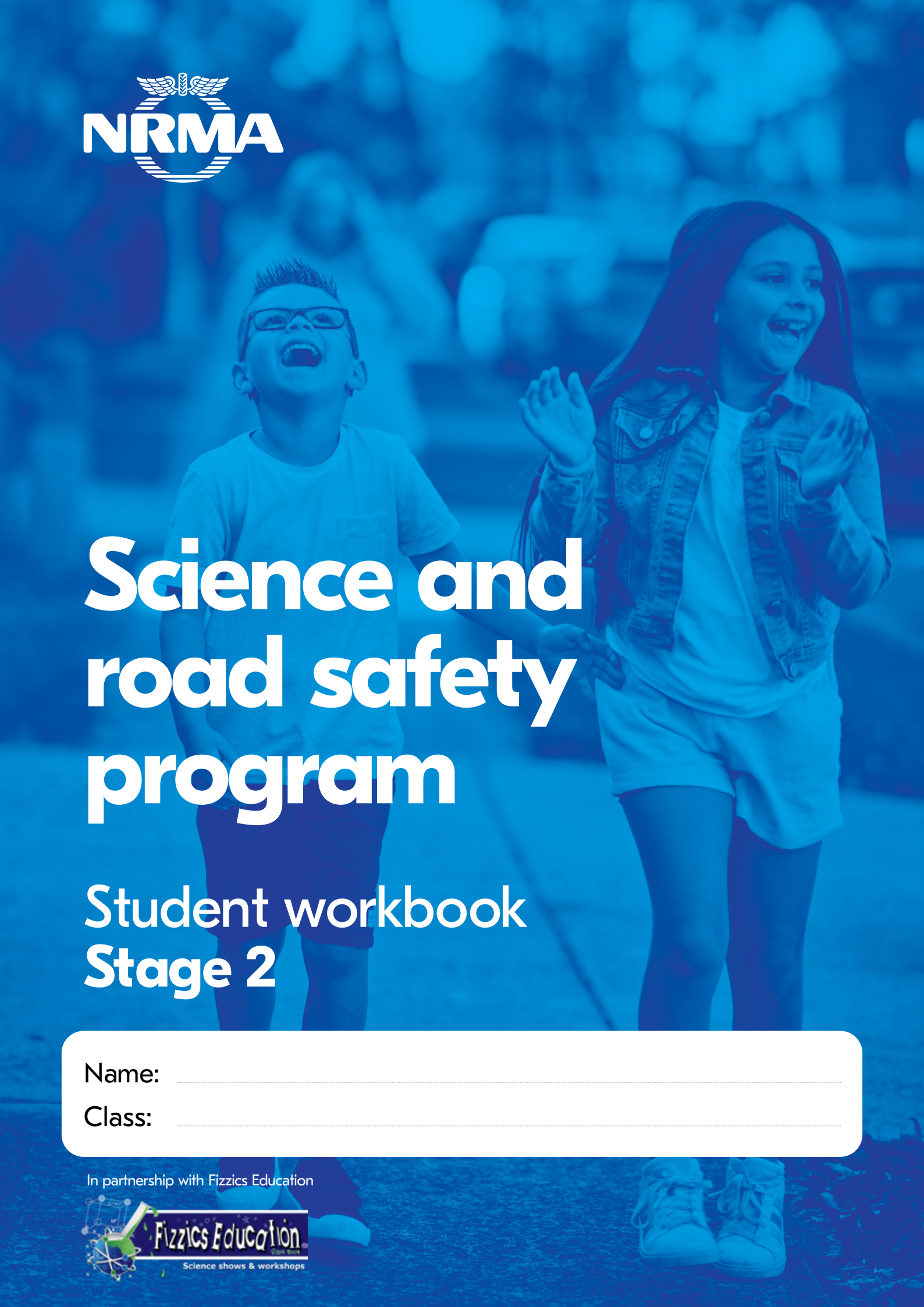


Science and road safety program

Student workbook
Stage 2

Name: .....

Class: .....

In partnership with Fizzics Education

Fizzics Education
Science shows & workshops

Welcome to Country

The NRMA acknowledges the Traditional Custodians of the land and waterways on which our business operates. We pay our respects to Aboriginal and Torres Strait Islander Elders past, present and future.

Crossing the road safely

Roughly

1,522

pedestrians are hit on NSW roads each year.

Thinking back to the information shared in the show about crossing the road safely, answer these questions:

Activity

1. Where are the safest places for a pedestrian to cross the road?

2. What is the 4 step sequence you need to do before crossing?

3. Why is it important to look out before you step out?

4. Why is it recommended to hold hands or stand close to an adult when crossing the road?

5. What is the danger with car parks and driveways?

6. Why should you never cross the road between parked cars?

7. Why are school zones so important for safety?

8. What is the added risk with electric cars when crossing the road?

Independent play

Now that you are getting older, you may be playing more independently or with your friends. More than ever, you need to be thinking of your own safety and that of your mates.

Activity

In groups of 4-5, choose one of the scenarios below, write a script and create a role-play whereby you identify the risk and use an appropriate safety strategy to keep you/your friends safe as you play.

1. You are playing basketball in the laneway behind your house, but cars also park along it.

2. You are creating some beautiful chalk drawings on the footpath on your street to brighten everyone's day, but they go across driveways.

3. You have a new skateboard and visit the skate park with your friends who have much more experience than you with doing jumps.

4. You are playing a ball game at the park with friends when it rolls out into the road.

5. Free choice!! Create your own scenario that relates to your own life.

Notes

Teacher callout
Invite students to reflect on their own circumstances where they play independently from their family, such as the skate park, local neighborhood, playgrounds, etc.

Helmets

Fitting your helmet

In a crash, most of the impact energy is absorbed by the helmet, rather than your head and brain. Therefore, it is critical that your helmet is fitted correctly so it can do its job.

Follow these 3 steps to fit your helmet correctly.

Place the helmet on your head and push it forward so that there are only two finger spaces between your eyebrows and the helmet.

Ensure the straps around your ear are fixed into a V shape with the toggle positioned under your earlobe.

Once the buckle is fastened, check that you can only fit two fingers between your chin and the strap.

Helmet care

Your helmet can only protect your head if you protect your helmet from damage. The foam inside your helmet is designed to compress when hitting a hard surface to absorb the energy from a crash.

If your helmet gets knocked around or dropped frequently, the foam will compress and therefore not be able to protect your head in a crash.

It is your responsibility to look after your helmet.

Activity

Create a simple checklist that you can use to remind you how to fit, inspect and store your helmet safely so that it can do its job.

Design and print your checklist and then stick it next to your helmet at home.

Tips:

1. A good way to remember things is to make it rhyme or use abbreviations.

2. Make your checklist bright, clear and engaging so that it always catches your eye.

- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____

Helmet safety

Helmet variations

As demonstrated in the show, it is essential that you wear the correct helmet for your activity. Each helmet is designed for different functions to give the wearer the ultimate protection.

The most important part of wearing a helmet is choosing the right **type** and **fitting** it correctly.

Bicycle helmets

are designed for higher speeds.

- Single impact — designed to protect the front of your head by compressing the foam upon impact.
- More aerodynamic.
- Better ventilation.
- Bicycle helmets are required by law to be worn by all cyclists.

Scooter helmets

are designed for slower speeds.

- Multi-impact — designed to withstand the typical range of skateboarding crashes.
- Cover the back of the head as riders tend to fall backwards.
- Skate helmets are not required by law but are strongly advised.

Activity

Watch the video of our scientists demonstrating just how important a helmet is using a watermelon stunt head.

As a class, discuss the following:

1. What does the foam in the helmet do in a crash?
2. Why did we use a watermelon for this experiment?
3. Was the helmet effective at protecting the watermelon from harm?
4. What should you do with the helmet after a crash like this?
5. How did this experiment make you feel about helmets?

Teacher callout

Talk with the students about their predictions and observations, and reflect on the comparison of the watermelon to the human skull.

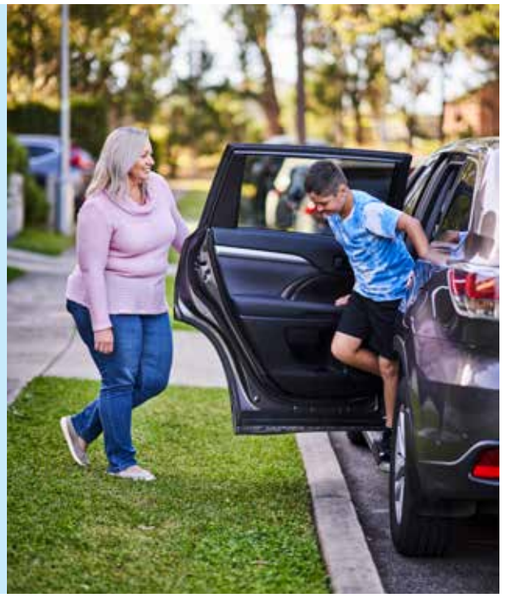
Passenger safety

As a passenger in a car, you can make good choices that will help keep you safe. Let's explore these choices in more detail.

The safety door

The safety door in any vehicle is the one located next to the kerb, footpath or nature strip, away from traffic.

Your safety strategy when entering and exiting the car is to always use the safety door.



Front seat

It is recommended that children remain in the back seat until they are at high school. Front airbags are designed to provide protection to adults as they will make impact with their chest. With a child, however, they would make impact with their neck and face, causing injury.

Always choose to sit in the back seat where possible.

Your safety strategy if you need to sit in the front seat is to push your seat back to increase the space between you and the airbag.

Booster seat

In NSW, the law requires children to use a booster seat until they are seven years old.

A booster seat raises your body up to enable correct fit and function of the car seatbelt.

If the seatbelt is uncomfortable, rubs on your neck or you are small in stature, your safety strategy is to remain in your booster seat beyond the age of seven until the seatbelt rests along your collar and hip bones comfortably.

Activity

Select one of these subject matters (safety door, front seat safety, or booster seats) and create a well-structured, imaginative, informative and persuasive speech to present to your fellow classmates that ensures they will always make safe choices as a passenger.

Things to remember:

- The booster seat is not a baby seat.
- You can always make safe choices even if an adult tells you otherwise.
- Your speech should be no longer than 3 mins...don't forget to have fun!

Teacher callout
To further support your students' writing efforts, supply them with a persuasive text scaffold with which they are already familiar.

Seatbelts

Newton's Law of Motion

Imagine you are in a car travelling at 60km/h. You and everything in your car are also travelling at 60km/h. Inertia is an object's tendency to keep moving until something else works to change that motion. If your car were to crash into a tree, it would stop. However, you and every other object in the car will still be travelling forward at 60km/h. This is when seatbelts kick into action to stop you from flying through the windshield or slamming into the dashboard. The seatbelt has a 'lock', which stops the belt unreeling in a crash. Most cars have pre-tensioner seatbelts, which tighten as soon as they detect a crash.

The hard facts:

Seatbelts have been mandatory in NSW since 1971.

Seatbelts are the key safety component for all occupants of any vehicle.

Each year, on average, 30 people are killed and 220 are injured from crashes in NSW involving seatbelt non-compliance.

Fitting your seatbelt correctly

The seatbelt has a lap part that should sit across your hip bones and a sash that should sit across the centre of your chest and rest on your collarbone. Never take off your seatbelt, even if your car has stopped at traffic lights or has broken down. There are other cars around you travelling at speed that could crash into you and cause serious injury.

Activity

Conduct a deep dive exploration into the what, why and how seatbelts have changed the landscape for road safety. Using the research components of the design thinking cycle, create a brief report on how seatbelts work and the impact they have on safety.

Things to remember:

Consider the theory of inertia and Newton's first law of motion!

Teacher callout

This activity fits well into the Stage 3 STEM Learning Framework in the Research and Plan phase.

Driver distraction

Driver distraction is, increasingly, one of the major causes of road crashes.

Remember we used the skill tester game in the show to demonstrate how passengers can unintentionally distract their driver, which can increase the risk of a crash?

Driving a vehicle takes an enormous amount of concentration.

Safety strategies

- Avoid distracting your driver by minimising noise and disruptions.
- Pack your own entertainment and snacks for the journey.
- Set a good example for younger passengers.

Poster presentation

In groups of 3-4, create a poster to educate other children on how to avoid distracting the driver.

Present your poster to another group or class.

Things to remember:

Include at least one safety strategy in your masterpiece.

Teacher callout

As an introduction to this activity, discuss with your class examples of when they have experienced distractions that have impacted their performance, such as playing a game/computer game/reading.

Information for parents

If you are reading this, it means that your child has participated in the NRMA Science and Road Safety Program, where we merged science with theatrics to create a fun and memorable educational experience — one that empowers children to know how to keep themselves and others safe.

Ask your child to tell you what they learnt today and teach you some of the safety strategies we shared. Use this workbook to help prompt the conversation or scan this QR code to visit our parents' hub for more information on what we covered on the stage.

Road safety is the responsibility of all. We need you and your school community to help instil safe behaviours to keep our children safe.

To learn more about road safety, visit **mynrma.com.au/roadsafetyday**

Teacher callout

View the curriculum links in the teacher pack.