Safety in numbers

Overview of the unit

In this unit students will learn about and practise their understanding of key mathematical concepts and knowledge that are the mathematical foundations behind driving a car safely. These include the concepts of:

- numbers, including whole numbers, decimals, fractions and percentages
- the metric system, especially distances and volume
- speed
- time (for parking).

Purpose

Road safety:

Safety in numbers aims to improve students' understanding of some core mathematical skills in order to be able to drive safely. This includes:

- being able to read and understand numbers so that drivers can read and interpret numbers that indicate distances, speeds, alcohol consumption, safety features of cars, etc.
- being able to know what metric distances mean so that drivers have concepts of what legal and safe distances are for travelling, parking, etc.
- being able to know what speed means, for obeying speed limits and safe driving behaviour
- concepts and calculations with time for reading and obeying parking restrictions, clearways, etc.

VCAL:

The purpose of *Safety in numbers* is to support students to develop the skills and confidence to make sense of mathematics in their daily personal lives, in this case some fundamental measurement and number skills that are part of learning to drive and being able to drive safely.

Teacher information

The idea in this unit is for students to become familiar and confident in their mathematical understanding of numbers and metric measurements behind driving a car safely. It is therefore important to make the activities practical and related to issues around driving a car.

It is assumed that this unit would be undertaken in conjunction with other measurement units related to road safety. For example, *Only a little bit over?*

Resource requirements

Worksheets	Worksheet 1: Numbers around us Worksheet 2: What unit? Worksheet 3: Parking, clearways and time
Published material	The Road to Solo Driving Driving in Victoria: rules and responsibilities Getting There From Ls to Ps
Internet sites	www.vicroads.vic.gov.au
Places	Classroom and outside space
Facilities & equipment	Examples of numbers related to driving (and cars in general). This could include photos or images of road signs, copies of the *Driving in Victoria, Rules and Responsibilities* from VicRoads, articles or images from magazines, newspapers or from the Internet. Examples of materials showing different types of everyday measurements.

Alignment of the unit to VCAL

VCAL units

Numeracy

VCAL level

Activities in this unit are predominately focused at **Foundation** level, although aspects also meet the requirements of the **Intermediate** level. The major difference is that students working at Intermediate level should work more independently, not need prompting by the teacher, and show their understanding and skills at a slightly more sophisticated level through writing and documenting their work.

Learning outcomes

Activity	Units and learning outcomes
1. Reading the numbers	**Numeracy Skills Foundation Unit:** 3. Numeracy for personal organisation – money & time. Can identify and use familiar everyday numbers, and units of money and time to make decisions about money and time in personal situations 6. Numeracy for interpreting society - numerical information. Can use simple everyday numbers and figures to interpret information which is in texts of personal relevance or interest
2. Metrics – what's the story?	**Numeracy Skills Foundation Unit:** 2. Numeracy for practical purposes – measuring. Can use familiar simple measurements of length, mass, capacity and temperature to compare or measure materials or objects in personal situations

3. All important distances	**Numeracy Skills Foundation Unit:** 2. Numeracy for practical purposes – measuring. Can use familiar simple measurements of length, mass, capacity and temperature to compare or measure materials or objects in personal situations
4. All important speeds	**Numeracy Skills Foundation Unit:** 2. Numeracy for practical purposes – measuring. Can use familiar simple measurements of length, mass, capacity and temperature to compare or measure materials or objects in personal situations 3. Numeracy for personal organisation – money & time. Can identify and use familiar everyday numbers, and units of money and time to make decisions about money and time in personal situations
5. Times, fines and safety	**Numeracy Skills Foundation Unit:** 3. Numeracy for personal organisation – money & time. Can identify and use familiar everyday numbers, and units of money and time to make decisions about money and time in personal situations

Please note: The activities **support** the learning outcomes listed but may not cover all the assessment criteria/elements. Please check the relevant Curriculum Planning Guide to ensure all assessment criteria/elements are covered. For assessment purposes, in the Personal Development Skills, Reading and Writing and Work Related Skills Units, all the elements of a learning outcome must be covered in the one assessment task. Where an activity doesn't cover all the elements, the activity can be used to build the student's portfolio of evidence.

Assessment

The activities in this unit have been designed as learning activities. However, documentation can be used to build a portfolio of evidence to be used for the assessment of relevant learning outcomes. Evidence may include:

- teacher checklists
- notes from discussions
- student self-assessments
- results of students work
- poster.

Sample assessment record sheet

See next page.

Sample assessment record sheet: Foundation

Unit name: Safety in numbers **VCAL Level: Foundation**

Student name: …… Form/Group: ……

Unit Outline:

Safety in numbers includes activities for students to learn about and improve their understanding of key mathematical concepts and knowledge that are the mathematical foundations behind driving a car safely. These include the concepts of:

- numbers, including whole numbers, decimals, fractions and percentages
- the metric system, especially distances and volume
- speed
- time (for parking).

Learning outcomes and performance:

Activity	Learning Outcomes	Performance	Evidence/comments
1. Reading the numbers	**Numeracy Skills Foundation Unit:** 3. Numeracy for personal organisation – money & time. Can identify and use familiar everyday numbers, and units of money and time to make decisions about money and time in personal situations 6. Numeracy for interpreting society - numerical information. Can use simple everyday numbers and figures to interpret information which is in texts of personal relevance or interest		
2. Metrics – what's the story?	**Numeracy Skills Foundation Unit:** 2. Numeracy for practical purposes – measuring. Can use familiar simple measurements of length, mass, capacity and temperature to compare or measure materials or objects in personal situations		

3. All important distances	**Numeracy Skills Foundation Unit:** 2. Numeracy for practical purposes – measuring. Can use familiar simple measurements of length, mass, capacity and temperature to compare or measure materials or objects in personal situations		
4. All important speeds	**Numeracy Skills Foundation Unit:** 2. Numeracy for practical purposes – measuring. Can use familiar simple measurements of length, mass, capacity and temperature to compare or measure materials or objects in personal situations 3. Numeracy for personal organisation – money & time. Can identify and use familiar everyday numbers, and units of money and time to make decisions about money and time in personal situations		
5. Times, fines and safety	**Numeracy Skills Foundation Unit:** 3. Numeracy for personal organisation – money & time. Can identify and use familiar everyday numbers, and units of money and time to make decisions about money and time in personal situations		

Unit performance codes: Y = Yet to do; NYC = Not yet completed; CS = Completed satisfactorily

Teacher's signature: …… Date: ……

Evidence of successful completion of the unit could include:

- teacher checklist and observation
- student documentation of planning and organising of a seminar
- the timeline
- materials produced as part of tasks undertaken
- advertising materials
- photos or video of the seminar
- final report.

Activity 1: Reading the numbers

The first part of the Unit is about making sure students can read and recognise numbers that they may meet in the Learner's Permit process, learning and knowing the road rules, and driving.

What to do

As the teacher you will need to:

- Collect examples of where numbers exist in relation to driving (and cars in general). This could include photos or images of road signs, copies of the *Driving in Victoria, Rules and Responsibilities* from VicRoads (or materials from its website: www.vicroads.vic.gov.au), articles or images from magazines, newspapers or from the Internet. Some examples are included in *Worksheet 1*: *Numbers around us*.
- You could give out a copy of the newspaper, *Crash 'n' Burn* and ask students to find and highlight all the numbers they can find. They could then order them from smallest to largest, write them out as words and numerals.
- In small groups ask the students to brainstorm and think about what types of numbers they might need to know about in terms of driving cars (and maybe buying a car to make it more comprehensive). Key questions are: What numbers do you use or see in relation to cars and driving? Are there different sorts of numbers? How many can you think of? Can you group them together in some way?
- Facilitate and stimulate the discussion, asking questions to gather the information you need. Pull the brainstorm outcomes together and summarise the discussion by grouping together the different types of numbers (whole numbers, fractions, decimals and percentages). Explain any characteristics of the numbers if you feel the students are not all clear about the differences.
- Have available teaching materials and worksheets about different types of numbers (sorting and comparing different numbers; identifying and listing/ordering numbers embedded in texts or images). If students have difficulty with reading and understanding some numbers you may need materials about place value, especially for decimals. Get the students to work on the materials, or send those who need more support and work to use available software or Website based programs, if available (see section on Links and resources below).
- You could play some number games as a fun way to reinforce students' understanding of numbers (e.g., *Multidigit*, *Dicing with Decimals* etc. are available in some of the resources listed in the Links and resources section below).

Student role and responsibilities in relation to the activities

Contribute to small group work and class discussions.

Complete activities, games and worksheets about numbers.

Level of teacher support

Facilitate small group brainstorms and the pulling together of the class discussion about numbers.

Provide encouragement.

Introduce tasks and activities to teach or reinforce number skills and understanding.

Key questions

Why are numbers important in terms of cars and driving?

What types of numbers are used?

Links and resources

A good resource for learning about and practising a range of skills related to measurement (and fractions and decimals) is:

- Tout, Dave and Marr, Beth, *Measuring up: an interactive multimedia computer resource for numeracy learners*, Protea Textware, Melbourne, 1997[5]

For number games, worksheets and activities, along with material about measurement and time see:

- Goddard, Ruth and Regan, Margaret, *The Value of Time: Numeracy for workers in manufacturing*, Council of Adult Education, Melbourne, 1995
- Goddard, Ruth; Marr, Beth; Martin, Judith, *Strength in Numbers: A resource book for teaching adult numeracy,* Holmesglen College of TAFE, Holmesglen, Vic., 1997 (revised edition)
- Marr, Beth & Helme, Sue, *Mathematics: a new beginning,* Victoria: State Training Board, 1987
- Marr, Beth; Anderson, Chris; Tout, Dave, *Numeracy on the Line: Language Based Numeracy Activities for Adults*, National Automotive Industry Training Board, Doncaster, Vic., 1994[6]
- Maths300 has many relevant activities and games: www.curriculum.edu.au/maths300/
- Tout, Dave, *Car Costs II: A numeracy workbook*, CAE, Melbourne, 2006
- Tout, Dave, *Having fun with maths*, Multifangled, Melbourne, 2008

Assessment

This is a learning activity. To use it as an assessment task you would need to collect evidence such as:

- teacher checklists
- notes from discussions
- student self-assessments.

Students working at Intermediate level should work more independently, be more responsible for writing up results and outcomes and show leadership skills in discussions.

[5] Available from Protea Textware: www.proteatextware.com.au

[6] The four numeracy resources listed here are available from the Centre for Adult Education (CAE): www.cae.edu.au

Activity 2: Metrics – what's the story?

The second and third parts of the Unit are about the metric system and focus on helping students recognise and have a concept about common measurements that they will need to understand in relation to getting their Learner's Permit, knowing the road rules and driving safely. This first part introduces students to how the metric system works, whilst the next activity looks at being able to estimate and measure lengths.

What to do

As the teacher you will need to have an initial classroom activity or session whereby students can establish what they know and don't know about the metric system and how it works. This can be done via a whole group discussion/brainstorm where you collect all the knowledge the group has about metrics on the board. You could ask a starting question such as:

- What units do we use when we measure different things, like our own height?

And use this, and follow up questions, to elicit the range of things we measure and what we measure them with and what units we (should) use. If someone mentions old units like inches, use it to illustrate how the former imperial system was much more cumbersome with conversion units of 12, along with 3, 8, 16, 22, 1760 and so on and how much simpler the metric system is in comparison.

So that you know that all relevant aspects of the metric system will be covered you could bring along examples or materials that cover the different types of measures and their metric units. For example, this could include:

- Length: have available rulers, but also bring along tape measures of different sorts (dressmakers, builders). Have objects (or pictures of objects) of different lengths that are measured using metric lengths – from very small (e.g. a drill bit or a nail/screw measured in millimetres) through to much longer (e.g. a ball of string/rope that is measured and sold by the metre or through to a photo of something long like a country road fading into the distance or a plane runway or a racetrack that would be measured in kilometres).
- Volume and capacity: have available measuring implements such as measuring cups, spoons, buckets, and maybe even a dropper for medicines, along with common things that have a known volume that we measure or buy. From something small like a tube of Super Glue (if measured in millilitres) or small medicine or perfume bottle through to something bigger like a large bottle of soft drink, through to a picture of a swimming pool or a dam (measured in either cubic metres or kilolitres or even megalitres). Here you may need to talk about the capacity in terms of litres, cubic centimetres and cubic metres units.
- Weight (mass): have available kitchen scales as well as bathroom weighing scales, along with common things that have a known weight or that we weigh. From something light like a matchstick or tea bag or even a smartie (measured in grams) through to something heavier like a bag of potatoes or oranges (measured in kilograms) through to very heavy like a picture of an elephant or a big truck (measured in tonnes). Or even medicine and tablets which are weighed in milligrams. Don't forget to relate it to people's own weights.

Demonstrate how big each unit is (where appropriate), especially unusual ones like a cubic metre.

Write up on the board all the units that are mentioned and fill in any gaps – organise them under the different categories. Then look at and summarise all the different metric prefixes and what they mean. Indicate that the metric system is simple to use because all the relationships between the units are based on 10s, 100s, 1,000s and so on (powers of ten).

NOTE: This could be an opportunity to revise or teach the rules for multiplying by powers of ten and moving the decimal point. For Intermediate students including conversions between different metric measurements would also be appropriate.

The final part of this activity looks at where measurement and metrics are used in relation to cars and driving. You could ask the question:

- Now knowing about the metric system, what types of measurements are used in relation to driving and cars?

Invite students to contribute the types of measurements they might need to know about in terms of driving and using cars. Facilitate and stimulate the discussion, asking questions to gather the information you need. Pull the brainstorm outcomes together and summarise the discussion by grouping together the different types of uses of measurements:

- Distances: used for parking distances, stopping distances, safe distances between cars, distances for travelling between towns, and for measuring sizes of cars.
- Speeds: used for travelling speeds and speed limits.
- Volume/Capacity: used for alcohol consumption and drinking, fuel, measuring sizes of car engines.
- Mass: can be used for weights of vehicles and towing capacity.

You could then use *Worksheet 2: What unit?* as an activity for students to practise their understanding of basic metric units.

Student role and responsibilities in relation to the activities

Contribute to small group work and class discussions.

Complete activities, games and worksheets about measurement and metrics.

Level of teacher support

Facilitate brainstorm and the pulling together of the class discussion about measurement and metrics.

Provide encouragement.

Introduce tasks and activities to teach or reinforce measurement and metric skills and understanding.

Key questions

What units do we use when we measure different things, like our own height?

What types of measurements are used in relation to driving and cars?

Extension activity

The activity could be extended to include estimating lengths by developing students' knowledge of their own body measurements – such as 1 cm width of a finger, the width of their hand span, the width of their arm span and the length of their pace.

Links and resources

A good resource for learning about and practising a range of skills related to measurement (and fractions and decimals) is:

- Tout, Dave and Marr, Beth, *Measuring up: an interactive multimedia computer resource for numeracy learners*, Protea Textware, Melbourne, 1997

For measurement worksheets and activities see:

- Marr, Beth and Helme, Sue, *Mathematics: a new beginning,* Victoria: State Training Board, 1987
- Marr, Beth; Anderson, Chris; Tout, Dave, *Numeracy on the Line: Language Based Numeracy Activities for Adults*, National Automotive Industry Training Board, Doncaster, Vic., 1994
- Maths300 has many relevant activities: www.curriculum.edu.au/maths300
- Tout, Dave, *Car Costs II: A numeracy workbook*, CAE, Melbourne, 2006

Assessment

This is a learning activity. To use it as an assessment task you would need to collect evidence such as:

- teacher checklist
- results of students work
- student self-assessments.

Students working at Intermediate level should work more independently and show leadership skills in any class discussions, including in terms of mathematics, describing the relationships between the different metric units. They could be expected to be able to convert between the different metric units.

Activity 3: All important distances

This part of the Unit is about making sure students know the importance of distance in terms of safe driving.

What to do

As the teacher you will need to:

- Refresh students understanding of metric length – using kilometres, metres, centimetres and millimetres.
- Revisit the discussion in the previous session about what distances are important in terms of safety when you drive a car:
  - stopping distances
  - safe travelling distances between cars.
- For stopping distances the important concepts are about reaction times and braking distances. A number of materials and websites have information about these, and it is possible to undertake classroom activities that get students to work out their reaction times (see Extensions for some resources you can use here).
- For safe travelling distances between cars there are no hard and fast rules, apart from leaving ample space. Again, speed and road conditions are extremely important factors. One 'rule' that is suggested is the '2 second' (or '3 second') rule. Another that is suggested is that there should be at least 3 car lengths between the car you are driving and the one in front. For a good discussion of these suggestions see the *Drive and stay alive Inc* website at www.driveandstayalive.com
- Ask students (in pairs or small groups) to undertake research on the distances that are important with regard to these. They could read *Driving in Victoria, Rules and Responsibilities* from VicRoads (or materials from its website: www.vicroads.vic.gov.au) or search the Internet for information about these distances.
- One important issue is about how travelling speed impacts on these distances. It is also important to discuss how road conditions affect the distances. Although there are different formulae used, one main perspective taken is that the relationship between speed and stopping distance is a squared relationship – that if you double the speed the required braking distance doesn't just double, it quadruples. Although the use of formulae is above what is required here, higher level students could investigate and use such formulae.
- When students have collected the information, get each group of students to select one of the two important distances (stopping distances or safe travelling distances between cars) and ask them to come up with a poster or e-poster that illustrates safe stopping distances for cars coming to a full stop or for safe travelling distances between cars that are moving.
- They could produce e-posters or use software to produce posters that can be printed.
- After this, it is important to get students to be aware of the distances they have researched. They need to have a visual concept of how far a metre is and then how far 10 metres, 20 metres is, and so on.
- You could start the activity by asking students to use tape measures and rulers to measure a variety of different lengths around their classroom or outside. You could develop a worksheet to support this activity. Measure small lengths and distances (like lengths of pens and pencils and paper sizes) through to tables, doors and windows, room lengths and widths, and finally through to outside lengths such as that of buildings and grounds.

- If you didn't do it in the previous session, make sure students know their own body measurements and personal referents – such as their height, a 1 cm width of one of their fingers, the width of their hand span, the width of their arm span and the length of their pace. Get them to use their body measurements to estimate the above distances and lengths before they measure them more accurately with a tape measure.
- Finally find a safe area (e.g., a driveway in the schoolyard or sports area) and get them to mark out the different stopping distances and safe travelling distances between cars. Using the information on their posters they could use chalk to write on the driveway what the speed is against the distance from a zero starting point. They should guess and estimate the distances, and mark them on the road, then measure them accurately using a tape measure.

Student role and responsibilities in relation to the activities

Contribute to small group work and class discussions.

Complete measurement activities.

Undertake research into distances.

Produce a poster.

Level of teacher support

Facilitate brainstorm and the pulling together of the class discussion about measuring distances.

Provide encouragement.

Introduce any necessary teaching tasks and activities to teach or reinforce measurement and metric skills and understanding.

Key questions

What distances are important in terms of safety when you drive a car?

How does travelling speed impact on the distance it takes to stop a car?

Extension activities

In terms of mathematics, Intermediate level students should be capable of describing the relationships between the speed and distance in a more sophisticated way, and be able to produce a more complex and mathematically correct poster. For high level Intermediate or Senior level students, there are a number of activities and calculations using formulae that can be used to work out reaction times and distances travelled under different road conditions, and so on. Some activities for doing these calculations are included in these resources:

- Lowe, Ian, *Mathematics at Work*, (CD-ROM), AAMT, Adelaide, 2001
- O'Connor, M. and Gaton, B., *Foundation Mathematics*, Oxford, Melbourne, 2000
- Thomson, S. and Forster, I., *Trade and business mathematics 1*, Addison Wesley Longman Australia, South Melbourne, 1998

Links and resources

Search on the Internet and you will find both science and mathematics sites that address the issue of stopping distances for cars. Also both the VicRoads www.vicroads.vic.gov.au and Transport Accident Commission (TAC) www.tacsafety.com.au websites provide information about speed and road safety.

Assessment

This is a learning activity. To use it as an assessment task you would need to collect evidence such as:

- teacher observation checklist, especially for measurement activities
- results of students work – the poster
- student self-assessments.

Activity 4: All important speeds

This part of the Unit is about making sure students know about the importance of speed in terms of safe driving. The last activity will have highlighted how speed plays a vital and direct role in terms of stopping (and therefore avoiding crashes).

What to do

As the teacher you will need to:

- Introduce and discuss what speed is and how it is measured (without being too technical and using a formal formula).
- It is possible to talk about speed in general terms by relating it to known speeds and student's knowledge. Include points such as:
  - How have we been talking about the speed that cars travel at?
  - How do we describe the speed of a car – that is, what units do we use?
  - Discuss what kilometres per hour means.
  - Show how this is written – in full and using abbreviations (include the common variations – kmph and km/h)
  - What is a slow car speed? What is a fast car speed? What is a safe car speed?
  - Do some quick and easy calculations. For example, if you traveled 60 km in 1 hour the (average) speed would be 60 km/h; if you traveled 120 km in 2 hours the average speed would still be 60 km/h; and so on.
  - You can also ask about how far they might travel if they were going at a certain (average) speed for a particular time (just use full hours and half hours so the calculations are easy).
- Ask students to see if they know about other speeds so they can compare them with car speeds. These could be conducted through research projects in small groups or individually. For example:
  - How fast do people travel when they walk?
  - When they ride a bike?
  - How fast do birds fly? What is the fastest bird? Is it the emu?
  - How fast do animals travel? What is the fastest animal? What is the fastest Australian animal? Is it the kangaroo?
  - How fast do planes travel?
- They could report this information by plotting a graph of the speeds of different vehicles or for different animals or birds.
- Another option is to get them to do some measurements and calculations to work out how fast they walk and how fast they can ride a bike. Get students to work in pairs to collect the measurements. All they need is a safe and clear space where they can measure out a standard distance like 100 or 200 metres and work out the average time they take to walk it and/or ride it. Then help them to convert this into kilometres per hour. (You may need to develop a worksheet that structures how they can record and calculate these speeds in km/h).
- An extension here for all students is to research and consider issues about safe driving speeds and how campaigns such as the 50 km/h limit for local roads, and the 40 km/h speed limit outside schools have been implemented and why. Again there is a lot of information available about how reducing speeds save lives and reduces serious injuries.

Student role and responsibilities in relation to the activities

Contribute to small group and class discussions.

Complete activities and worksheets about speed.

Level of teacher support

Facilitate brainstorm and the pulling together of the class discussion about speed.

Provide encouragement.

Introduce the teaching tasks and activities to teach about speed.

Key questions

What is speed and how is it measured?

What are some common speeds?

Extension activities

In terms of mathematics, Intermediate level students should be capable of describing the relationships between speed and distance in a more sophisticated way and it may be possible to get them to draw up a chart or graph showing distance versus time using kilometres travelled versus the time taken for a few different speeds.

At Senior level this is a great opportunity to develop and write about formal mathematical formulae – how we write them, how we use abbreviations and shorthand methods and so on. The speed versus distance and time formula is a common sense and everyday application of a formula that can make sense to many students. At Senior level it could be used to help cover the Numeracy for Knowledge – Formula Learning Outcome.

This activity could also be extended by inviting the local Police to attend the school to talk about speed, stopping distances, etc.

Links and resources

- Tout, Dave, *Car Costs II*, Melbourne, CAE, 2006

Assessment

This is a learning activity. To use it as an assessment task you would need to collect evidence such as:

- teacher checklist
- results of students work
- student self-assessments.

Activity 5: Times, fines and safety

This part of the Unit is about making sure students are able to tell and estimate with time, especially in terms of parking times and in clearways where it is important to make sure you don't leave your car parked illegally during peak hour times. This has an impact not only on the hip pocket in terms of fines but also in terms of safety due to wanting to keep traffic clear and safe at times when roads are busy and crowded.

What to do

As the teacher you will need to:

- Point out what part time plays in driving a car. This can include:
  - the time it takes for you to travel from A to B (and the relationship with speed that we discussed in the previous activity)
  - driver fatigue – how long people can drive for without it impacting on their driving skills
  - parking times.
- But here we want to highlight the importance of knowing about time and being able to calculate with time when you park your car. Talk about parking restrictions and the costs of fines, and also the safety aspects in terms of clearways where it is important on busy roads to have no cars parked along the roadside so that traffic can flow easily and safely.
- Check that students can tell the time and do some basic calculations with time. There does not need to be formal calculations with time. Show them how to count forwards informally with time, to both calculate when adding on times (e.g. how long will it be in one and half hours from now) and in subtracting times (how long is it from now until such and such a time).
- Use examples of parking restrictions to pose scenarios and questions to students. They could work in small groups to solve the problems and work together so they can support and explain it to each other. Pose problems such as:
  - reading parking signs to tell how long they can park in different places.
  - give a specific time of the day and ask students to add on (count forward) a certain numbers of hours and/or minutes (use both hours and minutes and common fractions of hours).
  - give them a specific time of the day and ask them how many hours and minutes left until a particular time (e.g. when a clearway starts).
- You could use Worksheet 3: Parking, clearways and time.
- There are numerous time calculations and processes explained along with activities and exercises in the resource:
  - *The Value of Time: Numeracy for workers in manufacturing*, by Ruth Goddard and Margaret Regan (see Links and resources section for further information).

Student role and responsibilities in relation to the activities

Contribute to small group work and class discussions.

Complete activities, games and worksheets about measurement and metrics.

Level of teacher support

Facilitate the class discussion about time and calculating with time.

Provide encouragement.

Introduce any necessary teaching tasks and activities to teach or reinforce measurement with time.

Key question

What part does time play in driving (and parking) a car?

Extension activity

Calculate and compare the costs of different fines e.g. parking infringements and speeding.

Links and resources

- Goddard, Ruth and Regan, Margaret, *The Value of Time: Numeracy for workers in manufacturing*, Council of Adult Education, Melbourne, 1995

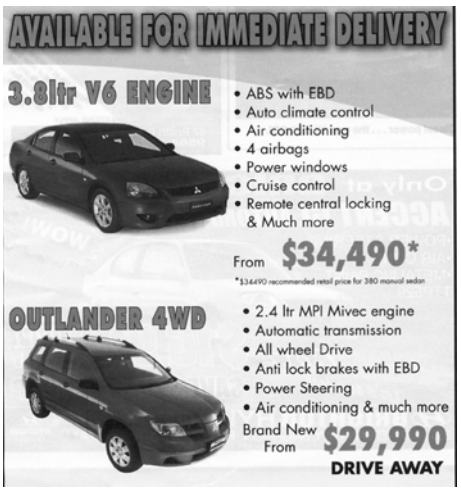
Assessment

This is a learning activity. To use it as an assessment task you would need to collect evidence such as:

- teacher checklist
- results of students work
- student self-assessments.

Students working at Intermediate level should work more independently and show leadership skills in class discussions.

Worksheet 1: Numbers around us



YOUNG DRIVERS AT RISK

Statistics show that young drivers are involved in more serious crashes than any other group of drivers on the road. Each year, 40-50 young drivers are killed, 61 are involved in fatal crashes, and over 4,000 are involved in injury crashes. The greatest risk is in the first six months of driving. First year drivers in Victoria are almost three times more likely than experienced drivers to be involved in a fatal or serious injury crash.

Worksheet 2: What unit?

1. What metric unit or units could you use to measure the following:

Item	Unit(s)
How far it is from Melbourne to Brisbane?	
How much oil to put into a car engine?	
The width of a football ground	
The size of a computer screen	
The size of a bottle of soft drink to have with lunch	
The weight of cheese to buy at the supermarket	
How much petrol to put into a car fuel tank?	
The weight of an adult	

2. Which of the following are the most likely measurements? Circle the correct answer.

The weight of the car is:

a) 1 kg b) 1 tonne c) 10 kg d) 100 tonne

The volume of the container of oil for the car is:

a) 5 ml b) 5 l c) 50 l d) 50 ml

The width of the footpath is:

a) 20 cm b) 20 mm c) 2 km d) 2 m

The capacity of the car engine is:

a) 36 ml b) 3.6 litres c) 360 l d) 3.6 kl

The size of a Standard drink of spirits is:

a) 3 ml b) 3 litres c) 30 ml d) 300 ml

The weight of the bag of apples is:

a) 3 g b) 30 g c) 30 kg d) 3 kg

The width of the car tyre is:

a) 175 cm b) 175 mm c) 175 km d) 175 m

Worksheet 3: Parking, clearways and time

Answer the following questions about the Clearway signs:

Sign / information	Question:
	How long can you park here on a Saturday morning? _____ How long can you park on a Sunday? _____
	How many hours are you not allowed to park on this road during the week? _____ Can you park here on a Sunday afternoon? _____
	If there are no other parking signs, how long can you park here on a Saturday morning? _____ How long can you park here on a Tuesday? _____
	 If your watch shows this time on a weekday afternoon and you are parked in the clearway area, how long have you got before you have to go and move your car? _____