 Analysing blood alcohol content (BAC)

These activities are designed to engage students in calculations related to BAC and the time taken until a zero BAC is reached.

Part 1: Calculating the number of standard drinks

In Australia a standard drink contains 10 grams of alcohol.

* Students choose three alcoholic beverages from the:
	+ Australian Department of Health [Standard Drinks Guide](https://www.health.gov.au/health-topics/alcohol/about-alcohol/standard-drinks-guide)
	+ And/or the DrinkWise [Standard Drinks Calculator](https://drinkwise.org.au/standard-drinks-calculator/)
* Students calculate the number of standard drinks each and comment on the accuracy of each website.

Part 2: Analysing BAC

An understanding of the [effects of alcohol](https://www.health.gov.au/health-topics/alcohol/about-alcohol/what-are-the-effects-of-alcohol) is an important consideration for Australian adults including ramifications for driving under the influence of alcohol.

* Students record down their mass in kilograms.
* Students calculate the BAC of a number of scenarios using the three previously chosen beverages.
	+ Teachers can set a number of each beverage consumed and the time taken.
	+ Resource: bac-scenario-generator.XLSX
* Students consider the [short term effects](https://www.health.gov.au/health-topics/alcohol/about-alcohol/what-are-the-effects-of-alcohol#shortterm-effects) in each scenario.
* Students check the accuracy of online BAC calculators against their own calculations.
* Learner and provisional drivers must have a BAC of zero.
* For each scenario, students estimate the number of hours from when the person stops consuming alcohol until they can legally drive if they are a provisional driver.
* Students discuss the legal ramifications if their estimates are incorrect.

Part 3: Factors affecting BAC

Investigate the effect of weight and alcohol consumption on the BAC levels of both males and females by analysing a range of scenarios. Sample ideas include:

* Estimate the BAC of a male and female who both weigh 60 kg and consumed 3 standard drinks over 1 hour.
* Compare the BAC of two males (or female), one who weighs 70 kg and one who weighs 80 kg if they both consumed 5 standard drinks over 2 hours
* Compare the BAC of two males (or female), both weigh 70 kg over 3 hours one consumed 5 standard drinks and the other 10.

Part 4: Analysing the rule of thumb:

There is a common rule of thumb for fully licenced drivers in Australia who are allowed a BAC of less than 0.05 when driving.

The rule of thumb states the following may be consumed by an individual and their BAC will stay below 0.05:

* Males: 2 standard drinks in the first hour then 1 every hour after
* Females: 1 standard drinks in the first hour then 1 every hour after

Investigate the accuracy of the rule of thumb for a BAC of 0.05%

Part 5: Non-standard definitions of a standard drink:

Although the World Health Organisation defines a standard drink as one containing 10 gram of alcohol, different countries use different definitions.

* Use the World Health Organisation, [standard drink defined by country,](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/standard-drink-defined) and choose a country whose standard drink definition is over 10 grams.
* Analyse a scenario using this non-standard definition:
	+ You have a guest from the country previously chosen.
	+ They pour you 5 of their “standard drinks” which you consume over 3 hours.
	+ Calculate your BAC and time until your BAC will be zero using the WHO definition of a standard drink.
* If you were unaware of their alternate definition of a standard drink, what would you believe your BAC was and the time until your BAC would be zero?
	+ By referring to your calculations, why is it important to understand how the standard drink was defined by your guest?