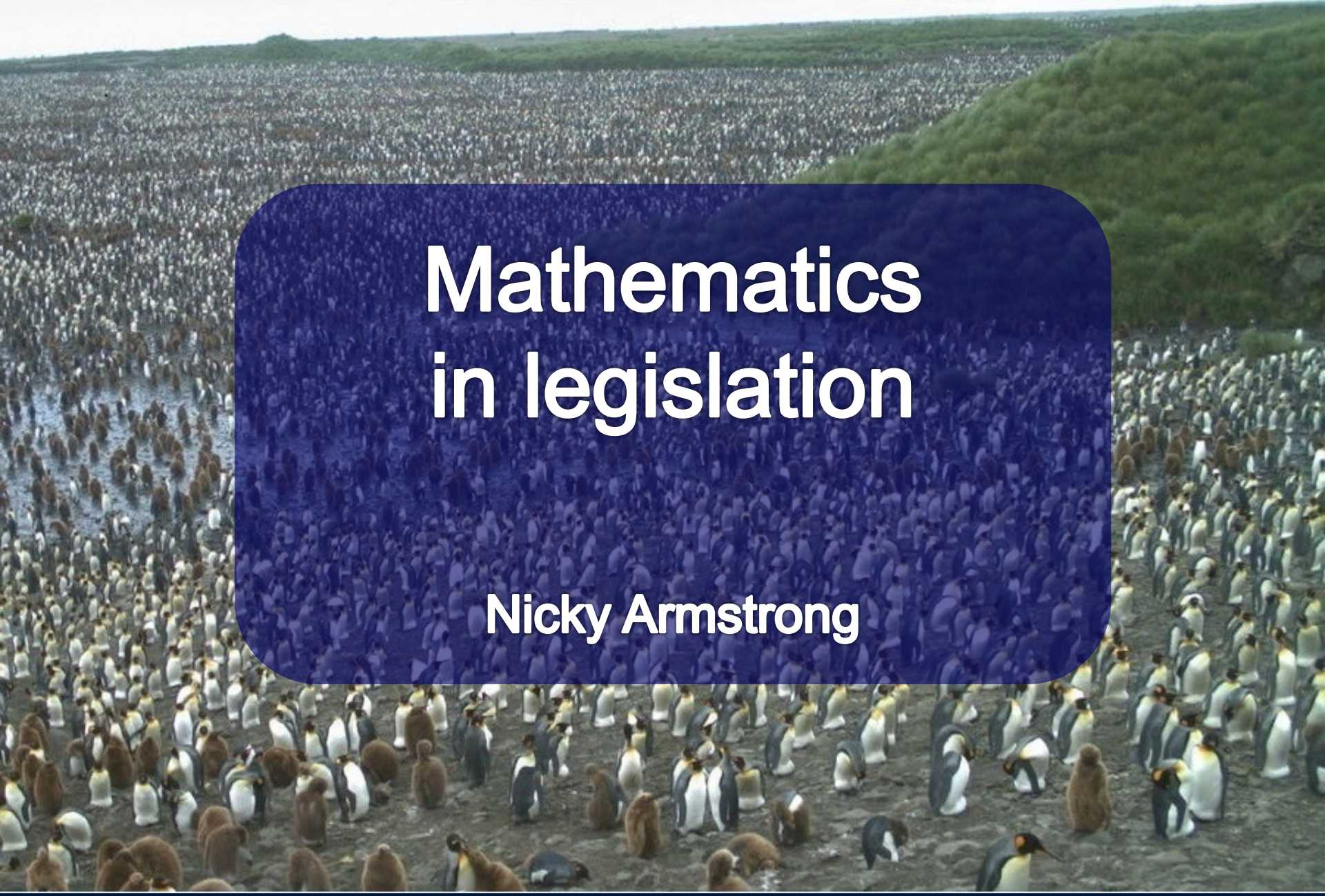

Mathematics in legislation

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CALC

When to use a formula – considerations

- complexity
- users - familiarity with formulae
  - need to generate own formula
- technology
- fear of maths

Things to consider with calculations

- units of measurement

units of measurement

4 Mass limits for road trains

The total mass of a road train must not exceed … :

$$a = \frac{k \times w \times t}{16}$$

where:

a = total mass of vehicle and load **in kilograms**

k = for a class 1 vehicle k = 0.055

for a class 2 vehicle K = 0.053

w = the number of **wheels on the vehicle**

t = maximum engine net torque **in newton-metres**.

Things to consider with calculations

- units of measurement
- rounding

rounding

10 Security deposit

(1) The amount of the security deposit … is:

$d = a \times w \times p$

where:

d = amount of deposit

a = area of the land, in hectares, **rounded down to the nearest multiple of 10**

w = number of **whole months** in the development period

p = relevant multiple prescribed by the regulations.

(2) If the amount determined under subsection (1) is not a whole number, the amount **is to be rounded up to the nearest whole number**.

Things to consider with calculations

- units of measurement
- rounding
- ascertaining value – how and when

Ascertaining value –how and when

12 Determination of amount of levy

The amount of the levy is …:

$a = (v \times r) - p$

where:

a = amount of levy (in dollars)

v = volume of waste .. determined in **accordance with regulation 26**

r = prescribed rate **on the first day of the return period**

p = the reasonable processing costs of the waste determined **by the Director-General**.

Things to consider with calculations

- units of measurement
- rounding
- ascertaining value – how and when
- negative values

negative values

24 Out of balance charges

(1) The out of balance charge for a month is .. :

$c = n \times b \times 5.26$

where:

c = out of balance charge for the month

n = sum of the adjusted net amounts for the group for the month

b if **n is negative**, then b = sell fee for the month

if **n is positive**, then b = buy fee for the month.

(2) If the out of balance charge for a month **is negative, then** ...

(3) If the out of balance charge for a month **is positive, then** ...

Things to consider with calculations

- units of measurement
- rounding
- ascertaining value – how and when
- negative values

How to use formulae

- numbers
- variables
- mathematical function symbols

Multiplication signs between variables are optional

a × b × c

a b c

variables – what not to do

17 Actual periodic deduction

The actual periodic deduction for the employer for a periodic return period, is the amount worked out using the following formula:

$$apd = \frac{fme}{g} - \frac{1}{4}\left(tw - \frac{fme}{g}\right)$$

$$a = \frac{f \times m \times e}{g} - \left[\frac{1}{4} \times \left(t - \frac{f \times m \times e}{g}\right)\right]$$

where:

a ~~apd~~ = actual periodic deduction in dollars

f = number of days in the period for which employer pays taxable wages

m = number of months in the period

e = maximum deduction per month

g = total number of days in the period

t ~~tw~~ = amount of taxable wages paid or payable in the period.

variables – what not to do

19 Amalgamated loan treated as dividend

The formula for the minimum yearly repayment for a year of income is:

$$\frac{\text{Amount of the loan not repaid by the end of the previous year of income} \times \text{Current year's benchmark interest rate}}{1 - \left[\frac{1}{1 + \text{Current year's benchmark interest rate}}\right]^{\text{Remaining term}}}$$

where …

Current year's benchmark interest rate is the …

Remaining term is the ….

How to use formulae

- numbers
- variables
- mathematical function symbols

The formula, the whole formula, and nothing but the formula

- 2+ calculations - formula for 1, formulae for all

2+ calculations - formula for 1, formulae for all

26 Duty on transfer of vehicle

(1) The amount of duty payable on the grant or transfer of a licence for a vehicle is worked out under this section (rounded down to the nearest 5 cents).

(2) For the grant or transfer of a licence for a vehicle that is **not a heavy vehicle**, the amount of duty is:

(a) if the dutiable value of the vehicle **does not exceed $20 000** – 2.75% of the dutiable value; or

(b) if the dutiable value of the **vehicle exceeds $20 000 but does not exceed $45 000** – r% of the dutiable value, where r is determined in accordance with the following formula:

$$r = \left[2.75 + \left(\frac{dv - 20\,000}{6666.66}\right)\right]$$

where dv = dutiable value; or

(c) if the dutiable value of the vehicle **exceeds $45 000** – 6.5% of the dutiable value..

(3) For the grant or transfer of a licence for **a heavy vehicle**, the amount of duty is the lesser of:

(a) 3% of the dutiable value; and

(b) $12 000.

2+ calculations - formula for 1, formulae for all

26 Duty on transfer of vehicle

The amount of duty payable on the grant or transfer of a licence for a vehicle is the about determined from the following table (rounded down to the nearest 5 cents).

Type of vehicle	Dutiable value ($v)	Amount of duty ($d)
Not a heavy vehicle	$v \leq 20\,000$	$d = \frac{2.75}{100} \times v$
	$20\,000 < v \leq 45\,000$	$d = \frac{\left[2.75 + \left(\frac{v - 20\,000}{6666.66}\right)\right]}{100} \times v$
	$v > 45\,000$	$d = \frac{6.75}{100} \times v$
Heavy vehicle	$v \leq 400\,000$	$d = \frac{3}{100} \times v$
	$v > 400\,000$	$d = 12\,000$

The formula, the whole formula, and nothing but the formula

- 2+ calculations - formula for 1, formulae for all
- whole calculation into the formula

2+ calculations - formula for 1, formulae for all

6 Rate of pension

If the judge is entitled to a pension because of section 6(2A)(b), the annual rate of pension is worked out by using the formula:

$$\frac{ab}{10}$$

where:

a = 60% of the appropriate current judicial salary

b = whichever is the lesser of:

(a) the sum of:

(i) the total number of years (including a fraction of a year) of his or her service as a judge; and

(ii) the total number of years (including a fraction of a year) that the Attorney-General certifies to be the period, or aggregate of the periods, (if any) of leave in respect of that service due to the judge immediately before his or her retirement; or

(b) 10.

2+ calculations - formula for 1, formulae for all

6 Rate of pension

If the judge is entitled to a pension because of section 6(2A)(b), the annual rate of pension is worked out by using the formula:

$$p = \frac{0.6 \times s \times n}{10}$$

where:

s = current judicial salary

n = if $y + g \geq 10$, then $n = 10$

if $y + g < 10$, then $n = y + g$

y = years of service as a judge

g = years of leave certified by Attorney-General to be due to judge immediately before retirement

The formula, the whole formula, and nothing but the formula

- 2+ calculations - formula for 1, formulae for all
- whole calculation into the formula
- include exceptions, special cases, alternatives, limitations etc in formula

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