$$Moles = \frac{mass}{RMM}$$

$$Moles = \frac{703}{144}$$

$$Moles = 6.166$$

$\therefore$ *There are* 6.166 *moles of octane used when* $1L$ *of petrol is burned*

Moles of carbon dioxide produced

Relative molecular mass:

Mass of carbon = 12
Mass of oxygen = 16

H_2O?

$(1 \times 12) + (2 \times 16)$

$= 12 + 32$

$= 44\ g$

The moles for octane will be multiplied by 8 because 1 mole of octane produces 8 moles of carbon dioxide.

Convert to grams

$mass = n \times M$

$mass = (6.166 \times 8) \times 44$

$mass = 2170.66\ g$

$mass = 2.17\ kg$

$\therefore$ *There is* $2.17\ kg$ *of* CO_2 *released per litre of petrol*

Moles of water vapor produced

Relative molecular mass:

Mass of hydrogen = 1
Mass of oxygen = 16

$(2 \times 1) + (1 \times 16)$

$= 2 + 16$

$= 18\ g$