

# The Mole

## Practice Problems

### Set #5

# CH 3 Set #5 / The Mole

Convert mass to moles:

Given mass of a  
pure substance

1.00 mole of pure substance

molar mass of pure Substance

= number unit symbol

= 2.00 moles Mg (example)

# CH 3 Set #5 / The Mole

Convert moles to mass:

Given moles of a  
pure substance

molar mass of pure Substance

1.00 mole of pure substance

= number unit symbol

= 15.00 grams Na (example)

# CH 3 Set #5 / The Mole

## Practice Problem #1

Calculate the mass of 1.000 mole of Potassium

1.00 atom of Potassium (K) = 39.10 amu (Periodic Table)

1.00 mole Potassium (K) = 39.10 g/mole

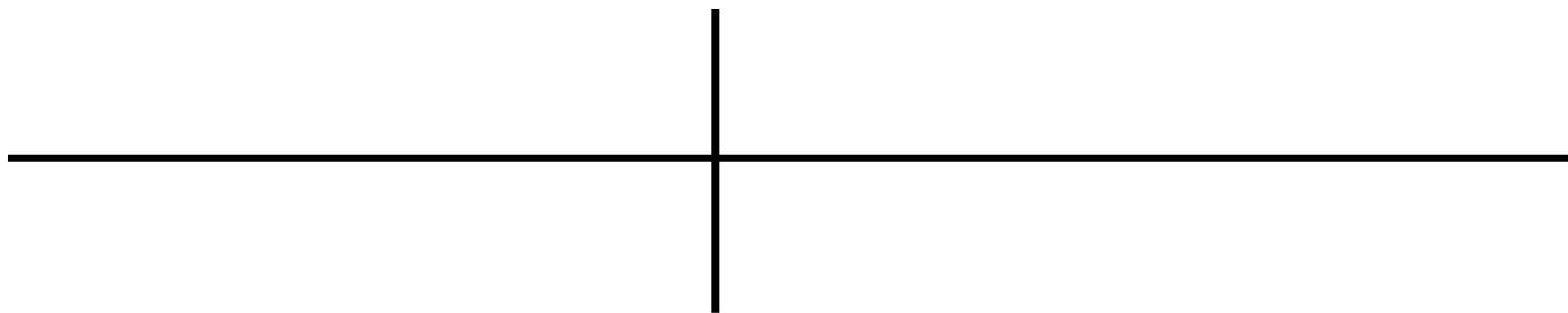
1.00 mole K	39.10 grams K
	1.00 mole K

= 39.10 grams K

# CH 3 Section #5 / The Mole

## Practice Problem #2

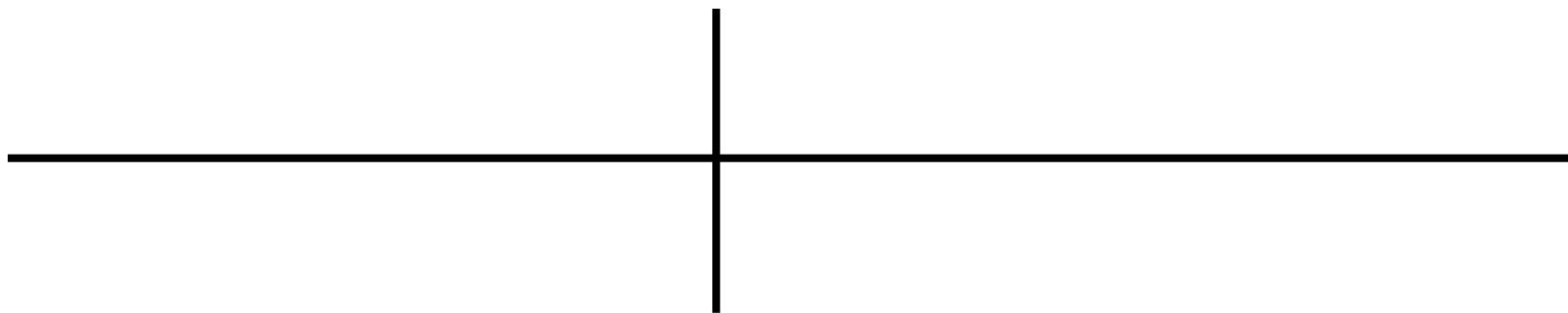
Calculate the mass of 1.500 mole of Aluminum (Al)



# CH 3 Set #5 / The Mole

## Practice Problem #3

Calculate the mass of 3.55 mole of Sulfur

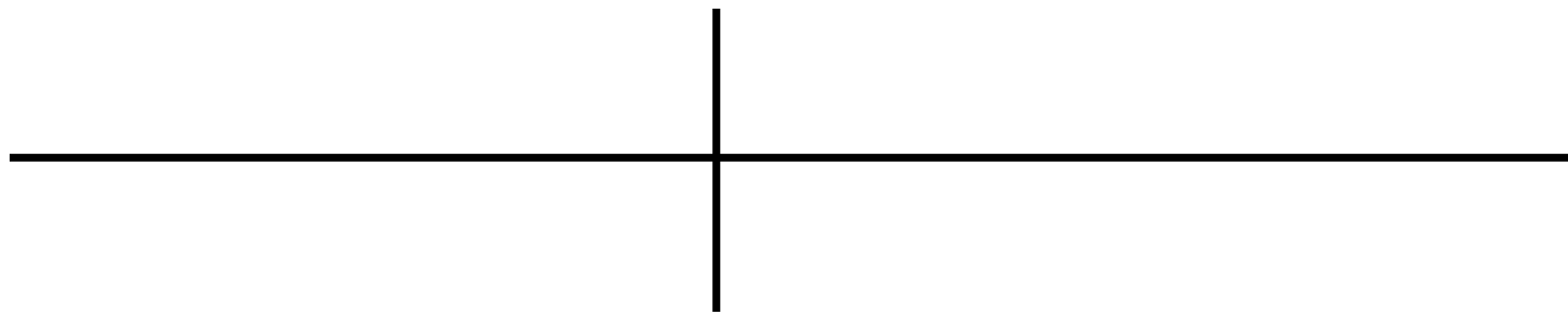


# CH 3 Set #5 / The Mole

## Practice Problem #4

Calculate the mass of 5.00 Kilomoles of Copper

1.00 Kilomole = \_\_\_\_\_ moles

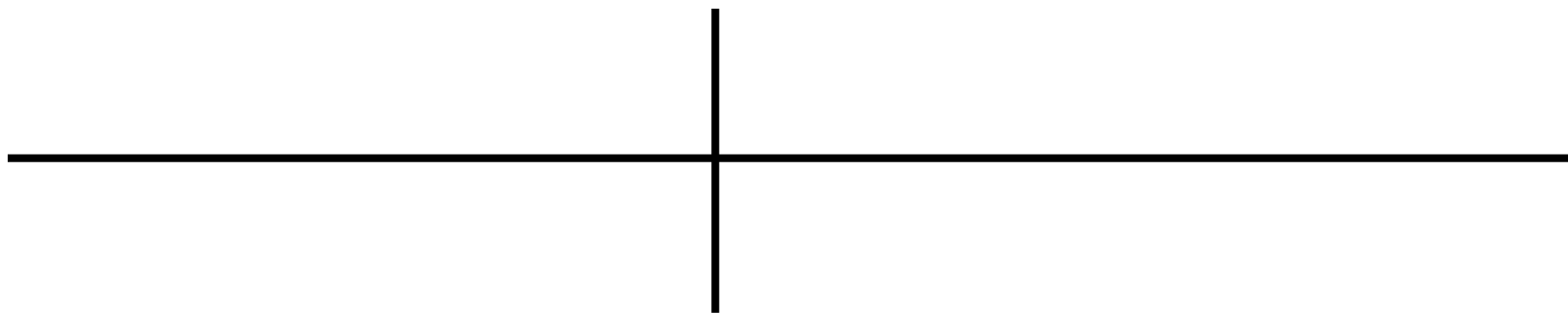


# CH 3 Set #5 / The Mole

## Practice Problem #5

Calculate the mass of 4.500 millimoles of Gold

1.00 millimole = \_\_\_\_\_ moles

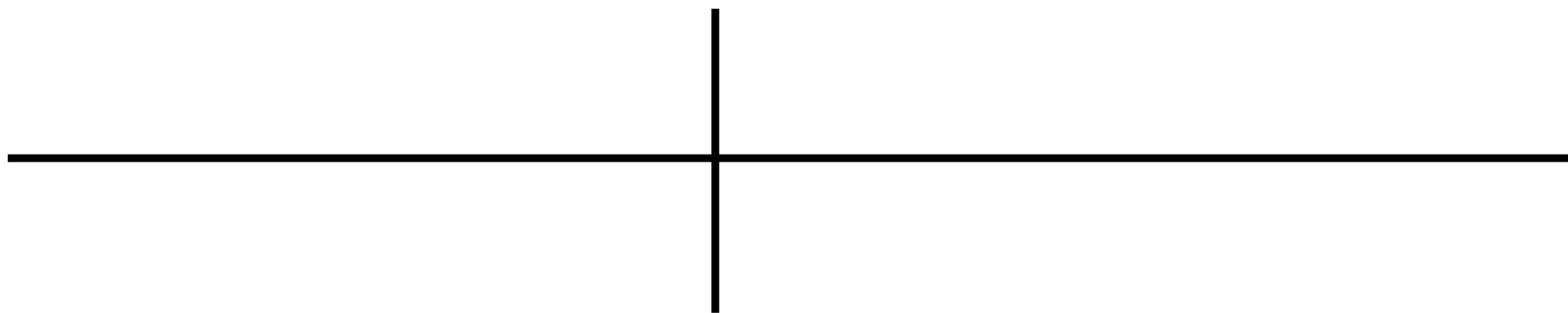


# CH 3 Set #5 / The Mole

## Practice Problem #6

Calculate the number of moles in 782.0 grams of Potassium

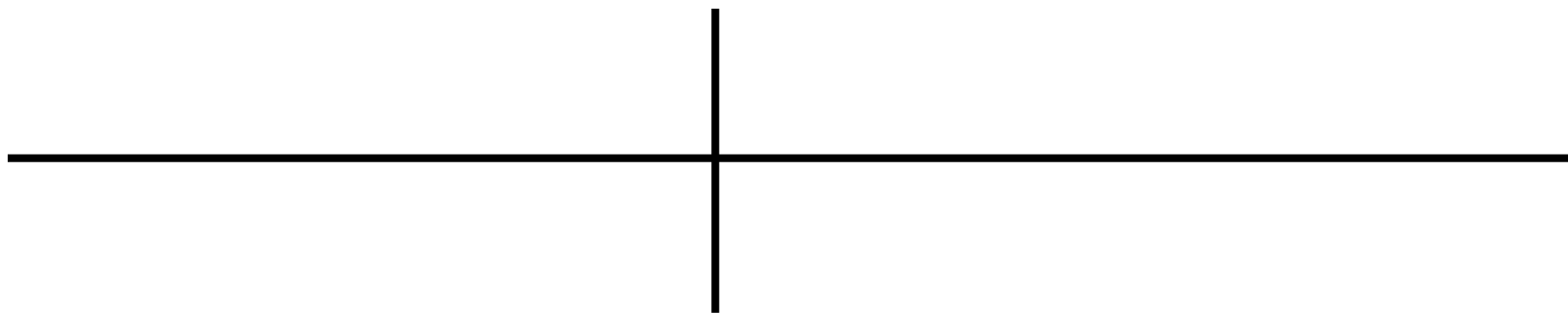
1.00 mole of Potassium (K) = 39.10 grams/mole (Periodic Table)



# CH 3 Set #5 / The Mole

## Practice Problem #7

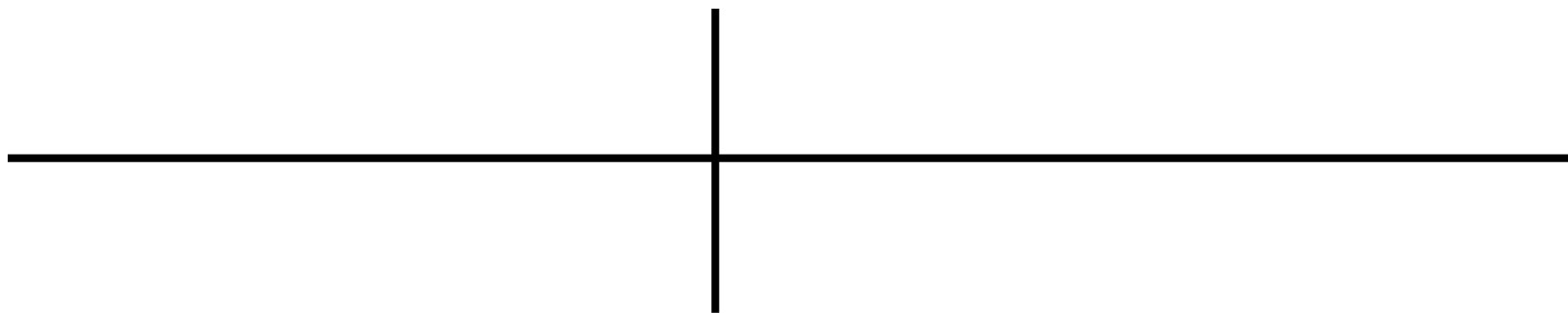
Calculate the number of moles in of 229.5 grams of Aluminum (Al)



# CH 3 Set #5 / The Mole

## Practice Problem #8

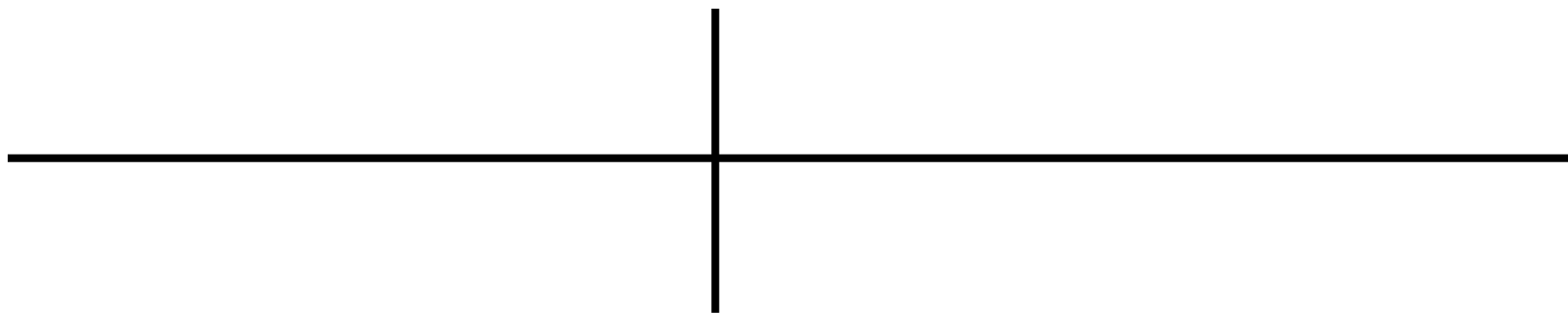
Calculate the number of moles in of 550.0 grams of Sulfur



# CH 3 Set #5 / The Mole

## Practice Problem #9

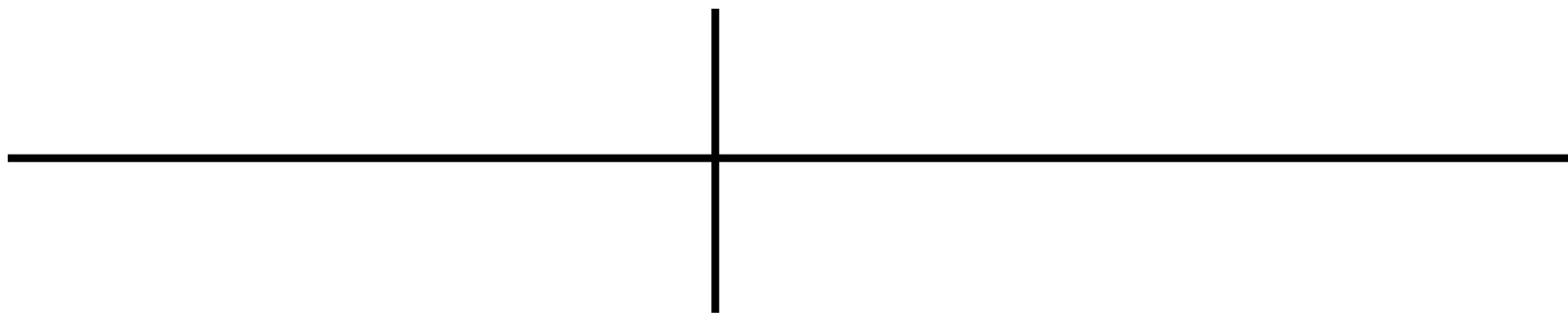
Calculate the number of moles in of 5.000 Kilograms of Copper



# CH 3 Set #5 / The Mole

## Practice Problem #10

Calculate the number of millimoles in 2.500 grams of Gold



# CH 3 Set #5 / The Mole

Convert moles to representative particles:

Given moles of pure substance	$6.02 \times 10^{23}$ representative particles
	1.00 mole of pure substance

= number unit symbol

=  $1.500 \times 10^{24}$  atoms Na (example)

# CH 3 Set #5 / The Mole

Convert representative particles to moles:

Given representative particles	1.00 mole of pure substance
	$6.02 \times 10^{23}$ representative particles

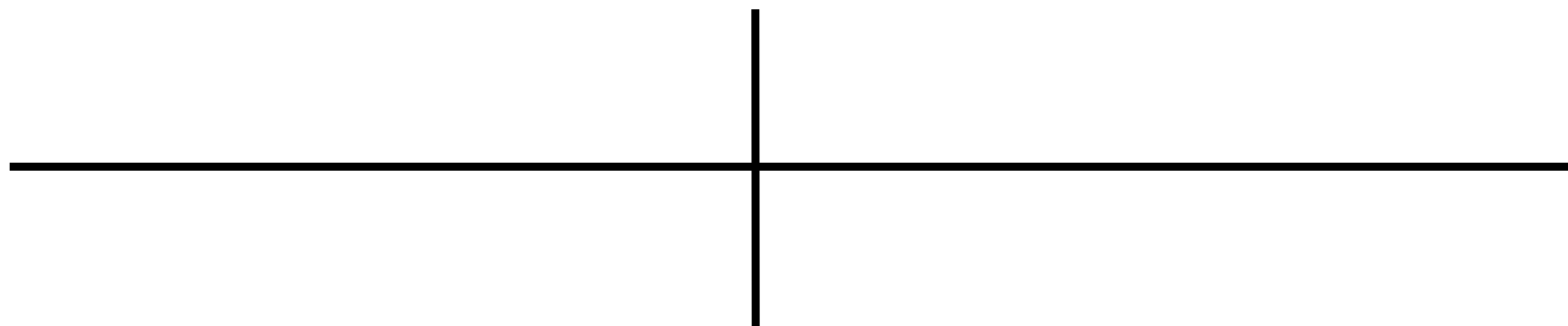
= number unit symbol

= 2.50 moles Ba (example)

# CH 3 Set #5 / The Mole

## Practice Problem #11

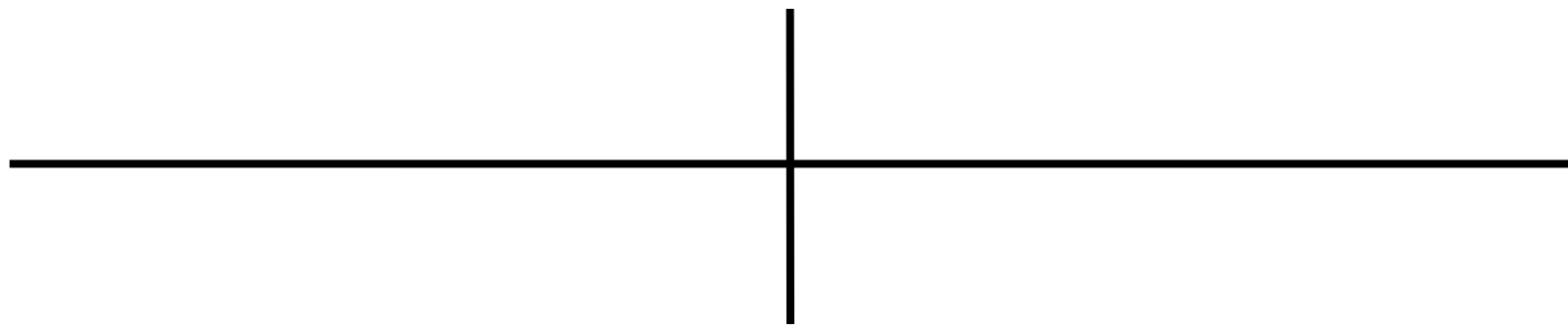
9.600 moles of Carbon-12 is how many atoms?



# CH 3 Set #5 / The Mole

## Practice Problem # 12

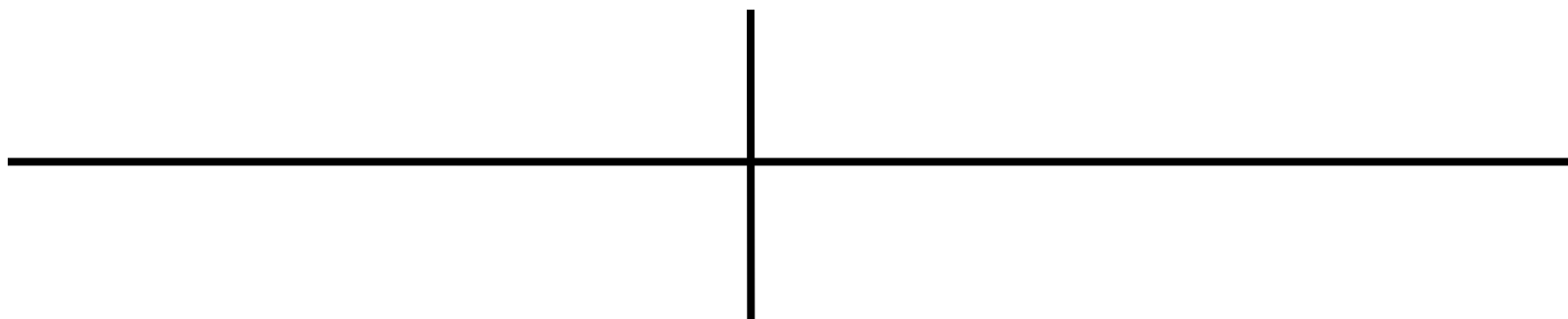
10.5 moles of Sodium is how many atoms?



# CH 3 Set #5 / The Mole

## Practice Problem #13

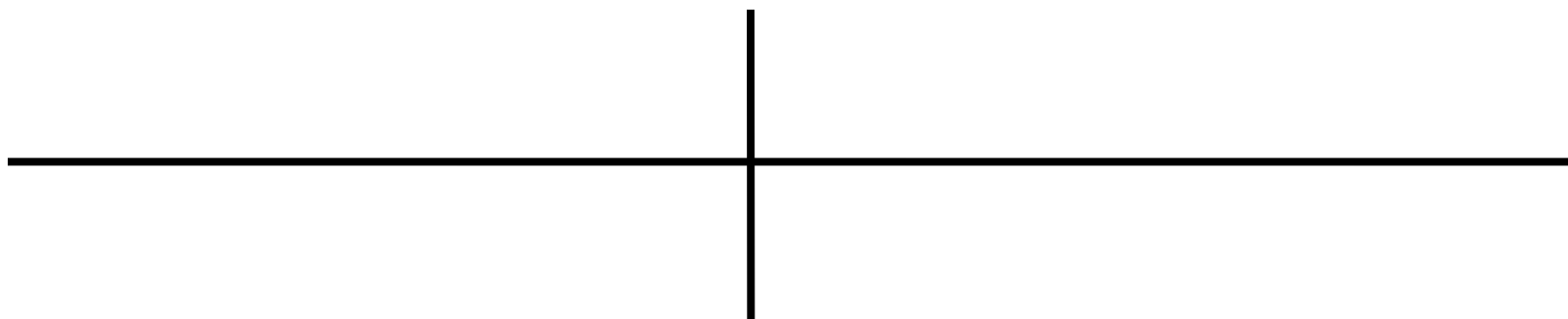
20.00 moles of Helium gas is how many atoms?



# CH 3 Set #5 / The Mole

## Practice Problem #14

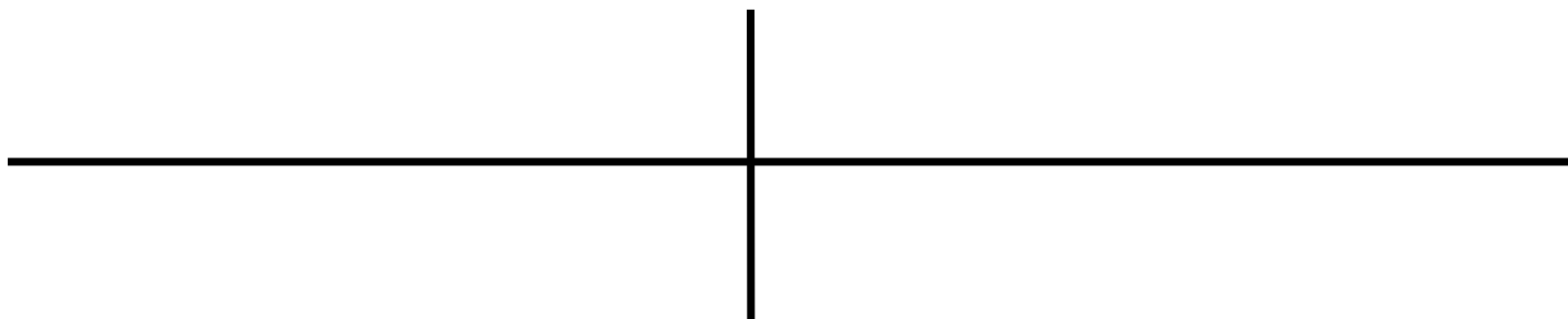
1.000 Kilomoles of Copper is how many atoms?



# CH 3 Set #5 / The Mole

## Practice Problem #15

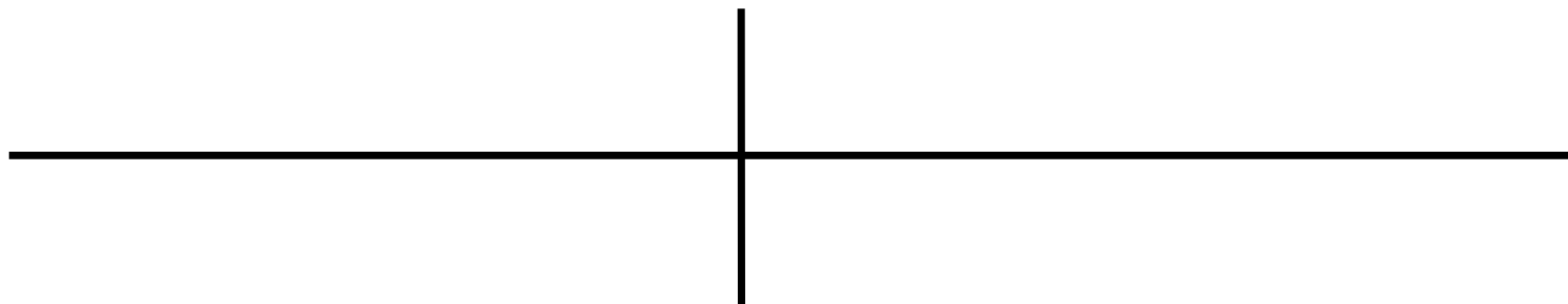
4.500 millimoles of Gold is how many atoms?



# CH 3 Set #5 / The Mole

## Practice Problem #16

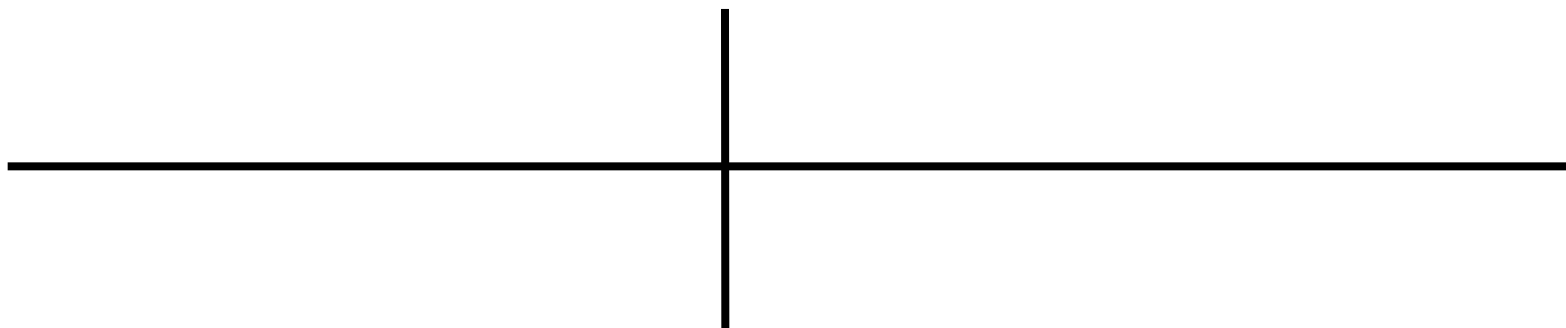
$1.204 \times 10^{24}$  atoms of Carbon-12 is how many moles?



# CH 3 Set #5 / The Mole

## Practice Problem # 17

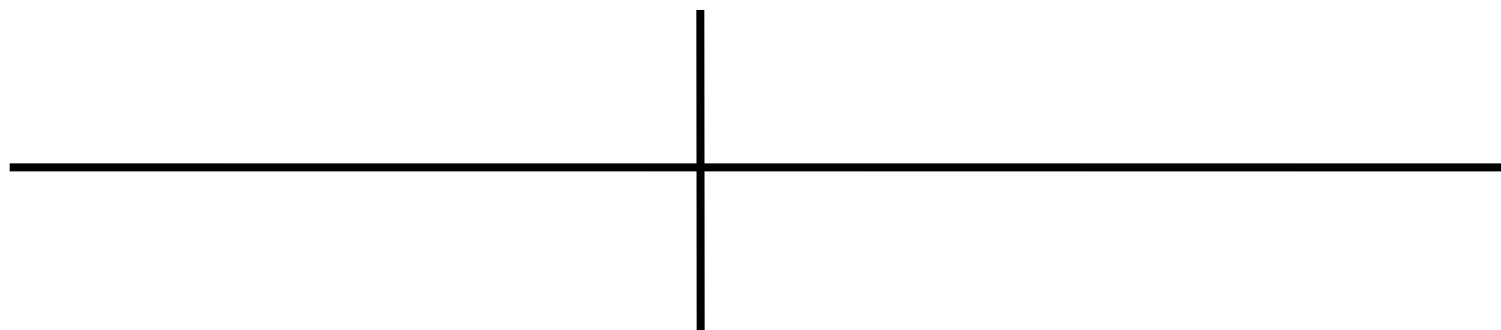
$3.612 \times 10^{24}$  atoms of Sodium is how many moles?



# CH 3 Set #5 / The Mole

## Practice Problem #18

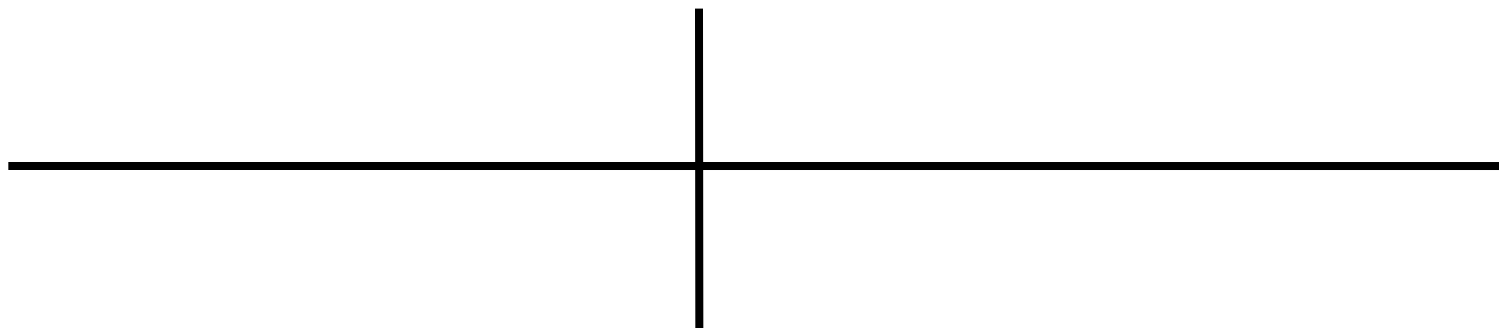
$7.550 \times 10^{23}$  atoms of Helium gas is how many moles?



# CH 3 Set #5 / The Mole

## Practice Problem #19

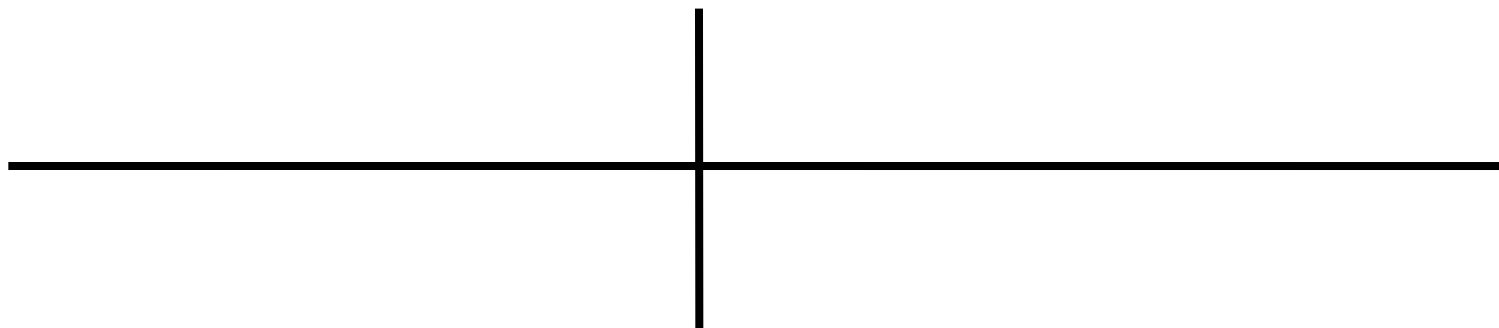
$4.560 \times 10^{25}$  atoms of copper is how many Kilomoles?



# CH 3 Set #5 / The Mole

## Practice Problem #20

$6.023 \times 10^{20}$  atoms of gold is how many millimoles?



# CH 3 Set #5 / The Mole

## Practice Problem #21

$1.500 \times 10^{25}$  atoms of Neon is how many grams?

A large empty coordinate system consisting of two horizontal axes and two vertical axes, intended for a student to draw a solution or diagram.

# CH 3 Set #5 / The Mole

## Practice Problem #22

$4.500 \times 10^{24}$  atoms of Gold is how many grams?

The image shows two blank coordinate axes. Each axis consists of a horizontal line and a vertical line intersecting at the origin. The top axis is positioned higher than the bottom axis, and they are parallel to each other.

# CH 3 Set #5/ The Mole

## Practice Problem #23

125.0 grams of Calcium is how many atoms?

Two sets of blank lines for writing the answer. Each set consists of a horizontal line and a vertical line intersecting at the center, forming a cross shape.

# CH 3 Set #5 / The Mole

## Practice Problem #24

$1.000 \times 10^3$  grams of Hydrogen Gas is how many atoms?

Note: Hydrogen gas in nature is a diatomic gas ( $H_2$ ) (Double the molar mass!)

The image shows two sets of blank lines for writing the answer. Each set consists of a horizontal line and a vertical line intersecting at the center, forming a cross shape. The top set is positioned higher than the bottom set.