Cornell Notes		
Name:	Date:	_Block:

Topic: The Mole

**Essential Question:** What is a mole and how do we convert between moles, grams, and atoms?

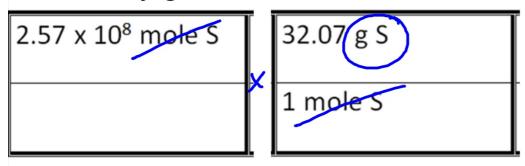
How many seconds are in 6 hours?

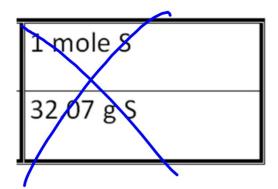
#### How many seconds are in 6 hours?

The Dimensional Analysis Way

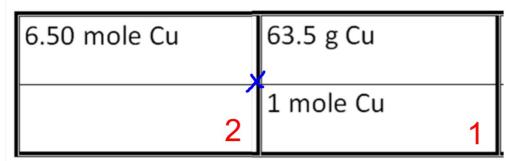
$$\frac{6 \text{ br/s} \times \frac{60 \text{ mins}}{1 \text{ hr/s}} \times \frac{60 \text{ s}}{1 \text{ mins}} = 21600 \text{ s}$$

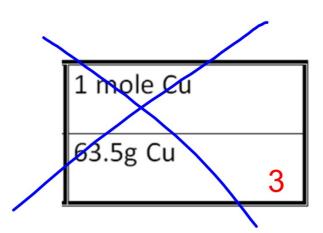
How many grams of S are in 2.57 x 108 moles of S'



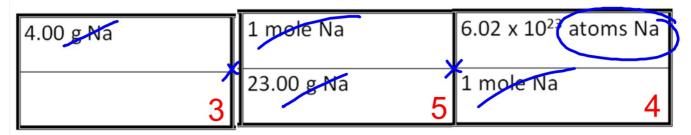


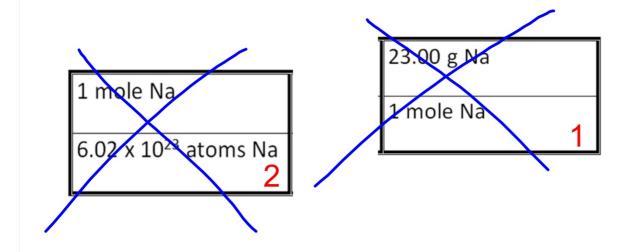
#### How many grams of Cu are in 6.50 moles of Cu?



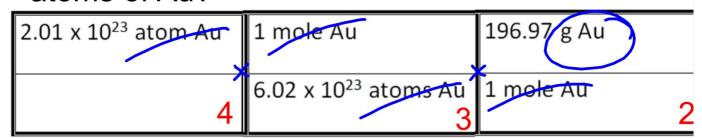


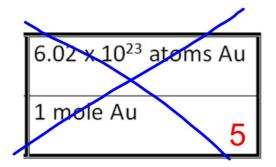
#### How many atoms of Na are in 4.00 g of Na?

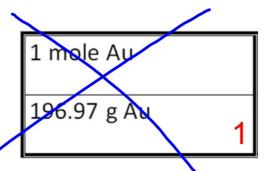




# How many grams of Au are in 2.01 x 10<sup>23</sup> atoms of Au?







#### meet the MOLE



### Mole is a unit

1 mole =  $6.02 \times 10^{23}$  atoms



Avogadro's #



#### Mole is a unit

# 1 mole = molar mass (g)





## Mole is a unit



?\_ 3 SF's

B1) What is the mass in grams of 2.25 mol of the element iron, Fe?

given: 2.25 mol Fe

want: ? g Fe

B2) What is the mass in grams of 0.375 mol of the element potassium, K?

gisen: 0.0135 mol Na

want: ? g Na

0.0135 mat Na 
$$\times \frac{22.99}{1}$$
 g Na = 0.316365 g Na =  $0.310365$  g Na =  $0.310365$  g Na

B4) What is the mass in grams of 16.3 mol of the element nickel, Ni?

? 355°5 C1) How many moles of calcium, Ca, are in 5.00 g of calcium?

given: 5.00 g Ca want!? mol Ca

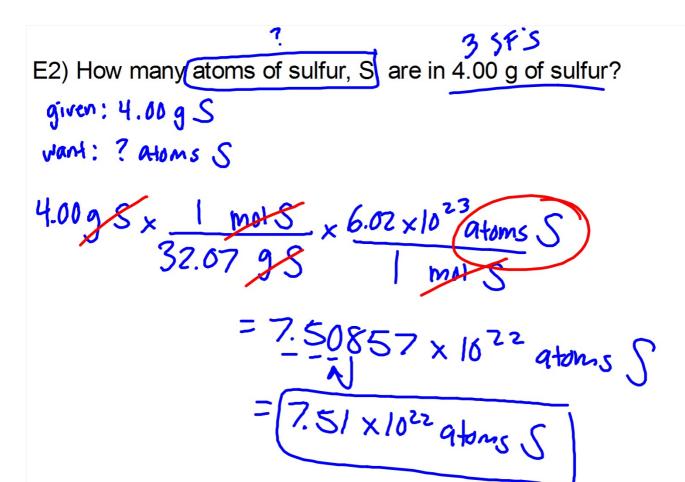
5.00 gea x 1 mol Ca 40.08 gea = 0.12475 mol Ca = 0.125 mol Ca

C2) How many moles of gold, Au, are in 3.60 x 10 <sup>-5</sup> g of gold	?
C3) How many moles of zinc, Zn, are in 0.535 g of znic?	

D2) How many moles of tin, Sn, are in 2500 atoms of tin?

- D3) How many atoms of aluminum, Al, are in 2.75 mol of aluminum?
- given: 2.75 mal A)
- want ? atoms Al

- E1) What is the mass in grams of 7.5 x 10<sup>15</sup> atoms of nickel, Ni?
- given: 7.5 x 10 15 atoms Ni
- Want: ?9 Ni



E3) What mass of gold, Au, contains the same number of atoms as 9.0 g of aluminum, Al?