

Mole Unit WS #1: The Mole



The mole is simply a number equal to 602,000,000,000,000,000,000,000 or 6.02×10^{23} written in scientific notation. If you had a mole of pennies, you would have enough money to pay all the expenses of the United States for the next billion years. A mole of the larger marshmallows would cover the United States to a depth of more than 600 miles.

Why would you need to use a number this big? The mass of atoms is so small that you need many of them to have mass significant enough for people to weigh.

Questions

1. A mole is a certain number of items. What do each of the following terms represent?

dozen 12
million _____
pair 2

billion 1,000,000,000 or 10^9
mole _____
gross 144

2. Use a Periodic Chart to find the mass, in grams, of each of the following:

1 mole of aluminum =	<input type="text" value="27.0 g"/>	1 mole of Iron =	<input type="text" value="56.0 g"/>
1 mole of magnesium =	<input type="text" value="g"/>	1 mole of lead =	<input type="text" value="g"/>
1 mole of helium =	<input type="text" value="4.00 g"/>	1 mole of Cobalt	<input type="text" value="59.0 g"/>

3. Find the mass, in grams, of each of the following:

2 moles of aluminum =	<input type="text" value="54.0 g"/>	3 moles of Iron =	<input type="text" value="168 g"/>
4 moles of magnesium =	<input type="text" value="g"/>	5 moles of lead =	<input type="text" value="g"/>
6 moles of helium =	<input type="text" value="24.0 g"/>	7 moles of Cobalt	<input type="text" value="413 g"/>

4. How many moles are in each of the following?

156 grams of chromium =	<input type="text" value="3 moles"/>	84 grams of Carbon =	<input type="text" value="7 moles"/>
156 grams of potassium =	<input type="text" value="moles"/>	40 grams of Calcium =	<input type="text" value="moles"/>
476 grams of uranium =	<input type="text" value="2 moles"/>	40 grams of Neon =	<input type="text" value="2 moles"/>