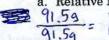






A	GREAT MIRTHEIN	552 beans 91.5 grams total
В	ANY SEINS	552 beans 266.1 grams total
C	ζόψΑ	552 beans 121.4 grams total

1. IF we arbitrarily choose the lightest substance and divide the others by it, we can get relative ratios of the mass of single pieces. Do this for each substance. a. Relative Mass of Substance A



b. Relative Mass of Substance B

c. Relative Mass of Substance C

 A bag of beans has a mass of 454 grams. How many of each bean are in the bag? (3 calculations)

2. Black beans are delivered to the store in boxes. Each box contains 24 bags. How many beans are in a box of black

beans?

ANSWET: 49531 3. You can buy a large bag of Navy beans. The bag contains 3 pounds. (1 lb = 454g) How many navy beans are in the

large bag?

4. For quality control inspector will randomly measure the mass of a box of bean to make sure there is the correct number of bags. During one of these inspections it was determined that the mass of a box of black beans was 10.4 kg. Does this box have the correct number of bags? Explain why or why not? (use conversions from previous questions to help.)

Someone gave you a container containing 2500 pinto beans. You are given the task to put these pinto beans in bags. How many bags of pinto beans can you make and how many pinto

beans are leftover?

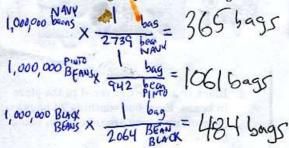
PRUTO
BEANS X

942 PINTO
BEAN

942 PINTO
BEAN

U4 ws4 v1.0

6. If you had 1 million beans which bean would give you the most bags?



7. If you had 1 million black beans. Is this enough beans to form a box? How many boxes can 1 million black beans form?

from #2 Answer: 20 Boxes

5. Assuming that each human being has
60 trillion body cells (6 x 10<sup>15</sup>) and
that the earth's population is 6 billion
(6 x 10<sup>9</sup>), calculate the total number of
living human body cells on this planet.
Is this number smaller or larger than
a mole? Divide the larger value by the
smaller to determine the relative size
of the two values.

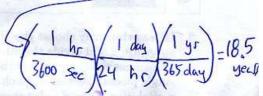
on an coople x 6×10 cells = 3.6×10 23 cells

## ANSWERD

A supercomputer, nicknamed
Roadrunner, built by IBM for the Los
Alamos National Labs can perform about
1.03 petaflop/s (1 petaflop is 10<sup>15</sup>
calculations). Determine how many
seconds it would take this computer to
count a mole of things. Convert this
figure into years. 43

mole of colculations (6.0200)

| mole of colculations (6.0200) | poets | sec | fee | 1.03 peta | fee | 1.03 peta |



8. If you started counting when you first learned how to count and then counted by ones, eight hours a day, 5 days a week for 50 weeks a year, you would be judged a 'good counter' if you could reach 4 billion by the time you retired at age 65. If every human on earth (about 7 x 109) were to count this way until retirement, what fraction of a mole would they count?

7 × 10 People × (1, aso, aso, aso) = 20×101/s

Test 5 is a week from today
It covers this week and next week.

Start reviewing for the Final Exam ASAP
Look at anything that is "Review" on the class
website. Re-Solve all those old problems. The Test
will be very similar to those old questions and
Problems.

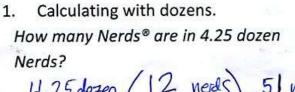
## Purpose:

What does the long number mean in the periodic table squares?

## warmup (copy & solve this):

"Here's how to convert 45,355 seconds into hours:"

45,355 seconts 1 min 1 hrs 12.599
60 sec 60 min = 2 hrs



4.25 dozen (12 nerds) = 51 nerds

Periodic table squares:



3. Some conversion factors for the mass of a mole of atoms (from the periodic table):

(6.02 × 10<sup>23</sup> K atom) 39.0983 grams 4. Calculating with moles.

How many boron atoms are in 542 grams
of boron?

542 grams × (6.02×103 boron) = atoms of Boron

Answer: 3.02×1025

4. If you have 10450 grans of chlorine find

A) ATOMS

10450 g Cl x (6.02\*10° Atoms) = 1.74\*10 ATOMS

B) MOLES

10450 g Cl x (1 moles) = 294.8 viroles

35.45279 cl)