Math 29
Homework 4

Write a 1-3 sentence summary of what we did in class the previous period.

1. A cleaning solution costs $4 a liter and another one costs $5 a liter. What would be the cost of 150 liters of a mixture of the two solutions 40% of which is the $4 cleaning solution?

2. What weight of iron ore containing 75% iron must be used in order to obtain 18 tons of iron?

3. Ammonia is a compound which has a 1 to 3 ratio of nitrogen to hydrogen atoms.

   (a) A sample of ammonia contains 1563 nitrogen atoms. How many atoms of hydrogen are there?

   (b) A sample of ammonia contains 1425 hydrogen atoms. How many nitrogen atoms are there?

4. Methane is a compound which has a 1 to 4 ratio of carbon to hydrogen atoms.

   (a) A sample of methane contains 1565 atoms. How many carbon and hydrogen atoms are there?

   (b) Can a sample of methane contain a total of 1566 atoms?

5. The mass to charge ratio of an isotope of a certain element is 1.97×10^{-7} kilograms per coulomb. If the charge on the isotope is 1.614×10^{-19} coulombs, what is the mass of the isotope?

6. A single strand of DNA can be represented by a string of bases. Each base is chosen from among the letters A, C, G, and T. Estimate how many distinct single strands of DNA there are which each contain 2 million bases where the first one million bases are chosen just from the letters A and C. Give your answer in scientific notation.

7. I want to estimate how many m & m's I have in a jar. I add 30 skittles to the jar without removing any m & m's. Then I take a sample of 35 candies and find that it contains 6 skittles. How many m & m's were originally in the jar?