

Sometimes We Need Large Numbers to Describe Small Things

Introduction:

You will be working on activities contained in a center or given instructions by your teacher. If completing the worksheet using center, each activity is labeled and the instructions to each activity is included at the center. You are to record your answers for activities on this worksheet.

Write one example of when you would need to use a number like a million, billion, or trillion.

Activities:

1. A. Read the book *How Much is a Million?* or after listening to teacher

B. Circle the number one million

1,000,000,000,000

1,000,000,000

1,000,000

1,000

C. Circle the number one billion

1,000,000,000,000

1,000,000,000

1,000,000

1,000

D. Circle the number one trillion

1,000,000,000,000

1,000,000,000

1,000,000

1,000

E. Complete the following statements.

It would take _____ millions to make a billion.

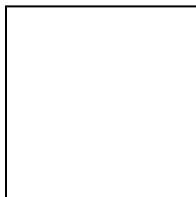
It would take _____ millions to make a trillion.

It would take _____ billions to make a trillion.

A billion is _____ times larger than a million and a trillion is _____ times larger than a billion.

2. After looking at the containers with the 10, 100, and 1000 beads think about the following question. Would the containers have looked different if you had increased from one container to the next by increasing by 100 each time? _____
If your answer was yes, how would they have looked different?

3. A. Measure the box below in both inches and centimeters. Write your measurements below the box



- B. Using a separate sheet of paper, make a drawing of this box 10 times larger and attach to your worksheet.
- C. Would you have been able to draw the box 100 times larger on the sheet of paper you were given? _____ Why or why not? _____
4. A. Were the yellow beads hard to find? _____
 B. Are the green beads hard to find? _____ Why or why not? _____
 C. Did you see the black bead? _____
 D. Is a million beads a lot of beads? _____ why or why not? _____
5. A. Length of 10 beads. _____ inches _____ centimeters
 B. Length of 100 beads _____ inches _____ centimeters
 C. Length of 1000 beads _____ inches _____ centimeters
 D. Length of 10,000 beads _____ inches _____ centimeters
 E. Length of 100,000 beads _____ inches _____ centimeters
 F. Length of 1,000,000 beads _____ inches _____ centimeters
 G. Length of 1,000,000,000 beads _____ inches _____ centimeters
 H. Could you line the one million beads up in your classroom? _____
6. A. Length of classroom _____
 B. Number of classrooms to line up a million beads. _____
 C. Number of classrooms to line up a billion beads. _____
7. A. How many Cesium atoms (particles) could be lined up across the length of a centimeter? _____
- B. In the box below draw the smallest object that you can think of and write down what you think the length would be in centimeters.

Smallest Object	Length in Centimeters

C. Using your ruler draw a line that is one centimeter in length on your worksheet.

D. Length of a single bead. _____

E. Is this bead large or small? _____ How do you know?

F. Calculate how many cesium atoms (particles) would fit across the length of a centimeter. Show your work and circle your answer.

1 centimeter = 10,000,000 nanometers

1 cesium atom = .7 nanometers average diameter

10 000 000 nanometers/centimeter divided by .7 nanometer/atom

= _____ atoms/ centimeter

Draw Conclusions:

Using the tri-fold in the center, give examples of things that you would need the numbers millions, billions and trillions to describe.