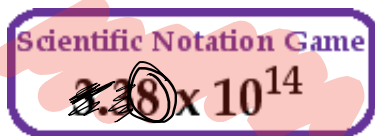


Math Forum - Problem of the Week

The Scientific Notation Game [Problem #2816]

Each Monday Mrs. Nasamy's class plays the Scientific Notation Game. Each student has five cards. Each card has a random number written in scientific notation. Mrs. Nasamy pulls a digit from 1-9 out of a bowl and the students find the sum of the values represented by the digit on all of their cards.

Here's an example:



$.03 \times 10^4$

How you score points?
 8×10^{12}

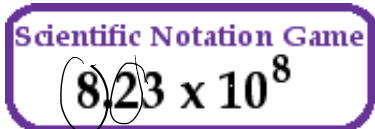
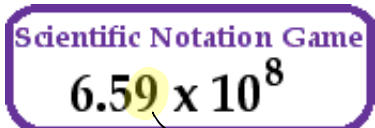
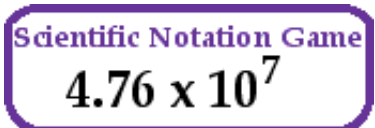
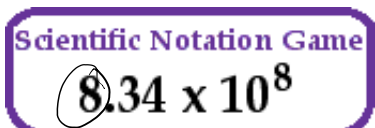
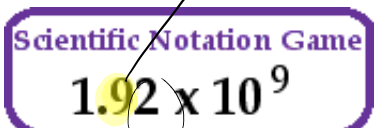
If a card contains the number 3.38×10^{14} and Mrs. Nasamy picks an 8, the card is worth 8×10^{12} points. If she picks a 3, it's worth 3.3×10^{14} points since 3 appears in two places, you must add both values:

$$(3 \times 10^{14}) + (3 \times 10^{13}) = (3.3 \times 10^{14}) \text{ points}$$

We include this example so you can think about how the game is played when the digit pulled appears in more than one place; note that the process would be the same if the digit appeared on two different cards.

Jay has the following cards:

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9



Handwritten calculation:
 $9 - 9.09 \times 10^8$

 $9. \times 10^8$
 $+ .09 \times 10^8$

 9.09×10^8

9×10^8

9×10^6

-1.6×10^9

If Mrs. Nasamy pulls a 9, how many points will Jay have?

What digit does he hope Mrs. Nasamy will pull so that he will have the highest possible score?

Please express your answers in scientific notation. [If you need help with scientific notation, here is [an explanation by Dr. Math.](#)]

Extra: What's the difference between the highest and the lowest possible scores on Jay's cards?

