

# Scientific Notation Practice

Name: \_\_\_\_\_

## Reflection and Self-Assessment

**Part 1:** Circle the statement that best describes how you completed the practice:

- I answered all questions without using the online solutions. I checked my answers against the key at the back of the practice and was able to determine my mistakes and correct them without referring to the online solutions.
- I answered most questions correctly without using the online solutions. I used the online solutions to help me with some questions and was able, with help from the online solutions, to understand every question and answer them correctly.
- I used the online solutions to help me with most of the questions. I was able, with help from the online solutions, to understand each question and answer them correctly.
- Even using the online solutions, I was not able to fully understand the solution to some problems. The questions I had trouble with were:

\_\_\_\_\_

- I did not attempt all the questions on the practice.

**Part 2:** Circle the statement that best describes your confidence in answering questions of this type in the future.

- I am confident I can answer nearly any question of this type correctly without using notes or other assistance.
- I am confident I can answer **MOST** questions of this type correctly without using notes or other assistance.
- I am **NOT** confident I can answer most questions of this type correctly without using notes or other assistance.

## Scientific Notation Practice

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1. Explain why each of the following is **NOT** in scientific notation:

a. 5.95

b.  $653 \times 10^{35}$

c.  $0.23 \times 10^{-5}$

d.  $5.23 \times 12^3$

2. Write each of the following in scientific notation:

a. 456 000

b. 0.000535

c. 1 042 000

d. 0.02199

e. Five million

f. Six trillion

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3. Write each of the following in standard notation.

a.  $4.6 \times 10^3$

b.  $2.11 \times 10^4$

c.  $1.34 \times 10^{-4}$

d.  $2.1 \times 10^5$

e.  $6.62 \times 10^{-1}$

f.  $5.1 \times 10^{-7}$

g.  $1.02 \times 10^6$

h.  $7.15 \times 10^{-2}$

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4. Simplify, *write answer in scientific notation if it is greater than 1000, or less than 0.01 and standard notation otherwise.*

a.  $1.3 \times 10^4 + 2.9 \times 10^6$

b.  $(4.993 \times 10^4)^2$

c.  $(8.34 \times 10^{-4})(3.62 \times 10^5)$

d.  $(4.14 \times 10^{-3}) - (2.62 \times 10^{-4})$

e.  $(9.4 \times 10^{16}) + (2 \times 10^{15})$

f.  $\frac{5 \times 10^{19}}{3 \times 10^4}$

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5. In each line circle the largest number

a.  $5.3 \times 10^{24}$                        $5.3 \times 10^{19}$                        $5.3 \times 10^{15}$

b.  $1.3 \times 10^{24}$                        $6.3 \times 10^{24}$                        $9.3 \times 10^{24}$

c.  $6.3 \times 10^{-5}$                        $6.3 \times 10^{-9}$                        $6.3 \times 10^{-16}$

d.  $2.9 \times 10^{-3}$                        $2.8 \times 10^{-3}$                        $2.7 \times 10^{-3}$

e.  $7.9 \times 10^{11}$                        $9.8 \times 10^{12}$                        $5.7 \times 10^{13}$

6. Write three different numbers between  $5 \times 10^6$  and  $5 \times 10^7$

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7. Write in scientific notation

a.  $659 \times 10^3$

b.  $0.013 \times 10^{-4}$

c. 520 billion

d. 64.25 million

e.  $659 \times 10^9$

f.  $0.0013 \times 10^{-4}$

g.  $659 \times 10^{-1}$



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11. The half-life of uranium-238 is  $4.5 \times 10^9$  years. The half-life of uranium-234 is  $2.5 \times 10^5$  years. How many times greater is the half-life of uranium-238 than that of uranium-234?

12. The mass of a hydrogen atom is approximately  $1.67 \times 10^{-24}$  grams. The mass of an oxygen atom is approximately  $2.66 \times 10^{-24}$  grams. There are  $6.69 \times 10^{24}$  water molecules (which each consist of 2 hydrogen and 1 oxygen atoms) in a glass of water. Based on this, how much will the water in the glass weigh?



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13. The Earth is approximately 4.5 billion years old. There are  $3.1536 \times 10^7$  seconds in a year. How old is the Earth in seconds?

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## Answer Key

1a) No power of 10	1b) 653 is bigger than 10	1c) 0.23 is less than 1	1d) Power of 12, not 10	2a) $4.56 \times 10^5$
2b) $5.35 \times 10^{-4}$	2c) $1.042 \times 10^6$	2d) $2.199 \times 10^{-2}$	2e) $5 \times 10^6$	2f) $6 \times 10^{12}$
3a) 4600	3b) 21100	3c) 0.000134	3d) 210000	3e) 0.662
3f) 0.00000051	3g) 1020000	3h) 0.0715	4a) $2.913 \times 10^6$	4b) $2.493 \dots \times 10^9$
4c) 301.908	4d) $3.876 \times 10^{-3}$	4e) $9.6 \times 10^{16}$	4f) $1.6667 \times 10^{15}$	5a) $5.3 \times 10^{24}$
5b) $9.3 \times 10^{24}$	5c) $6.3 \times 10^{-5}$	5d) $2.9 \times 10^{-3}$	5e) $5.7 \times 10^{13}$	6) Various possible
7a) $6.59 \times 10^5$	7b) $1.3 \times 10^{-6}$	7c) $5.2 \times 10^{11}$	7d) $6.425 \times 10^7$	7e) $6.59 \times 10^{11}$
7f) $1.3 \times 10^{-7}$	7g) $6.59 \times 10^1$	8) $1.1 \times 10^7$ people	9) $7.74 \times 10^4$ pounds	10) 270 times bigger
11) $1.8 \times 10^4$ times greater	12) 40.14 grams	13) $1.41912 \times 10^{17}$ seconds		