Name : _____ Score : _____

Scientific Notation

Positive: ES1

Example:

Write 3, 200 in scientific notation.

We should move the decimal point 3 places to the left. So, the exponent will be 3.

$3,200 = \mathbf{3.2 \times 10^3}$

Express each number in scientific notation.

1) 625 = _____

2) 4, 216 = _____

3) 49, 603 = _____

4) 25 = _____

5) 18, 569 = _____

6) 836 = _____

7) 9, 364 = _____

8) 34, 121 = _____

9) 22 = _____

10) 912 = _____

11) 7, 350 = _____

12) 4, 874 = _____

13) 62, 503 = _____

14) 13, 058 = _____

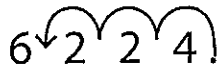
Name : _____ Score : _____

Scientific Notation

Mixed: ES1

Example: 1

Write 6, 224 in scientific notation.



We should move the decimal point 3 places to the left. So, the exponent will be 3.

$6,224 = \mathbf{6.224 \times 10^{3}}$

Example: 2

Write 0.0087 in scientific notation.

We should move the decimal point 3 places to the right. So, the exponent will be -3.

$0.0087 = \mathbf{8.7 \times 10^{-3}}$

Express each number in scientific notation.

1) 0.0259 = _____

2) 902 = _____

3) 5, 5820 = _____

4) 0.315 = _____

5) 0.00973 = _____

6) 1, 0006 = _____

7) 856 = _____

8) 0.2058 = _____

9) 0.00072 = _____

10) 5, 008 = _____

11) 0.001216 = _____

12) 0.00145 = _____

13) 7, 5919 = _____

14) 0.12 = _____

How Are Exponents Used in Everyday Life?

By Melissa Mayer; Updated May 14, 2018

Scientific Scales

Any time that a scientific field uses a scale, like the pH scale or the Richter scale, you can bet you will find exponents. Both the pH scale and the Richter scale are logarithmic relationships with each whole number representing a ten-fold increase from the number before it. For example, when chemists indicate a substance has a pH of 7, they know this represents 107while a substance with a pH of 8 represents 108. This means that the substance with the pH of 8 is 10 times more basic than the substance with the pH of 7.

Geophysicists also use a logarithmic scale. An earthquake that measures a 7 on the Richter scale clocks in at 107 for seismic energy while an earthquake measuring an 8 represents 108 for seismic energy. This means the second earthquake is 10 times more powerful than the first.

Writing Large or Small Numbers

Sometimes scientists must use exceptionally large or small numbers. Scientific notation relies on exponents to write these numbers in a simpler way. For example, the large number 21,492 is 2.1492 x 104 in scientific notation. This literally means 2.1492 x 10 x 10 x 10 x 10. To translate scientific notation into standard notation, you should move the decimal to the right the number of places indicated by the exponent. In the same way, the small number .067 is 6.7 x 10-2 in scientific notation. When the exponent is negative, you should move the decimal to the left to find the number in standard notation.

Taking Measurements

One of the most common real world applications of exponents involves taking measurements and calculating multi-dimensional quantities. **Area** is the measure of space in two dimensions (length x width), so you always measure it in square units like square feet or square meters. For instance, when you calculate the area of a garden bed using feet, you should provide the solution in square feet or ft2 using an exponent.

Similarly, **volume** is the measure of space in three dimensions (length x width x height), so you always measure it in cubic units like cubic feet or cubic meters. For example, if you wanted to calculate the volume of a greenhouse, you would provide the answer in cubic feet or ft3 using an exponent.

EARTH SCIENCE

Earthquake Magnitude

Richter Scale

Magnitude	*Strength (10x as great as previous magnitude)*	*Results*
1	0	Not felt by people; no damage to structures.
2	10	Not felt by people; no damage to structures.
3	100	Felt by people; some rattling of windows and dishes.
4	1,000	Slight damage to structures
5	10,000	"Minor" earthquake; some damge to structures.
6	100,000	Some damage to reinforced concrete; breakage of windows, dishes, and glassware.
7	1,000,000	Severe damage to structures; cracks in the ground; damage extending 10 km from epicenter.
8	10,000,000	"Great" earthquake; total destruction near epicenter; large chunks of landscape moved out of place; damage extending 200 km from epicenter.

I	Instrumental detected o
II	Very feeble noticed only
III	Slight felt by people at r Like passing of a truck
IV	Moderate generally felt in motion Loose objects disturbed
V	Rather strong dishes b pendulum clocks stoppe People awakened
VI	Strong felt by all, some Damage slight some ob