

Power Order

Compare scientific notation with confidence.

GRADE 7 • 7.NS.1.d

7.NS.1.d "Compare and order no more than four numbers greater than 0 written in scientific notation. Ordering may be in ascending or descending order.*"

NAME _____

DATE _____

COMPARE THE POWERS

First compare the exponents. A greater exponent means a greater positive number. If the exponents match, compare the coefficients.

WORKED EXAMPLE

Order from least to greatest: 3.4×10^6 , 9.1×10^5 , 1.2×10^7

1. Compare the exponents: 5, 6, and 7.
2. For positive numbers, 10^5 is least and 10^7 is greatest.
3. Place each number in that exponent order.

Answer: 9.1×10^5 , 3.4×10^6 , 1.2×10^7

PRACTICE 6 problems

- 1** Order from least to greatest: 7.3×10^5 , 2.8×10^6 , 9.6×10^4

ANSWER _____

- 2** Order from greatest to least: 4.1×10^8 , 6.9×10^8 , 5.3×10^8

ANSWER _____

- 3** Order from least to greatest: 1.7×10^3 , 9.2×10^2 , 3.5×10^4 , 6.1×10^3

ANSWER _____

- 4** Order from greatest to least: 8×10^6 , 7.99×10^6 , 8.01×10^6

ANSWER _____

- 5** Order from least to greatest: 2.4×10^7 , 2.04×10^8 , 2.004×10^7 , 2.4×10^6

ANSWER _____

- 6** Order from greatest to least: 5.6×10^9 , 9.9×10^8 , 1.1×10^{10} , 3.2×10^9

ANSWER _____

APPLY IT Show your work

- 1** Four game trailers have these view counts: Drift Dash, 7.8×10^5 ; Pixel Quest, 1.3×10^6 ; Sky Builders, 9.4×10^5 ; and Code Clash, 2.1×10^6 . List the trailers from most to fewest views.

WORK SPACE

ANSWER _____

- 2** A student records four short videos. Their file sizes in bytes are Beat Battle, 6.7×10^8 ; Skate Tricks, 9.3×10^7 ; Animation, 1.2×10^9 ; and Cooking Clip, 4.8×10^8 . List the videos from smallest to largest file size.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Order from greatest to least: 6.0×10^7 , 5.99×10^7 , 6.00×10^7 , 6.01×10^7 . Then explain why two of the numbers are equal.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Order from least to greatest: 7.3×10^5 , 2.8×10^6 , 9.6×10^4	9.6×10^4, 7.3×10^5, 2.8×10^6
2	Order from greatest to least: 4.1×10^8 , 6.9×10^8 , 5.3×10^8	6.9×10^8, 5.3×10^8, 4.1×10^8
3	Order from least to greatest: 1.7×10^3 , 9.2×10^2 , 3.5×10^4 , 6.1×10^3	9.2×10^2, 1.7×10^3, 6.1×10^3, 3.5×10^4
4	Order from greatest to least: 8×10^6 , 7.99×10^6 , 8.01×10^6	8.01×10^6, 8×10^6, 7.99×10^6
5	Order from least to greatest: 2.4×10^7 , 2.04×10^8 , 2.004×10^7 , 2.4×10^6	2.4×10^6, 2.004×10^7, 2.4×10^7, 2.04×10^8
6	Order from greatest to least: 5.6×10^9 , 9.9×10^8 , 1.1×10^{10} , 3.2×10^9	1.1×10^{10}, 5.6×10^9, 3.2×10^9, 9.9×10^8

PART 2 • APPLY IT

- Code Clash (2.1×10^6), Pixel Quest (1.3×10^6), Sky Builders (9.4×10^5), Drift Dash (7.8×10^5)** The trailers with 10^6 views come before those with 10^5 views. Compare coefficients to order the two trailers in each exponent group.
- Skate Tricks (9.3×10^7), Cooking Clip (4.8×10^8), Beat Battle (6.7×10^8), Animation (1.2×10^9)**
Compare the exponents first. For the two files with 10^8 bytes, 4.8 is less than 6.7.

CHALLENGE

6.01×10^7 , $6.0 \times 10^7 = 6.00 \times 10^7$, 5.99×10^7 . The coefficients 6.0 and 6.00 are equal, and both numbers have an exponent of 7.

Accept ordered lists or correct inequality chains. In the challenge, accept the two equal values in either order.