



Scientific Notation TEKS 8.1.D

Scientific notation is a way to write numbers using powers of 10. A number is written in **scientific notation** if it has the form $c \times 10^n$ where $1 \leq c < 10$ and n is an integer. The table shows some powers of ten in order from least to greatest.

| Power of Ten | 10^{-3} | 10^{-2} | 10^{-1} | 10^0 | 10^1 | 10^2 | 10^3 |
|--------------|-----------|-----------|-----------|--------|--------|--------|--------|
| Value | 0.001 | 0.01 | 0.1 | 1 | 10 | 100 | 1000 |



EXAMPLE

Write the number in scientific notation.

- | | | | |
|---|--|---|---|
| a. 12,800,000 | Standard form | b. 0.0000039 | Standard form |
| 12,800,000 | Move the decimal point 7 places to the left. | 0.0000039 | Move the decimal point 6 places to the right. |
|  | |  | |
| 1.28×10^7 | Use 7 as an exponent of 10. | 3.9×10^{-6} | Use -6 as an exponent of 10. |

EXAMPLE

Write the number in standard form.

- | | | | |
|---|---|---|--|
| a. 6.1×10^4 | Scientific notation | b. 5.74×10^{-5} | Scientific notation |
| 6.1×10^4 | The exponent of 10 is 4. | 5.74×10^{-5} | The exponent of 10 is -5. |
| 61,000 | Move the decimal point 4 places to the right. | 0.0000574 | Move the decimal point 5 places to the left. |
|  | |  | |
| 61,000 | Standard form | 0.0000574 | Standard form |

PRACTICE

Write the number in scientific notation.

- | | | | |
|-------------|-------------------|-------------|-----------------|
| 1. 0.6 | 2. 25,000,000 | 3. 0.08 | 4. 0.00542 |
| 5. 40.8 | 6. 7 | 7. 0.000385 | 8. 8,145,000 |
| 9. 41,236 | 10. 0.0000016 | 11. 486,000 | 12. 0.000000009 |
| 13. 0.01002 | 14. 1,000,000,000 | 15. 7050.5 | 16. 0.37 |
| 17. 9850 | 18. 0.0000206 | 19. 805 | 20. 0.0005 |

Write the number in standard form.

- | | | | |
|--------------------------|----------------------------|--------------------------|---------------------------|
| 21. 5×10^3 | 22. 4×10^{-2} | 23. 8.2×10^{-1} | 24. 6.93×10^2 |
| 25. 3.2×10^{-3} | 26. 9.01×10^{-5} | 27. 7.345×10^5 | 28. 2.38×10^{-2} |
| 29. 1.814×10^0 | 30. 2.7×10^8 | 31. 1×10^6 | 32. 4.9×10^{-4} |
| 33. 8×10^{-6} | 34. 5.6×10^4 | 35. 1.87×10^9 | 36. 7×10^{-4} |
| 37. 6.08×10^6 | 38. 9.009×10^{-3} | 39. 3.401×10^7 | 40. 5.32×10^1 |