

Exponents and Scientific Notation

1. Write $(8.0 \times 10^{140}) \cdot (5.0 \times 10^{20})$ in scientific notation.

- a. 4.0×10^{158} b. 4.0×10^{159} c. 4.0×10^{160} d. 4.0×10^{161}
 ae. 4.0×10^{162} be. 4.0×10^{163} ce. 4.0×10^{164} de. 4.0×10^{165}

2. Write $\frac{2.0 \times 10^{140}}{5.0 \times 10^{20}}$ in scientific notation.

- a. 4.0×10^{118} b. 4.0×10^{119} c. 4.0×10^{120} d. 4.0×10^{121}
 ae. 4.0×10^{122} be. 4.0×10^{123} ce. 4.0×10^{124} de. 4.0×10^{125}

3. Simplify $\frac{(4x^8)x}{8x^{-7}}$. Eliminate negative exponents.

- a. $\frac{x^{12}}{2}$ b. $\frac{x^{13}}{2}$ c. $\frac{x^{14}}{2}$ d. $\frac{x^{15}}{2}$ e. $\frac{x^{16}}{2}$

4. Simplify $\left(\frac{x^2}{y^4}\right)^3 \left(\frac{x^5}{y}\right)^{-2}$. Eliminate negative exponents.

- a. $\frac{1}{x^{10}y^4}$ b. $\frac{1}{x^9y^5}$ c. $\frac{1}{x^8y^6}$ d. $\frac{1}{x^6y^8}$
 ae. $\frac{1}{x^5y^9}$ be. $\frac{1}{x^4y^{10}}$ ce. $\frac{1}{x^3y^{11}}$ de. $\frac{1}{x^2y^{12}}$

5. Simplify $\frac{x^{4t+7}}{x^{t+1}}$.

- a. x^{3t+1} b. x^{3t+2} c. x^{3t+3} d. x^{3t+4}
 ae. x^{3t+5} be. x^{3t+6} ce. x^{3t+7} de. x^{3t+8}

6. Simplify $(x^{2t+3})^2$.

- a. x^{2t+4} b. x^{2t+5} c. x^{2t+6} d. x^{2t+7}
 ae. x^{4t+4} be. x^{4t+5} ce. x^{4t+6} de. x^{4t+7}

7. Simplify $-5x^0 + (-7x)^0$. Assume $x \neq 0$.

- a. 1 b. 2 c. 3 d. 4
 ae. -1 be. -2 ce. -3 de. -4

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8. Simplify $5^{-1} + 3^{-1}$.

a. 2/15

b. 4/15

c. 7/15

d. 8/15

ae. 1/8

be. 1/4

ce. 3/8

de. 5/8

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Answers:

1. d

2. b

3. e

4. be

5. be

6. ce

7. de

8. d