

Identify the base and exponent in each expression.

1 $\left(-\frac{1}{5}\right)^{-3}$ $-\frac{1}{5}$; -3

2 -0.92^4 0.92 ; 4

Tell whether each statement is correct. If it is incorrect, state the reason.

3 $-0.7^3 = -0.7 \cdot 0.7 \cdot 0.7$ Correct

4 $5^{-4} = (-5) \cdot (-5) \cdot (-5) \cdot (-5)$

Incorrect. The base is 5, not -5 , and the exponent is -4 , not 4.

Write in exponential notation.

5 $2 \cdot 2 \cdot 2 \cdot 2$ 2^4

6 $4.8 \cdot 4.8$ $(4.8)^2$

7 $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$ $\left(\frac{1}{2}\right)^3$

8 $c \cdot c \cdot c \cdot c \cdot c \cdot c$ c^6

9 $\frac{3}{4}k \cdot \frac{3}{4}k \cdot \frac{3}{4}k \cdot \frac{3}{4}k$ $\left(\frac{3}{4}k\right)^4$

10 $(-1.2)(-1.2)(-1.2)(-1.2)$ 1.2^4

Write the prime factorization of each number in exponential notation.

11 3,780 $2^2 \cdot 3^3 \cdot 5 \cdot 7$

12 27,720 $2^3 \cdot 3^2 \cdot 5 \cdot 7 \cdot 11$

Expand and evaluate each expressions.

13 $(-6)^2$ 36

14 1.1^2 1.21

15 10^5 100,000

16 $\left(\frac{2}{3}\right)^3$ $\frac{8}{27}$

Simplify each expression. Write your answer using a positive exponent.

17 $(-3)^{-1} \cdot (-3)^0$ $-\frac{1}{3}$

18 $\left(\frac{5}{6}\right)^4 \cdot \left(\frac{5}{6}\right)^3$ $\left(\frac{5}{6}\right)^7$

19 $5m^3n^4 \cdot 4m^5n^2$ $20m^8n^6$

20 $\left(\frac{7}{8}\right) \div \left(\frac{7}{8}\right)^3$ $\left(\frac{8}{7}\right)^2$

21 $(-h)^9 \div (-h)^{15}$ $\frac{1}{h^6}$

22 $x^8z^5 \div x^3z^9$ $\frac{x^5}{z^4}$

$$23 \quad 25p^6q^9 \div 45p^8q^4 \quad \frac{5q^5}{9p^2}$$

$$25 \quad 40c^5d^3 \div 10c^9d^2 \quad \frac{4d}{c^4}$$

$$27 \quad \frac{(9^{-2})^{-2} \cdot 2^2}{9^2} \quad 324$$

$$29 \quad \frac{42^{-1}}{(2^0)^{12} \cdot 21^{-1}} \quad \frac{1}{2}$$

$$24 \quad \left[\left(\frac{2}{3} \right)^2 \cdot \left(\frac{2}{3} \right)^{-1} \right]^3 \left(\frac{2}{3} \right)^3$$

$$26 \quad \left(\frac{72b^{-1}}{32c^{-1}} \right)^{-2} \left(\frac{4b}{9c} \right)^2$$

$$28 \quad \frac{6^8 \cdot 56^{-3}}{6^5 \cdot 7^{-3}} \quad \frac{27}{64}$$

$$30 \quad \frac{(3^5 \cdot 3^4)^2}{(3^3)^6} \quad 1$$

Solve each equation involving a variable that is squared.

$$31 \quad r^2 = 256 \quad 16 \text{ or } -16$$

$$32 \quad c^2 = \frac{121}{169} \quad \frac{11}{13} \text{ or } -\frac{11}{13}$$



Solve each equation involving a variable that is cubed.

$$33 \quad x^3 = 32.768 \quad 3.2$$

$$34 \quad t^3 = -\frac{27}{343} \quad -\frac{3}{7}$$

$$35 \quad \text{The expanded form of a number is } 5 \cdot 10^1 + 8 \cdot 10^0 + 1 \cdot 10^{-1} + 9 \cdot 10^{-2}. \text{ What is this number in standard form? } 58.19$$