

## BC Math 9 Exponents 1 (solutions)

Visit [hunkim.com/9](http://hunkim.com/9)

1.  $2^6$   
 $64$

2. Simplify  $a \times a \times a \times a \times a$   
 $a^5$

3.  $1^0 + 3^0$   
 $1 + 1 = 2$

4.  $0^1 + 0^5$   
 $0 + 0 = 0$

5.  $-3^4 + (-3)^4$   
 $-81 + 81 = 0$

6.  $n \times n^7 \times n^4$   
 $n^{12}$

7. Simplify  $(3x^3)^3$   
 $27x^9$

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

9.  $\left(\frac{2a}{b^2}\right)^3$   
 $\frac{8a^3}{b^6}$

10.  $(-1)^{100} + (-1)^{123}$   
 $1 - 1 = 0$

11.  $\left(a \times \frac{a^5}{a^2}\right)^2$   
 $(a^4)^2 = a^8$

12.  $\frac{x^5}{x^3} \div \frac{x}{x^2}$   
 $x^2 \times \frac{x^2}{x} = x^3$

13.  $\frac{(-3)^{100}}{(-3)^{98}}$   
 $(-3)^2$   
 $9$

14.  $\frac{(-2)^{101}}{-2^{100}} = 2^1 = 2$

$$\begin{aligned}
 15. & -2(-2)^2 - (-3)^2 \\
 & -2 \times 4 - 9 \\
 & = -8 - 9 = -17
 \end{aligned}$$

$$\begin{aligned}
 16. & \frac{9x^4y^4}{3xy^2} \\
 & 3x^3y^2
 \end{aligned}$$

$$\begin{aligned}
 17. & \frac{((2x^2)^3)^2}{64x^{12}}
 \end{aligned}$$

$$\begin{aligned}
 18. & \left(\frac{4p^4p^6q^4}{2p^8q^3}\right)^3 \\
 & = \left(\frac{2p^{10}q}{p^8}\right)^3 = (2p^2q)^3 = 8p^6q^3
 \end{aligned}$$

$$\begin{aligned}
 19. & -2\left(-\frac{3}{4}\right)^2 + (-1)^3 - \left(\frac{-2^4}{(-2)^3}\right)^2 \\
 & -2\left(\frac{9}{16}\right) - 1 - \left(\frac{2^4}{2^3}\right)^2 \\
 & = -\frac{18}{16} - 1 - 2^2 \\
 & = -\frac{9}{8} - \frac{8}{8} - \frac{32}{8} \\
 & = -\frac{49}{8}
 \end{aligned}$$

$$\begin{aligned}
 20. & \text{Solve } 25^2 = 125^k \\
 & (5^2)^2 = (5^3)^k \\
 & 4 = 3k \\
 & k = \frac{4}{3}
 \end{aligned}$$

$$\begin{aligned}
 21. & \text{Solve } \frac{3^{10}}{3^x} = 3^{x+1} \\
 & 3^{10-x} = 3^{x+1} \\
 & 10 - x = x + 1 \\
 & 9 = 2x \\
 & \frac{9}{2} = x
 \end{aligned}$$

22. Challenge:

a.  $0^0$   
Undefined

b.  $\left[\frac{(-3)^3}{3^2}\right]^2 - \left[\frac{(-3)^4}{3^3}\right]^1 + \left[\frac{(-3)^1}{3}\right]^0$   
 $\left[-\frac{27}{9}\right]^2 - \frac{3^4}{3^3} + 1$   
 $9 - 3 + 1 = 7$

c.  $\left(\frac{2^{1-2x}}{2^{x+3}}\right)^3 \div 2$   
 $= (2^{1-2x-(x+3)})^3 \div 2$   
 $= (2^{-3x-2})^3 \div 2$   
 $= 2^{-9x-6} \div 2$   
 $= 2^{-9x-7}$

d. Solve  $32 \times 2 + 2^{x+1} = 3 \times 2^x$   
 $2^5 \times 2 + 2 \times 2^x = 3 \times 2^x$   
 $2^6 = 3 \times 2^x - 2 \times 2^x$   
 $2^6 = 2^x(3 - 2)$   
 $2^6 = 2^x$   
 $x = 6$