

1.2 Exponents & Powers

base

exponent

$$2^3 = 2 \cdot 2 \cdot 2$$

power

Exponential Form	Words	Meaning
4^2	four to the second power or four squared	$4 \cdot 4$
8^3	eight to the third power or eight cubed	$8 \cdot 8 \cdot 8$
x^5	x to the fifth power	$x \cdot x \cdot x \cdot x \cdot x$

EXAMPLES: Write the expression in exponential form.

1. 8 squared 8^2

2. y to the ninth power y^9

3. 15 to the eleventh power 15^{11}

4. m squared m^2

Evaluate the power.

5. Evaluate x^3 when $x = 5$

$$5^3 = 5 \cdot 5 \cdot 5 = 125$$

6. Evaluate h^6 when $h = 2$.

$$2^6 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 64$$

GROUPING SYMBOLS

Parenthesis () and brackets [] tell you the order in which to do operations.

Evaluate the variable expression if $c = 2$ and $d = 3$.

$$\begin{aligned}
 7. \quad & (c)^2 + (d)^2 \\
 & (2)^2 + (3)^2 \\
 & 4 + 9 \\
 & 13
 \end{aligned}$$

$$\begin{aligned}
 8. \quad & (c + d)^2 \\
 & (2 + 3)^2 \\
 & (5)^2 \\
 & 25
 \end{aligned}$$

Evaluate the variable expression when $p = 2$ and $r = 4$.

$$\begin{aligned}
 9. \quad & (r - p)^3 \\
 & (4 - 2)^3 \\
 & (2)^3 = 8
 \end{aligned}$$

$$\begin{aligned}
 10. \quad & (r)^2 + (p)^2 \\
 & (4)^2 + (2)^2 \\
 & 16 + 4 = 20
 \end{aligned}$$

$$\begin{aligned}
 11. \quad & (p + r)^2 \\
 & (2 + 4)^2 \\
 & (6)^2 = 36
 \end{aligned}$$

$$\begin{aligned}
 12. \quad & (r)^2 - (p)^2 \\
 & (4)^2 - (2)^2 \\
 & 16 - 4 = 12
 \end{aligned}$$

$$\begin{aligned}
 13. \quad & (p^2) + r \\
 & (2^2) + 4 \\
 & 4 + 4 = 8
 \end{aligned}$$

$$\begin{aligned}
 14. \quad & (r)^2 - p \\
 & (4)^2 - 2 \\
 & 16 - 2 = 14
 \end{aligned}$$

Evaluate when $g = 4$.

$$\begin{aligned} 15. \quad 2g^3 \\ 2(4)^3 \text{ or } 2 \cdot 4^3 \\ 2 \cdot 64 \\ 128 \end{aligned}$$

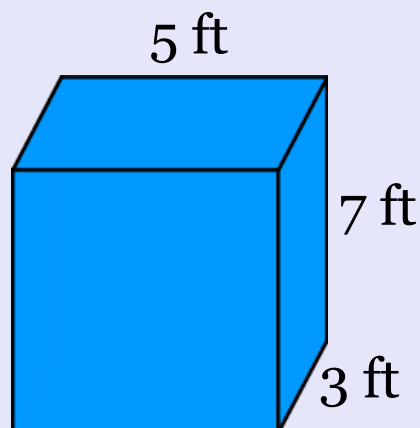
$$\begin{aligned} 16. \quad (2g)^3 \\ (2 \cdot 4)^3 \\ 8^3 \\ 512 \end{aligned}$$

$$\begin{aligned} 17. \quad (5g)^2 \\ (5 \cdot 4)^2 \\ 20^2 \\ 400 \end{aligned}$$

$$\begin{aligned} 18. \quad 5g^2 \\ 5 \cdot 4^2 \\ 5 \cdot 16 \\ 80 \end{aligned}$$

Find the volume of the box.

$V = lwh$ for rectangular prisms



$$V = (5\text{ft})(7\text{ft})(3\text{ft})$$

$$V = 105 \text{ ft}^3$$