Name: Date: Period:
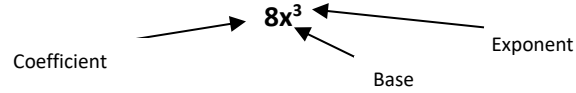
Exponent – A short way of writing multiplication of the same number.
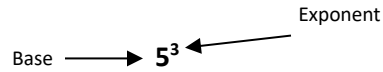
Examples: $5^2 = 5 \times 5 =$ _____ $3^3 = 3 \times 3 \times 3 =$ _____

An exponent tells us how many times to use the base number as a factor. Reminder:

$$8x^3$$

Coefficient   Base   Exponent

If there is no variable, the number is the base.

Exponent

Base ⟶ 5^3

Anything to the zero power = 1.

Examples: $5^0 = 1$ $100^0 = 1$ $1,000,000^0 = 1$

Write using exponents.

1. $2 \times 2 \times 2 \times 2 =$

2. $5(5)(5) =$

3. $10 \cdot 10 \cdot 10 \cdot 10 =$

Write each number in standard form.

1. 10^3	2. $(2\frac{1}{3})^2$	3. 6^2
4. 19^0	5. $\frac{2}{3}$ squared	6. 5^1
7. 0.4 cubed	8. $2^3 \cdot 2^2$	9. 4^3

Find the value of x.

1. $2^x = 16$	2. $10^x = 1$	3. $3^x = 81$
4. $x^3 = 8$	5. $5^x = 125$	6. $x^3 = 343$

Exponent Intro

Write each expression using exponents.

1. $3 \cdot 3 \cdot m$

2. $\left(\dfrac{1}{4}\right)\left(\dfrac{1}{4}\right)\left(\dfrac{1}{4}\right)$

3. $2 \cdot d \cdot 5 \cdot d \cdot d \cdot 5$

4. $p \cdot (-9) \cdot p \cdot (-9) \cdot p \cdot q \cdot q$

5. $g \cdot (-7) \cdot (-7) \cdot g \cdot h \cdot (-7) \cdot h$

6. $x \cdot \left(\dfrac{1}{8}\right) \cdot x \cdot x \cdot y \left(\dfrac{1}{8}\right) \cdot y \cdot x$

Evaluate each expression

7. $(-8)^4$

8. $\left(\dfrac{1}{5}\right)^3$

9. $\left(-\dfrac{3}{5}\right)^5$

10. $(-2)^3 + 5^2$

11. $3^4 - 5^2$

12. $(-2)^5 - (-2)^4$

13. $4^3 \div 2^3$

14. $5^3 \cdot 2^3$

15. $1^7 + (-3)^4$

Evaluate each expression.

16. $r^3 - s$, if $r = 5$ and $s = 4$

17. $m^2 - n^3$, if $m = 6$ and $n = 2$

18. $f - g^4$, if $f = 3$ and $g = -5$

19. $(x^6 - y^2)^2 + x^3$, if $x = 2$ and $y = 8$

20. Florida has about $2^2 \cdot 3^2 \cdot 5^3$ islands (over 10 acres). About how many islands is this?