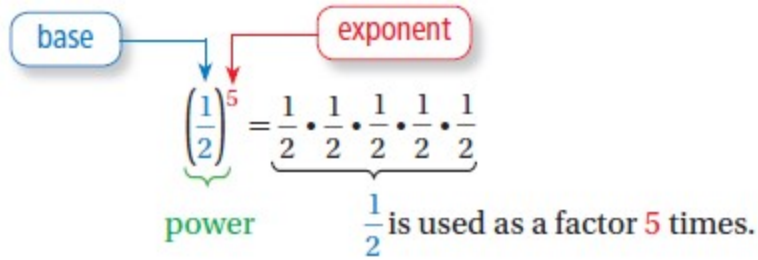Name: _____

A _____ is a product of repeated factors. The _____ of a power is the repeated

factor. The _____ of a power indicates the number of times the base is used as a
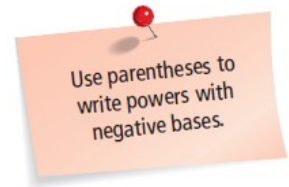
factor.

$$\left(\frac{1}{2}\right)^5 = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$$

power $\frac{1}{2}$ is used as a factor 5 times.

Writing Expressions Using Exponents

Ex:) Write each product using exponents.   Notes:

a. $(-7)\square(-7)\square(-7)\square(-7)$

Use parentheses to write powers with negative bases.

b. $\pi\square\pi\square r\square r\square r$

OYO:) Write each product using exponents.   Notes:

a. $\frac{1}{4}\square\frac{1}{4}\square\frac{1}{4}\square\frac{1}{4}\square\frac{1}{4}$

b. $0.3\square0.3\square0.3\square0.3\square x\square x$

Evaluating Expressions

Ex:) Evaluate each expression.   Notes:

a. $(-2)^4$

b. -2^4

OYO:) Evaluate each expression.   Notes:

a. -5^4

b. $-\left(\dfrac{1}{6}\right)^3$

Using Order of Operations

Ex:) Evaluate each expression.   Notes:

a. $3 + 2 \cdot 3^4$

b. $3^3 - 8^2 \div 2$

c. $-3\left(-10^2 + 70\right)$

OYO:) Evaluate each expression.

a. $9 - 2^5 \square 0.5$

b. $\left| -3^3 \div 27 \right|$

c. $\left(7 \square 4 - 4^3 \right) \div 6$

Modeling Real Life

Ex:) A fish jumps out of the water at a speed of 12 feet per second. Notes:
The height y (in feet) of the fish above the surface of the water is
represented by the equation $y = -16x^2 + 12x$, where x is the time (in
seconds) since the jump began. The fish reaches its highest point above
the surface of the water after 0.375 second. How far above the surface is
the fish at this time?

Ex:) Consider the diameters of three planets

Planet A: $10^9 m$ **Planet B**: $10^7 m$ **Planet C**: $10^8 m$

a. Write each diameter as a whole number.

b. A dwarf planet is discovered with a radius that is $\dfrac{1}{100}$ the radius of Planet C. Write the diameter of the dwarf planet as a power.

OYO:) The annual profit P (in thousands of dollars) earned by a Technology company x years after opening is represented by the equation $P = 0.1x^3 + 3$. How much more profit is earned in year 5 than in year 4?