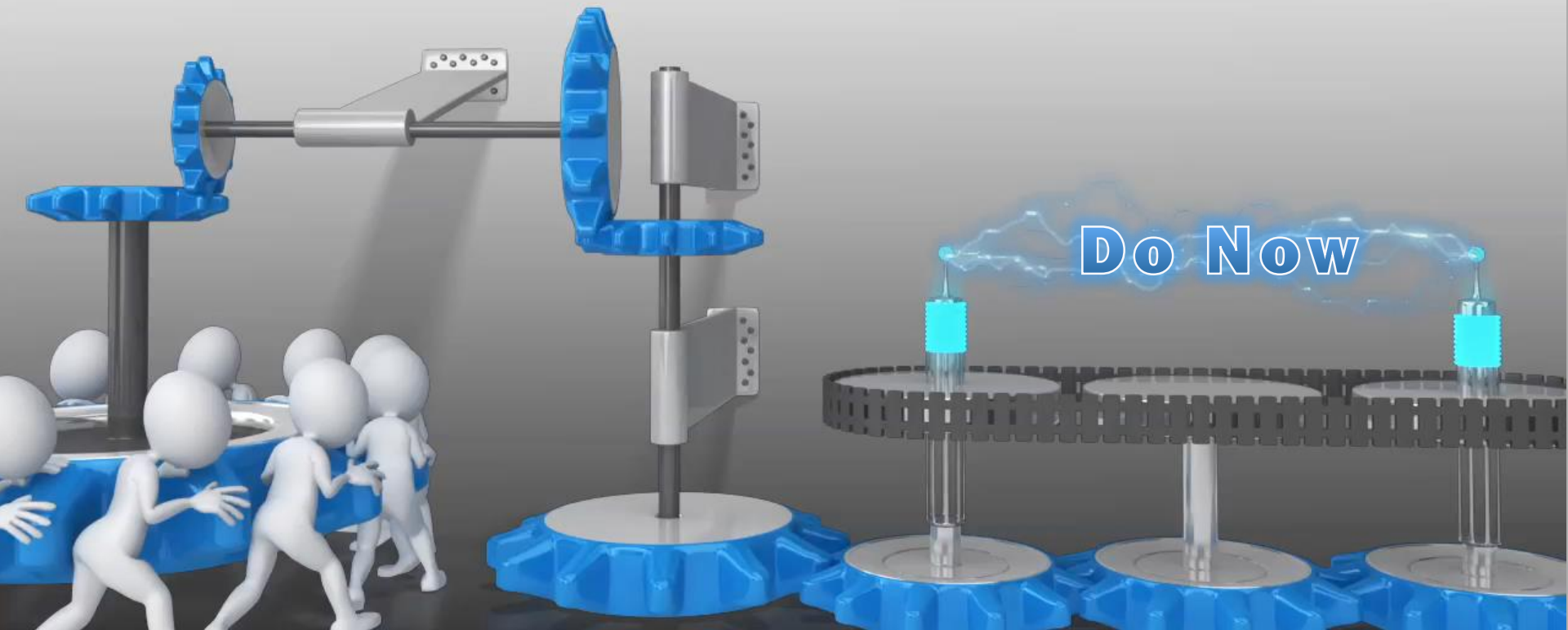


Exponents

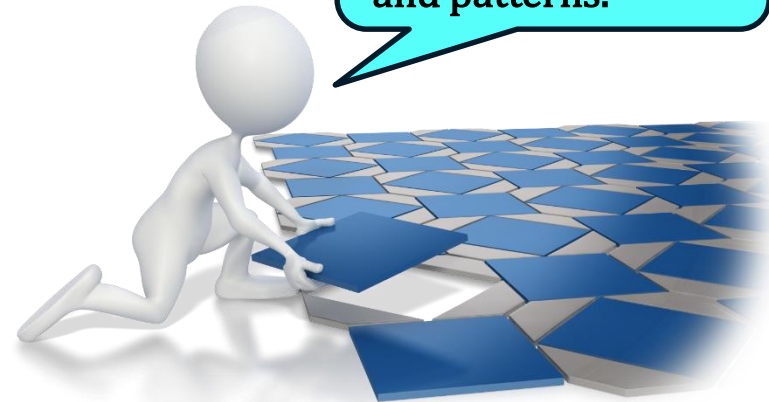
Please work quietly on your Do Now while I check your homework. Thanks!



Do Now

Simplify each of the following:

I can solve problems by looking for rules and patterns.



$$2^2 =$$

$$3^2 =$$

$$10^2 =$$

$$2^3 =$$

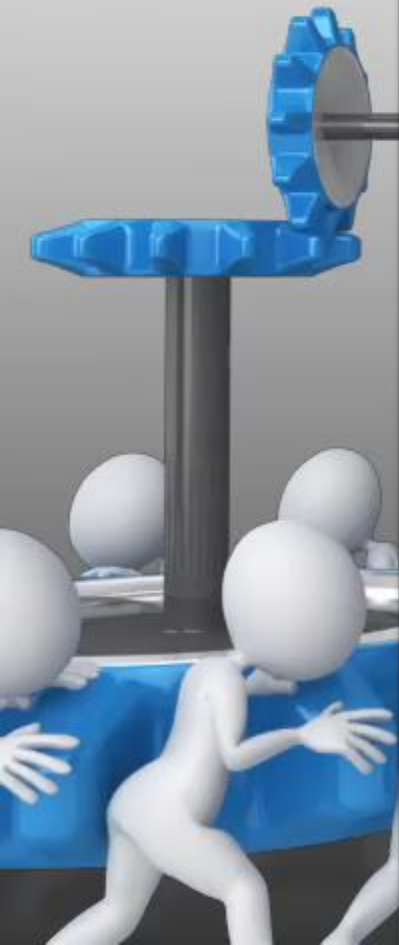
$$3^3 =$$

$$10^3 =$$

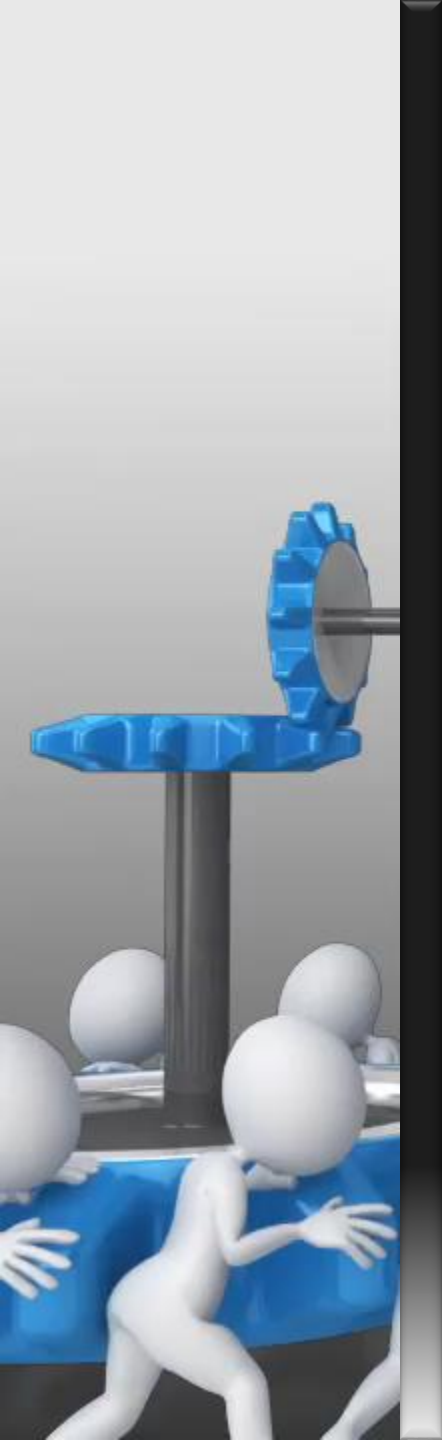
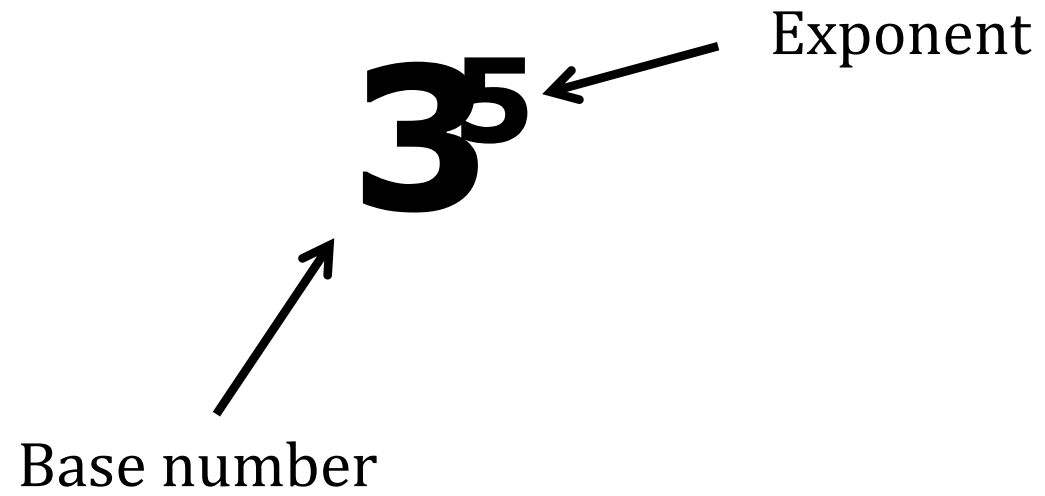
$$2^4 =$$

$$3^4 =$$

$$10^4 =$$



bases and exponents:



1 as an exponent:

Any base number to the power of 1 is equal to the base number itself.

Examples: $2^1 = 2$, $10^1 = 10$

$$2^4 = 16$$

$$3^4 = 81$$

$$10^4 = 10,000$$

$$2^3 = 8$$

$$3^3 = 27$$

$$10^3 = 1,000$$

$$2^2 = 4$$

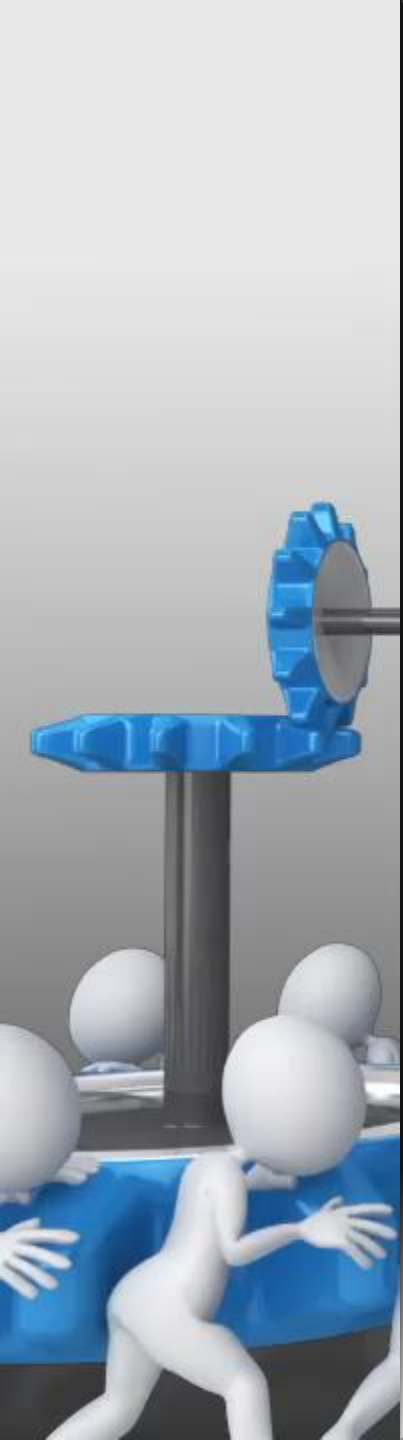
$$3^2 = 9$$

$$10^2 = 100$$

$$2^1 =$$

$$3^1 =$$

$$10^1 =$$



0 as an exponent: Any base number to the power of 0 is equal to 1.

Examples: $5^0 = 1$, $8^0 = 1$

$$2^4 = 16$$

$$2^3 = 8$$

$$2^2 = 4$$

$$2^1 = 2$$

$$2^0 =$$

$$3^4 = 81$$

$$3^3 = 27$$

$$3^2 = 9$$

$$3^1 = 3$$

$$3^0 =$$

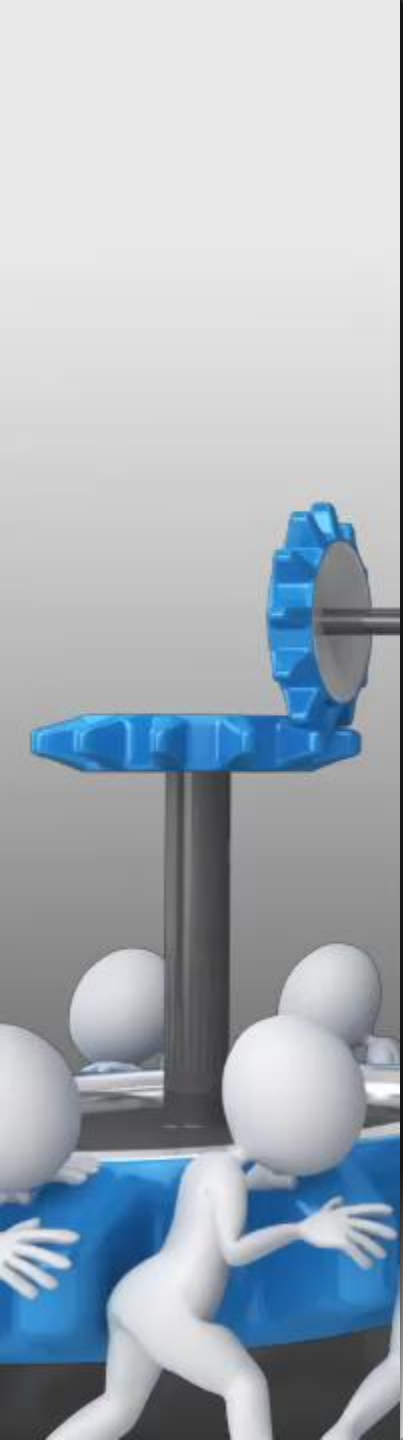
$$10^4 = 10,000$$

$$10^3 = 1,000$$

$$10^2 = 100$$

$$10^1 = 10$$

$$10^0 =$$



Negative exponents: Any base number to a negative power equals its reciprocal to the positive power.

Examples:

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

$$3^{-2} = \left(\frac{1}{3}\right)^2 = \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$$

$$2^4 = 16$$

$$3^4 = 81$$

$$10^4 = 10,000$$

$$2^3 = 8$$

$$3^3 = 27$$

$$10^3 = 1,000$$

$$2^2 = 4$$

$$3^2 = 9$$

$$10^2 = 100$$

$$2^1 = 2$$

$$3^1 = 3$$

$$10^1 = 10$$

$$2^0 = 1$$

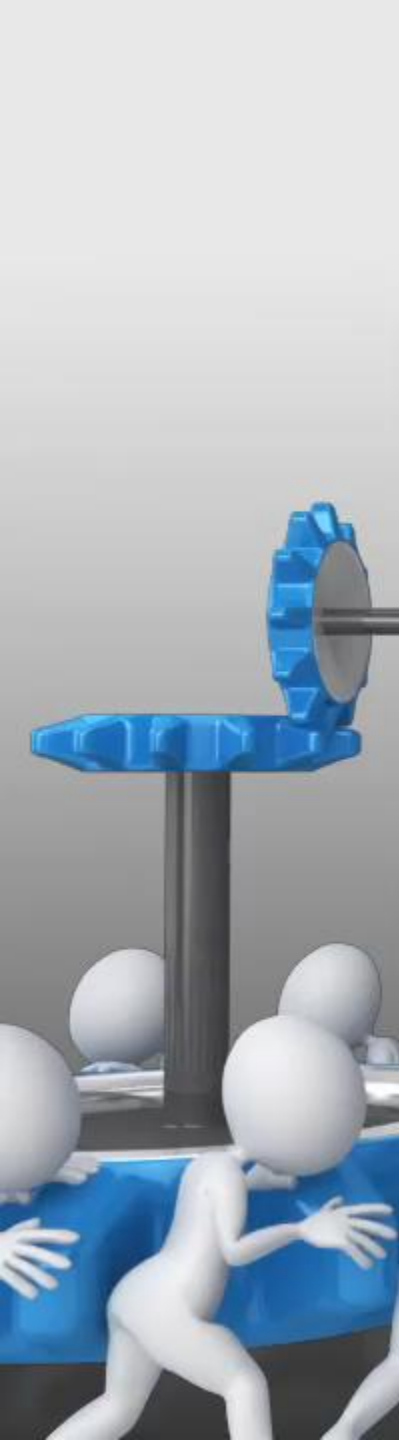
$$3^0 = 1$$

$$10^0 = 1$$

$$2^{-1} =$$

$$3^{-1} =$$

$$10^{-1} =$$

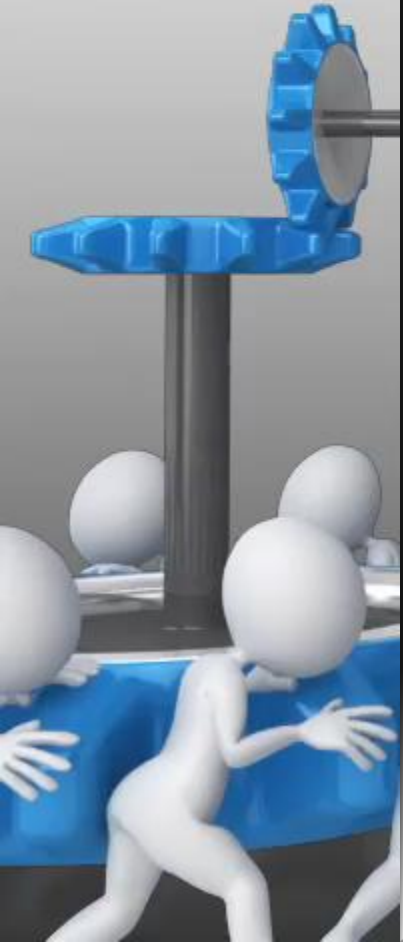


Simplify each of the following expressions.

$$1,333^1$$

$$19^0$$

$$5^{-2}$$

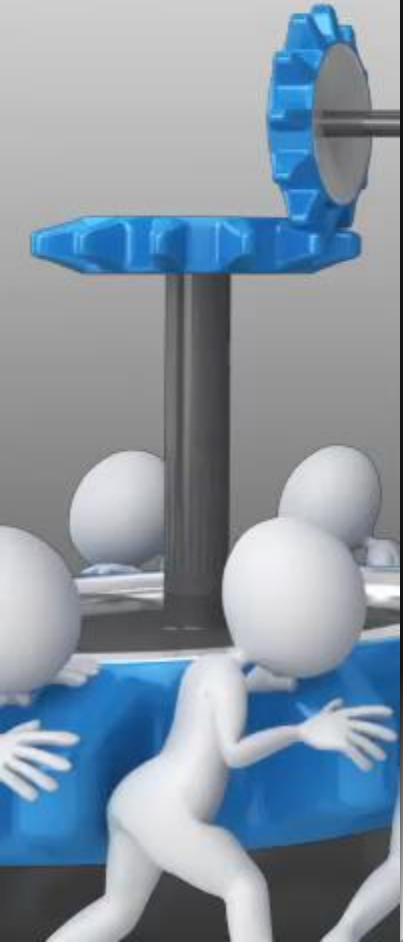


Simplify each of the following expressions.

$$(-2)^4$$

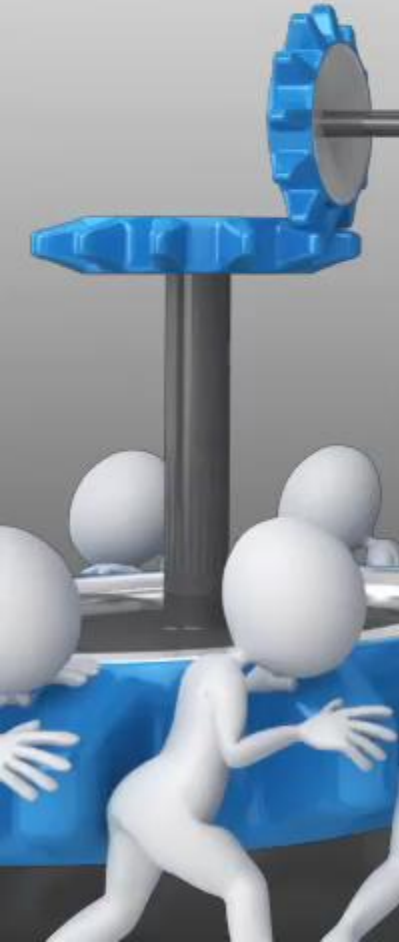
$$-2^4$$

$$-2^{-3}$$





This dust mite has been magnified 1.5×10^5 times its actual size. The picture of the dust mite is how many times larger than the actual mite?



What is the value of this expression?

$$(1 - 4)^3 - 3 \cdot 8 \div 6$$

