

Content and Language Objective:

Students will begin to explore the various rules involving exponents and be able to explain in their own words how the exponent rules work.

Warm-Up

1. $\left(\frac{4}{5} \bullet \frac{5}{8}\right) \div \frac{1}{2}$ $\frac{4}{5} \cdot \frac{5}{8} = \frac{20}{40} = \frac{1}{2} \div \frac{1}{2} = \frac{1}{1} = 1$ ①

$\frac{1}{2} \div \frac{1}{2} = \frac{1}{2} \cdot \frac{2}{1} = \frac{2}{2} = 1$

2. $6 \bullet \frac{2}{3} \bullet 3 \bullet \left(-\frac{1}{6}\right)$

$\frac{6}{1} \cdot \frac{2}{3} \cdot \frac{3}{1} \cdot \frac{-1}{6} = \frac{-36}{18} = -2$

Content and Language Objective:

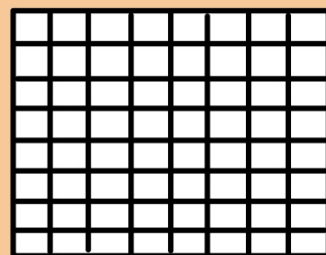
Students will begin to explore the various rules involving exponents and be able to explain in their own words how the exponent rules work.

BASES AND POSITIVE EXPONENTS

The area of a square that is 8 inches on a side is given by the expression.

$$8 \bullet 8 = 8^2 = 64 \text{ square inches}$$

The expression 8^2 is an exponential expression with base 8 and exponent 2.



8 inches

8 inches

Content and Language Objective:

Students will begin to explore the various rules involving exponents and be able to explain in their own words how the exponent rules work.

Exponential expressions occur frequently in a variety of applications. For example suppose that an investment doubles its initial value 3 times.

$$2 \bullet 2 \bullet 2 = 2^3 = 8$$

So the rule for using exponents is as follows:

$$a^n = a \bullet a \bullet a \bullet \cdots \bullet a$$

Content and Language Objective:

Students will begin to explore the various rules involving exponents and be able to explain in their own words how the exponent rules work.

EXPRESSION	BASE	EXPONENT
2^3	2	3
6^4	6	4
7^1	7	1
0.5^2	0.5	2
x^3	x	3

Content and Language Objective:

Students will begin to explore the various rules involving exponents and be able to explain in their own words how the exponent rules work.

Read 0.5^2 as "0.5 squared"

Read 2^3 as "2 cubed"

Read 6^4 as "6 to the fourth power"

Content and Language Objective:

Students will begin to explore the various rules involving exponents and be able to explain in their own words how the exponent rules work.

Using the given base, write each number as an exponential expression.

1.) 10,000 (base 10)

2.) 27 (base 3)

3.) 32 (base 2)