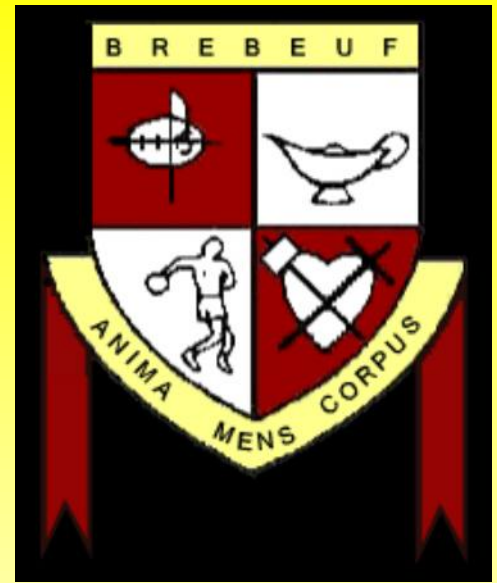


ST. JEAN DE BREBEUF MATHEMATICS



NUMBER SENSE

EXPONENTS

NUMBER SENSE EXPONENTS

KEY CONCEPTS

A **power** consists of two parts: a **base** and an **exponent**



Powers are a useful way to express repeated multiplication

→ The *exponent* tells you **how many times** to multiply the base

EXAMPLE

$$2^3 = 2 \times 2 \times 2 \text{ or } (2)(2)(2)$$

NUMBER SENSE EXPONENTS

KEY CONCEPTS

A **power** consists of two parts: a **base** and an **exponent**



A power with a *fractional* base $\left(\frac{a}{b}\right)^c$ can be re-written as $\frac{(a)^c}{(b)^c}$

EXAMPLE

$$\left(\frac{2}{3}\right)^4 = \frac{(2)^4}{(3)^4} = \frac{16}{81}$$

NUMBER SENSE EXPONENTS

EXAMPLE 1 Identifying Bases and Evaluating Powers

For each of the following, **identify the base**, write in **expanded form** and **evaluate**

(a) 2^5 Base = 2
 $= 2 \times 2 \times 2 \times 2 \times 2$
 $= 32$

(b) $(-3)^4$ Base = -3
 $= (-3)(-3)(-3)(-3)$
 $= 81$

(c) $(-2)^4$ Base = -2
 $= (-2)(-2)(-2)(-2)$
 $= 16$

(d) -2^4 Base = 2
 $= -(2)(2)(2)(2)$
 $= -16$

NUMBER SENSE EXPONENTS

EXAMPLE 1 Identifying Bases and Evaluating Powers

For each of the following, **identify the base**, write in expanded form and **evaluate**

(e) $\left(\frac{3}{4}\right)^3$ Base = $\frac{3}{4}$

$$= \left(\frac{3}{4}\right)\left(\frac{3}{4}\right)\left(\frac{3}{4}\right)$$

$$= \frac{(3)^3}{(4)^3} \quad \text{Raise the } \textit{top} \text{ and } \textit{bottom} \text{ number by the exponent!}$$

$$= \frac{27}{64}$$

NUMBER SENSE EXPONENTS

EXAMPLE 2

Writing Expressions as Powers

Write each expression as a **power**. Do not evaluate

(a) $3 \times 3 \times 3 \times 3 \times 3$ **3** is multiplied 5 times

$= 3^5$

(b) $(4)(4)$ **4** is multiplied 2 times

$= 4^2$

* (c) 13 **13** is multiplied 1 time

$= 13^1$

NUMBER SENSE EXPONENTS

Homework:

Worksheets in the
package!