

# UNIT #2 Powers & Exponents

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## 2.1 What is a Power?

We can use powers to show repeated multiplication

$$2 \times 2 \times 2 \times 2 \times 2 = 2^5$$

← exponent  
↖ base  
↓ power

repeated multiplication

Ex. #1 write as a power

(a)  $\underline{4} \times \underline{4} \times \underline{4} \times \underline{4} \times \underline{4} \times \underline{4}$  (b)  $\underline{3}$

there are 6 factors of 4 =  $3^1$

so =  $4^6$

Ex. #2 Write as repeated multiplication and in standard form

(a)  $2^4$

=  $2 \times 2 \times 2 \times 2$

=  $16$  ← standard form

(b)  $5^3$

=  $5 \times 5 \times 5$   
= 125

(c)  $2^5$

=  $2 \times 2 \times 2 \times 2 \times 2$   
= 32

## SOLVE IT!!

To evaluate a power that contains negative integers, identify the base of the power

Ex. #3

Identify the base, then evaluate each power

(a)  $(-5)^4$

(b)  $-5^4$

base -5

\* the brackets tell us that the base is -5

$$\begin{aligned} &= (-5) \times (-5) \times (-5) \times (-5) \\ &= \boxed{625} \end{aligned}$$

base . 5

\* no brackets  
\* the negative sign applies to the whole expression

$$\begin{aligned} &= -5 \times 5 \times 5 \times 5 \\ &= \boxed{-625} \end{aligned}$$

Ex. #4

$$-(-5)^3 = \underline{125} \text{ ?}$$

$$= -[(-5) \times (-5) \times (-5)]$$

$$= -[-125]$$

$$= 125$$

pg 55 # 4, 7-9, 11-14, 16-18