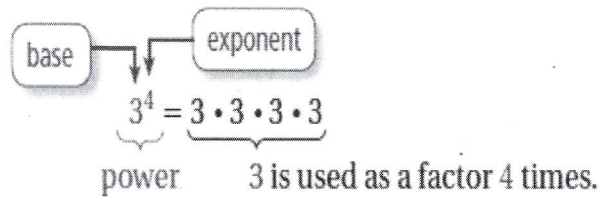


Vocabulary

A **power** is a product of repeated factors. The **base** of a power is the repeated factor. The **exponent** of a power indicates the number of times the base is used as a factor.



Word	Definition	Example
power	a product of repeated factors	3^4
base	repeated factor	3^4 ← base
exponent	the number of times the base is multiplied	3^4 ← exponent

Complete the following problems in your composition book.

1a

Write each product as a power.

a. $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 = 4^5$

1b

b. $12 \times 12 \times 12 = 12^3$

Now complete #1 and 2 on your notes page.

1) $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 \cdot 6 = 6^6$

2) $15 \times 15 \times 15 \times 15 = 15^4$

Complete the following problems in your composition book.

EXAMPLE 2 Finding Values of Powers

Find the value of each power.

a. 7^2

b. 5^3

2a $7^2 = 7 \times 7 = 49$

2b $5^3 = 5 \times 5 \times 5$
 25×5
 $5^3 = 125$

Now complete #3-6 on your notes page.

$$3) \quad 6^3 = 6 \times 6 \times 6 = 216$$

$$4) \quad 9^2 = 9 \times 9 = 81$$

$$5) \quad 3^4 = 3 \times 3 \times 3 \times 3 = 81$$

$$6) \quad 18^2 = 18 \times 18 = 324$$

Complete this problem in your composition book.

FIGURINES The smallest figurine in a gift shop is 2 inches tall. The height of each figurine is twice the height of the previous figurine. Write a power to represent the height of the tallest figurine. Then find the height.



Answers:
 $2^4 = 16$ inches

2 in.	$2 \times 2 =$	$4 \times 2 =$	$8 \times 2 =$
	4 in.	8 in.	16 in.
$2 \times 2 \times 2 \times 2 = 2^4$			

Complete practice problem #7 on your notes page.

John Deere makes its toy tractors identical to real tractors. The smallest tractor shown is 3 inches long. If each toy tractor is three times larger than the previous toy tractor, how long is the largest toy tractor? Write a power to represent the length of the largest toy tractor. Then find the length of the largest toy tractor.

$(3 \times 3 \times 3 \times 3) \times 3$	$(3 \times 3 \times 3) \times 3$	$(3 \times 3) \times 3$	3×3	3
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$$3^5 = 243 \text{ inches}$$

Respond to these questions on your notes page.



Vocabulary and Concept Check

1. **VOCABULARY** How are exponents and powers different?

A power is the whole expression. The exponent tells how many times to use the base as a factor.

2. **WHICH ONE DOESN'T BELONG?** Which one does *not* belong with the other three? Explain your reasoning.

a) $2^4 = 2 \times 2 \times 2 \times 2$

b) $3 + 3 + 3 + 3 = 3(4)$

c) $3^2 = 3 \times 3$

d) $5 \cdot 5 \cdot 5 = 5^3$

B does not belong because it shows repeated addition, not repeated factors. A, C, and D show products as powers; they use exponents.