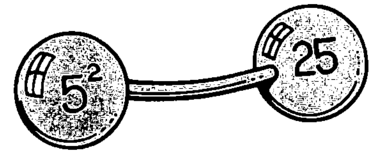
Powers to the Numbers



In each row, write the problems in exponent form. Then, find the value. You may use a calculator to check your answers.

1. five squared | 8 • 8 • 8 • 8 | nine to the 4th power

2. 15 • 15 • 15 | ten to the 5th power | seven cubed

3. one-half cubed | 4 • 4 • 4 • 4 • 4 | six to the 3rd power

4. 2.3 • 2.3 • 2.3 | twelve squared | 1.5 • 1.5 • 1.5 • 1.5

5. twenty cubed | 7 • 7 • 7 • 7 • 7 • 7 | one to the 12th power

6. 12.3 • 12.3 | two to the 6th power | three-fourths squared

Name ______________________

Exponents

An **exponent** tells the number of times a number is used as a factor.

$$4^3 = 4 \times 4 \times 4 \text{ or } 64$$

4 is the **base**, and 3 is the **exponent**.

Rewrite each power in factored form and simplify.

1. $6^3 =$ ______________ = ________

4. $1^5 =$ ______________ = ________

2. $2^5 =$ ______________ = ________

5. $9^3 =$ ______________ = ________

3. $3^4 =$ ______________ = ________

6. $4^4 =$ ______________ = ________

7. What does 1 raised to any power equal? Why? ______________________________

8. Why does 3^4 equal 9^2? ______________________________

Solve these three sets of problems. Rewrite each power in factored form and simplify.

9. $2^3 \times 2^4 =$ ______________________________ = ________ $2^7 =$ ________

10. $3^2 \times 3^3 =$ ______________________________ = ________ $3^5 =$ ________

11. $5^2 \times 5^2 =$ ______________________________ = ________ $5^4 =$ ________

12. Describe the pattern demonstrated in problems 9–11. ______________________________

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THINK

Does this pattern work for other operations (addition, subtraction, or division) with exponents? Explain your reasoning with examples.