

Powers & Roots

Numbers & Patterns · Grade 6

◆ Medium · 10 Questions

Solve each problem. Show your work in the space provided. Write your answer on the line.

1. Simplify: $2^3 \times 2^4$

Answer: _____

2. Simplify: $3^5 \div 3^2$

Answer: _____

3. Simplify: $(2^3)^2$

Answer: _____

4. Simplify: $5^2 \times 5^3$

Answer: _____

5. Simplify: $4^6 \div 4^4$

Answer: _____

6. Simplify: $(3^2)^3$

Answer: _____

7. Simplify: $2^4 \times 3^4$

Answer: _____

8. Simplify: $2^5 \div 2^5$

Answer: _____

9. Simplify: $(5^2)^2 \div 5^3$

Answer: _____

10. Which is greater: 2^5 or 5^2 ?

Answer: _____

Answer Key

Powers & Roots — Medium

1. $2^7 = 128$

Same base: add exponents. $2^3 \times 2^4 = 2^{(3+4)} = 2^7 = 128$.

2. $3^3 = 27$

Same base: subtract exponents. $3^5 \div 3^2 = 3^{(5-2)} = 3^3 = 27$.

3. $2^6 = 64$

Power of a power: multiply exponents. $(2^3)^2 = 2^{(3 \times 2)} = 2^6 = 64$.

4. $5^5 = 3,125$

$5^2 \times 5^3 = 5^{(2+3)} = 5^5 = 3,125$.

5. $4^2 = 16$

$4^6 \div 4^4 = 4^{(6-4)} = 4^2 = 16$.

6. $3^6 = 729$

$(3^2)^3 = 3^{(2 \times 3)} = 3^6 = 729$.

7. $6^4 = 1,296$

Same exponent, different bases: $2^4 \times 3^4 = (2 \times 3)^4 = 6^4 = 1,296$.

8. $1 (= 2^0)$

$2^5 \div 2^5 = 2^{(5-5)} = 2^0 = 1$.

9. $5^1 = 5$

$(5^2)^2 = 5^4$. Then $5^4 \div 5^3 = 5^{(4-3)} = 5^1 = 5$.

10. $2^5=32 > 5^2=25$. So 2^5 is greater.

$2^5=32$. $5^2=25$. $32>25$.