

Name: _____

Date: _____

Lesson 1.2 The Product and the Quotient of Powers

Simplify each expression. Write your answer in exponential notation.

1. $5^8 \cdot 5^2$

2. $3.2^4 \cdot 3.2^5$

3. $\left(\frac{7}{9}\right)^2 \cdot \left(\frac{7}{9}\right)^6$

4. $(-12)^8 \cdot (-12)$

5. $q^4 \cdot q^3$

6. $m^9 \div m^5$

7. $6xy^2 \cdot 3x^7y^2$

8. $4.5a^3b^7 \cdot 2a^6b$

9. $(-7)^9 \div (-7)^2$

10. $\left(\frac{3}{4}\right)^8 \div \left(\frac{3}{4}\right)^5$

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Simplify each expression. Write your answer in exponential notation.

11. $b^5c^8 \div b^3c^2$

12. $72x^9y^7 \div 8x^3y^5$

13. $\frac{8^9 \cdot 8^2 \cdot 8^6}{8^4 \cdot 8^2 \cdot 8^3}$

14. $\frac{\left(\frac{2}{3}\right)^7 \cdot \left(\frac{2}{3}\right)^3 \cdot \left(\frac{2}{3}\right)^9}{\left(\frac{2}{3}\right)^2 \cdot \left(\frac{2}{3}\right) \cdot \left(\frac{2}{3}\right)^4}$

15. $\frac{y^3 \cdot y^8 \cdot y^6}{y^4 \cdot y^2 \cdot y^2}$

16. $\frac{5a^5 \cdot 7b^4 \cdot 2b^3}{b^5 \cdot 5b^2 \cdot 2a^4}$

Solve. Show your work.

17. The side length of cube A is 100,000 millimeters. The side length of cube B is 10^8 millimeters.

a) Express the volume of cube A in cubic millimeters, using exponential notation.

b) How many times greater is the volume of cube B than that of cube A?

18. A rectangular container has length $15p$ meters, width $12p$ meters, and height $6p$ meters. How many cubes, each of length $2p$ meters, can be packed into the rectangular container?