DIVIDING POWERS WITH THE SAME BASE Simplify the expression. Write your answer

as a power. (See Example 1.)





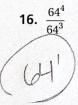


15.
$$\frac{4^5}{4^3}$$









17.
$$\frac{17^5}{17^2}$$

18.
$$\frac{72}{72^6}$$

19.
$$\frac{29^{11}}{29^7}$$





20. YOU BE THE TEACHER Your friend simplifies the quotient. Is your friend correct? Explain your reasoning.

no they divided the exponents

should subtract



SIMPLIFYING AN EXPRESSION Simplify the expression. Write your answer as a power. (See Example 2.)

22.
$$\frac{7^5 \cdot 7^3}{7^2}$$

$$\frac{7^2}{7^2} = \frac{76}{70}$$

3.
$$\frac{8^{11}}{8^7 \cdot 8^2}$$

24.
$$\frac{9^{30}}{9^{18} \cdot 9^4}$$

25.
$$\frac{5^{22}}{5^8 \cdot 5}$$

26.
$$\frac{11^8 \cdot 11^6}{11^8}$$



27. MODELING REAL LIFE The sound intensity of a normal conversation is 10⁶ times greater than the quietest noise a person can hear. The sound intensity of a jet at takeoff is 10¹⁴ times greater than the quietest noise a person can hear. How many times more intense is the sound of a jet at takeoff than the sound of a normal conversation?

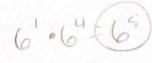


SIMPLIFYING AN EXPRESSION Simplify the expression. Write your answer as a power. (See Example 3.)

28.
$$\frac{4^8 \cdot 4^3}{4^4 \cdot 4^2}$$

▶29.
$$\frac{3^2 \cdot 3^6}{3^2} \cdot \frac{3^5}{3}$$

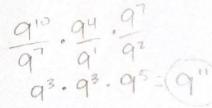
30.
$$\frac{6^2}{6!} \cdot \frac{6^{12}}{6^8}$$



31.
$$\frac{7^7 \cdot 7^6}{7^1 \cdot 7^2}$$

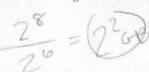
32.
$$\frac{8^5}{8^4} \cdot \frac{8^{13}}{8^8}$$

33.
$$\frac{9^8 \cdot 9^2}{9^7} \cdot \frac{9^4}{9^6} \cdot \frac{9^7}{9^2}$$





- PATTERNS The storage capacities and prices of five devices are shown in the table.
 - a. How many times more storage does Device D have than Device B?



b. Predict the price for a device with 2¹² GB of storage.



 Device
 Storage (GB)
 Price

 A
 2⁵
 \$30

 B
 2⁶
 \$50

 C
 2⁷
 \$70

 D
 2⁸
 \$90

 E
 2⁹
 \$110