Write in expanded form and using exponents (simplify).

Ex. 1: $2^4 \cdot 2^3$

$2 \cdot 2 \cdot 2 \cdot 2 \bullet 2 \cdot 2 \cdot 2 = 2^7$

$4 \quad 4 \quad 4 \quad 2$

$16 \cdot 8 = \boxed{128}$

Expanded

Stretch out

Ex. 2: $7^6 \cdot 7^1$

$7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 \bullet 7 = 7^7$

$49 \quad 49 \quad 49 \quad 7 = 823,543$

Simplify, Evaluate

Find the answer

Any # Bases that have an EXPONENT of 4 or smaller we need to evaluate.

Ex. 3: $r^4 \cdot r^6$

$r \cdot r \cdot r \cdot r \bullet r \cdot r \cdot r \cdot r \cdot r \cdot r = \boxed{r^{10}}$

Ex. 4: $c^3 \cdot c^5$

$c\,c\,c\,c\,c\,c\,c\,c = \boxed{c^8}$

Simplify.

Ex. 5: $-7x^2 \cdot 11x^4$

$-7 \cdot 11 \cdot x^2 \cdot x^4$

$\boxed{-77x^6}$

Ex. 6: $-2m\left(-8m^5\right)$

$-2 \cdot -8 \cdot m^1 \cdot m^5$

$\boxed{16m^6}$

Ex. 7: $(-3)^8 x^5 y^2 x^7$

$\boxed{3^8 x^{12} y^2}$

① Show multiplication
② Regroup
③ Multiply BIG #'s
④ Simplify common bases

If $(-\quad)^{\text{Exponent}}$

→ If exp even → $+$

→ If exp odd → $-$

Would the coefficient be positive or negative?

in front

Multiplication Rule:

If there are common bases being multiplied, then keep the base & add the exponent.

$x^{17} \cdot x^{35} = x^{17+35} = \boxed{x^{52}}$

Simplify.

Ex. 8: $b^4 \cdot g \cdot b^5$

$b^9 g$

Ex. 9: $\left(3cb^5\right)\left(-2b^4e\right)$

$3 \cdot -2 \cdot b^5 \cdot b^4 \cdot c \cdot e$

$\boxed{-6b^9ce}$

Write in expanded form and using exponents (simplify).

Ex. 10: $\dfrac{3^7}{3^3} = \dfrac{3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3}{3 \cdot 3 \cdot 3}$

$\dfrac{3^4}{1} = \boxed{3^4} = 81$

Ex. 11: $\dfrac{4^8}{4^2} \quad \dfrac{4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4}{4 \cdot 4}$

$\dfrac{4^6}{1} = \boxed{4^6}$

$\dfrac{2}{2} = 1$

$\dfrac{3}{3} = 1$

Ex. 12: $\dfrac{n^9}{n^4} \quad \dfrac{n\,n\,n\,n\,n\,n\,n\,n\,n}{n\,n\,n\,n}$

$\dfrac{n^5}{1} = \boxed{n^5}$

$\dfrac{x}{x} = 1$

Division Rule:

If you have common bases in a fraction, then keep the base & subtract the exp

$\dfrac{a^{98}}{a^{40}} = a^{98-40} = \boxed{a^{58}}$

Top exp — Bottom exp

Simplify.

Ex. 13: $\dfrac{12g^6}{3g^5} = \boxed{4g}$

① Simplify the BIG #'s
② Simplify common bases

Ex. 14: $\dfrac{18x^8y^5}{2x^2y^1} = \boxed{9x^6y^4}$

Ex. 15: $\dfrac{6^5 \cdot 5^7}{6^2 \cdot 5}$ $\boxed{6^3 \cdot 5^6}$

Ex. 16: $\dfrac{3gh^4}{2h^1} = \dfrac{3gh^3}{2} = \boxed{\dfrac{3gh^3}{2}}$