

1. Simplify. Your answers should have only **positive** exponents.

a) $x^3 \cdot x^6$
 $X^{3+6} = X^9$

b) $\frac{3^8}{3^3}$) $3^{8-3} = 3^5$

c) b^0 1

d) $-3m^0$
 $-3 \cdot 1 = -3$

e) $a^2 \cdot a^{-7}$
 $a^{2-7} = a^{-5} = \frac{1}{a^5}$

f) $\frac{2^2}{2^8}$) $2^{2-8} = 2^{-6} = \frac{1}{2^6}$

f) $(x^2)^7$
 $X^{2 \cdot 7} = X^{14}$

g) $(5b^2)^2$
 $5^2 \cdot b^4$ or $5^2 b^4$

2. a) Simplify the expression. Your answers should have only **positive** exponents.

$$(4x^{-2})^3$$

$$4^3 \cdot x^{-6}$$

$$4^3 \cdot \frac{1}{x^6} = \frac{4^3}{x^6}$$

- b) Mallory simplified the expression but made some mistakes. Explain to her the corrections she needs to make.

$$(4x^{-2})^3$$

1. You need to distribute the ³ to the 4 as well, it is a separate value (4 · x⁻²) in the parentheses

$$4^3 \cdot \frac{1}{x^6} = 4x^{-6}$$

$$\rightarrow = \frac{4^3}{x^6}$$

It is multiplied, so it is -6 (-2 · 3)

The answer is: $\frac{4^3}{x^6}$

From beginning:

$$(4x^{-2})^3$$

$$4^3 \cdot x^{-6}$$

$$4^3 \cdot \frac{1}{x^6}$$

$$\frac{4^3}{x^6}$$

a)

$$\frac{3x \cdot y^0}{yx^3 \cdot y^3x}$$

$$\frac{y \cdot y^3 \cdot x \cdot x^3}{x^4 y^4}$$

$$\frac{3 \cdot x \cdot y^0}{x^4 \cdot y^4}$$

$$3x^{-3}y^{-4}$$

$$\frac{3}{x^3y^4}$$

b)

$$\frac{(4a^6)^2 \cdot a^{-3} \cdot b^{-9} \cdot b}{a^{10} \cdot b^2}$$

$$4^2 \cdot a^{12} \cdot a^{-3} \cdot b^{-9} \cdot b = \frac{16a^9b^{-8}}{a^{10}b^2}$$

$$16a^{-1}b^{-10}$$

$$\frac{16}{a^1b^{10}}$$

1. Simplify. Your answers should have only **positive** exponents.

a) $a^3 \cdot a^5$ $5+3=8$ a^8	b) $\frac{2^9}{2^3}$ $9-3=6$ 2^6
c) m^0 1	d) $-5x^0$ $-5 \cdot 1 = -5$ -5
e) $x^3 \cdot x^{-7}$ $x^{-4} = \frac{1}{x^4}$	f) $\frac{4^3}{4^8}$ $4^{-5} = \frac{1}{4^5}$
g) $(w^3)^5$ w^{15}	h) $(3x^5)^2$ $3^2 \cdot x^{10}$ $9x^{10}$

2. a) Simplify the expression. Your answers should have only **positive** exponents.

$$(2b^{-3})^3$$

$$2^3 \cdot b^{-9}$$

$$8 \cdot b^{-9}$$

$$= \boxed{8 \frac{1}{b^9} = \frac{8}{b^9}}$$

- b) Mallory simplified the expression but made some mistakes. Explain to her the corrections she needs to make.

$$(2b^{-3})^3$$

$$= 2b^{-6}$$

$$= \frac{2}{b^6}$$

you have to turn it to 2^3 also because the two is in the parenthesis and you multiply -3 and 3 which is -9 .
It should look like...

$$2^3 b^{-9} = 8b^{-9} = \boxed{8 \frac{1}{b^9} = \frac{8}{b^9}}$$

3. Simplify the expressions. Your answers should have only **positive** exponents.

a)

$$\frac{2a^0 \cdot b}{db^5 \cdot a^2b^1} = \frac{2 \cdot b^1}{a^2b^6} = \frac{2}{a^2b^5} = \frac{2}{a^2} \cdot \frac{1}{b^5} = \boxed{\frac{2}{a^2b^5}}$$

b)

$$\frac{(3x^5)^2 \cdot x^{-8} \cdot y^{-5} \cdot y}{x^3 \cdot y^2} = \frac{3^2 x^{10} \cdot x^{-8} \cdot y^{-4}}{x^3 \cdot y^2} = \frac{9 \cdot x^2 \cdot y^{-4}}{x^3 \cdot y^2} =$$
$$\frac{9}{x^1 \cdot y^{-6} \cdot x^3} = \boxed{\frac{9}{x^4 y^6}}$$