

Properties of Exponents

Simplify. Your answer should contain only positive exponents.

1) $2m^2 \cdot 2m^3$

2) $m^4 \cdot 2m^{-3}$

3) $4r^{-3} \cdot 2r^2$

4) $4n^4 \cdot 2n^{-3}$

5) $2k^4 \cdot 4k$

6) $2x^3y^{-3} \cdot 2x^{-1}y^3$

7) $2y^2 \cdot 3x$

8) $4v^3 \cdot vu^2$

9) $4a^3b^2 \cdot 3a^{-4}b^{-3}$

10) $x^2y^{-4} \cdot x^3y^2$

11) $(x^2)^0$

12) $(2x^2)^{-4}$

13) $(4r^0)^4$

14) $(4a^3)^2$

15) $(3k^4)^4$

16) $(4xy)^{-1}$

17) $(2b^4)^{-1}$

18) $(x^2y^{-1})^2$

19) $(2x^4y^{-3})^{-1}$

20) $(3m)^{-2}$

21) $\frac{r^2}{2r^3}$

22) $\frac{x^{-1}}{4x^4}$

23) $\frac{3n^4}{3n^3}$

24) $\frac{m^4}{2m^4}$

25) $\frac{3m^{-4}}{m^3}$

26) $\frac{2x^4y^{-4}z^{-3}}{3x^2y^{-3}z^4}$

27) $\frac{4x^0y^{-2}z^3}{4x}$

28) $\frac{2h^3j^{-3}k^4}{3jk}$

29) $\frac{4m^4n^3p^3}{3m^2n^2p^4}$

30) $\frac{3x^3y^{-1}z^{-1}}{x^{-4}y^0z^0}$

Properties of Exponents

Simplify. Your answer should contain only positive exponents.

$$1) 2m^2 \cdot 2m^3 = 2 \cdot 2 \cdot m \cdot m \cdot m \cdot m \cdot m$$

$$\boxed{4m^5}$$

$$2) m^4 \cdot 2m^{-3}$$

$$\frac{2 \cdot m \cdot m \cdot m \cdot m}{m \cdot m \cdot m} = \boxed{2m}$$

$$3) 4r^{-3} \cdot 2r^2$$

$$\frac{4 \cdot 2 \cdot r \cdot r}{r \cdot r \cdot r} = \boxed{\frac{8}{r}}$$

$$4) 4n^4 \cdot 2n^{-3}$$

$$\frac{4 \cdot 2 \cdot n \cdot n \cdot n \cdot n}{n \cdot n \cdot n} = \boxed{8n}$$

$$5) 2k^4 \cdot 4k$$

$$2 \cdot 4 \cdot k \cdot k \cdot k \cdot k \cdot k = \boxed{8k^5}$$

$$6) 2x^3y^{-3} \cdot 2x^{-1}y^3$$

$$\frac{2 \cdot 2 \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y}{y \cdot y \cdot y \cdot x} = \boxed{4x^2}$$

$$7) 2y^2 \cdot 3x$$

$$2 \cdot 3 \cdot y \cdot y \cdot x = \boxed{6y^2x}$$

$$8) 4v^3 \cdot wu^2$$

$$4 \cdot v \cdot v \cdot v \cdot w \cdot u \cdot u = \boxed{4v^3wu^2}$$

$$9) 4a^3b^2 \cdot 3a^{-4}b^{-3}$$

$$\frac{4 \cdot 3 \cdot a \cdot a \cdot a \cdot b \cdot b}{a \cdot a \cdot a \cdot a \cdot b \cdot b \cdot b} = \boxed{\frac{12}{ab}}$$

$$10) x^2y^{-4} \cdot x^3y^2$$

$$\frac{x \cdot x \cdot x \cdot x \cdot y \cdot y}{y \cdot y \cdot y \cdot y} = \boxed{\frac{x^5}{y^2}}$$

$$11) (x^2)^0 = \boxed{1}$$

$$12) (2x^2)^{-4}$$

$$\frac{1}{(2x^2)^4} = \frac{1}{2^4(x^2)^4} = \frac{1}{16x^8}$$

$$13) (4r^0)^4$$

$$(4 \cdot 1)^4 = \boxed{256}$$

$$14) (4a^3)^2$$

$$4^2(a^3)^2 = \boxed{16a^6}$$

$$15) (3k^4)^4$$

$$3^4(k^4)^4 = 81(k^4)(k^4)(k^4)(k^4)$$

$$\boxed{81k^{16}}$$

$$16) (4xy)^{-1}$$

$$\frac{1}{4xy}$$

$$17) (2b^4)^{-1}$$

$$\boxed{\frac{1}{2b^4}}$$

$$18) (x^2y^{-1})^2$$

$$\frac{(x^2)^2}{(y^{-1})^2} = \boxed{\frac{x^4}{y^2}}$$

$$19) (2x^4y^{-3})^{-1}$$

$$\frac{1}{(2x^4y^{-3})} = \boxed{\frac{y^3}{2x^4}}$$

$$20) (3m)^{-2}$$

$$\frac{1}{(3m)^2} = \frac{1}{3^2m^2} = \boxed{\frac{1}{9m^2}}$$

$$21) \frac{r^2}{2r^3}$$

$$\frac{\cancel{r^2}}{2\cancel{r^3}} = \boxed{\frac{1}{2r}}$$

$$22) \frac{x^{-1}}{4x^4}$$

$$\frac{1}{4x^4x} = \boxed{\frac{1}{4x^5}}$$

$$23) \frac{3n^4}{3n^3}$$

$$\frac{\cancel{3}n^4}{\cancel{3}n^3} = \boxed{n}$$

$$24) \frac{m^4}{2m^4}$$

$$\frac{\cancel{m^4}}{2\cancel{m^4}} = \boxed{\frac{1}{2}}$$

$$25) \frac{3m^{-4}}{m^3}$$

$$\frac{3}{m^4m^3} = \boxed{\frac{3}{m^7}}$$

$$26) \frac{2x^4y^{-4}z^{-3}}{3x^2y^{-3}z^4}$$

$$\frac{\cancel{2}x^{\cancel{4}}y^{\cancel{-4}}z^{\cancel{-3}}}{3x^2y^{\cancel{-3}}z^4} = \boxed{\frac{2x^2}{3yz^7}}$$

$$27) \frac{4x^0y^{-2}z^3}{4x}$$

$$\frac{\cancel{4} \cdot 1 \cdot z^3}{\cancel{4}xy^2} = \boxed{\frac{z^3}{xy^2}}$$

$$28) \frac{2h^3j^{-3}k^4}{3jk}$$

$$\frac{2h^{\cancel{3}}j^{\cancel{-3}}k^{\cancel{4}}}{3j^{\cancel{1}}k^{\cancel{1}}} = \boxed{\frac{2h^3k^3}{3j^4}}$$

$$29) \frac{4m^4n^3p^3}{3m^2n^2p^4}$$

$$\frac{\cancel{4}m^{\cancel{4}}n^{\cancel{3}}p^{\cancel{3}}}{\cancel{3}m^2n^2p^{\cancel{4}}} = \boxed{\frac{4m^2n}{3p}}$$

$$30) \frac{3x^3y^{-1}z^{-1}}{x^{-4}y^0z^0}$$

$$\frac{3x^{\cancel{3}}y^{\cancel{-1}}z^{\cancel{-1}}}{yz} = \boxed{\frac{3x^7}{yz}}$$