

Exponents Problems : types you

will see on exam...

e.g.1

$$(\textcircled{64} a^{-2} b^3)^{-2} \cdot (-\textcircled{8} a^3 b^{-2})^3$$

$$\downarrow \qquad \qquad \qquad \downarrow$$

$$(2^6 a^{-2} b^3)^{-2} \cdot (-2^3 a^3 b^{-2})^3$$

$$2^{-12} a^{-4} b^{-6} \cdot \boxed{-1} 2^9 a^9 b^{-6}$$

$$\frac{-2^{-3} a^{-13} b^{-12}}{1} = \frac{-a^{-13}}{2^3 b^{12}}$$

$$\begin{aligned}
 & \boxed{\text{e.g. 2}} \quad \left(-3p^{-6} \frac{q^3}{7}\right)^4 \cdot \left(\overset{3^3}{27} p^2 \frac{q^{-3}}{6}\right)^{-1} \\
 & \quad 3^4 p^{-24} \frac{q^{12}}{7^4} \cdot 3^{-3} p^{-2} \frac{q^3}{6} \\
 & = \frac{3^{-26} p^{-26} q^{15}}{1} = \frac{3 q^{15}}{p^{26}}
 \end{aligned}$$

es. 3

$$(a b^3 c^4)^{-2} \cdot (a^4 b^{-1} c)^{\frac{1}{4}}$$

$$a^{-2} b^{-6} c^{-8} \cdot a^1 b^{-\frac{1}{4}} c^{\frac{1}{4}}$$

$$\frac{a^{-1} b^{-\frac{25}{4}} c^{-\frac{31}{4}}}{1} = \frac{1}{a b^{\frac{25}{4}} c^{\frac{31}{4}}}$$

$$-\frac{6}{4} = -\frac{25}{4}$$

$$-\frac{8}{4} + \frac{1}{4} = -\frac{31}{4}$$

e.g. 4

$$\left(\frac{81}{a}\right)^{-2} \cdot \left(\frac{a^2}{9}\right)^{-4}$$

$$\left(\frac{3^4}{a}\right)^{-2} \cdot \left(\frac{a^2}{3^2}\right)^{-4}$$

$$\frac{\cancel{3^8}}{a^{-2}} \cdot \frac{a^{-8}}{\cancel{3^8}} = \frac{a^2}{a^8}$$

$$= \boxed{\frac{1}{a^6}}$$

e.g. 5

$$\left(\frac{b^3}{25}\right)^{-3} \cdot \left(\frac{625}{b^2}\right)^{-2}$$

$$\left(\frac{b^3}{5^2}\right)^{-3} \cdot \left(\frac{5^4}{b^2}\right)^{-2}$$

$$\left(\frac{5^2}{b^3}\right)^3 \cdot \left(\frac{b^2}{5^4}\right)^2$$

$$\frac{5^6}{b^9} \cdot \frac{b^4}{5^8} = \frac{1}{b^5 5^2}$$

e.g. 6

$$\left(-8a^{-2}by^3\right)^6 \div \left(16b^{\frac{1}{3}}a^3\right)^{-3}$$

$$\frac{\left(-8^2 a^{-2} b y^3\right)^6}{\left(16^{2^4} b^{\frac{1}{3}} a^3\right)^{-3}}$$

$$= \frac{2^{18} a^{-12} b^6 y^{18}}{2^{-12} b^1 a^{-9}} = \frac{2^{18} 2^{12} b^5 y^{18} a^9}{a^{12}}$$

$$= \frac{2^{30} b^5 y^{18}}{a^3}$$

e.g. 7

$$(-a^7 b^{-2})^{-1} \div (3^{\frac{1}{4}} b^{\frac{1}{3}} c^{-1})^{12}$$

$$-a^{-7} b^2 \div \frac{3^3 b^4 c^{-12}}{1}$$

$$\frac{-a^{-7} b^2}{1} \cdot \frac{1}{3^3 b^4 c^{-12}}$$

$$= \frac{-b^2 c^{12}}{a^7 3^3 b^4} = \boxed{\frac{-c^{12}}{3^3 a b^2}}$$

e.g. 8

$$\left(\frac{\cancel{27}^{3^3}}{3^3} \right)^4 \div \left(\frac{3^5}{\cancel{9}^{3^2}} \right)^{-2}$$

$$\frac{3^{12}}{3^{12}} \div \frac{3^{-10}}{3^{-4}}$$

$$\frac{3^{12}}{3^{12}} \div \frac{3^4}{3^{10}}$$

$$\frac{3^{12}}{3^{12}} \cdot \frac{3^{10}}{3^4} = \frac{3^8}{3^2}$$

e.g. 9)

$$\left(\frac{27}{8}\right)^{-5} \cdot \left(\frac{9}{16}\right)^4 \cdot \left(\frac{64}{81}\right)^3$$

$$\left(\frac{3^3}{2^3}\right)^{-5} \cdot \left(\frac{3^2}{2^4}\right)^4 \cdot \left(\frac{2^6}{3^4}\right)^3$$

$$\left(\frac{2^3}{3^3}\right)^5 \cdot \left(\frac{3^2}{2^4}\right)^4 \cdot \left(\frac{2^6}{3^4}\right)^3$$

$$\frac{2^{15}}{3^{15}} \cdot \frac{3^8}{2^{16}} \cdot \frac{2^{18}}{3^{12}}$$

$$= \frac{2^{33} 3^8}{2^{16} 3^{27}} = \frac{2^{17}}{3^{19}}$$

Do :

Review Booklet :

Questions 1-3 (pp 1-7)

5 (pp 10-11)

7 (pp 16-19)

Quiz Pkg : pp 1-4, 8-10