

Practice answers

Simplify completely. Use only positive exponents.

$$1) (4^4)^2 = 4^8$$

$$2) (2x^3)^2 = 2^2 x^6 = 4x^6$$

$$3) (2y^2)^3 = 2^3 y^6 = 8y^6$$

$$4) (uv^3)^4 = u^4 v^{12}$$

$$5) \frac{6^6}{6^3} = 6^{6-3} = 6^3$$

$$6) \frac{6}{6^6} = 6^{1-6} = 6^{-5} = \frac{1}{6^5}$$

$$7) \frac{3x^3}{5x^2} = \frac{3x^1}{5}$$

$$8) \frac{4n}{2n^5} = 2n^{-4} = \frac{2}{n^4}$$

$$9) \frac{2xy}{12x^4y^2} = \frac{2y^1}{x^4y^2} = \frac{2y^{-1}}{x^4} = \frac{2}{x^4y^1}$$

$$10) 10^7 \cdot 10^5 = 10^{12}$$

$$11) 5^7 \cdot 5^6 = 5^{7+6} = 5^{13}$$

$$12) 3n^9 \cdot 3n^8 = 9n^{17}$$

$$13) 9xy^2 \cdot 9yx^4 = 81x^5y^3$$

$$14) (-4)^4 = 256$$

$$15) (3x^9)^3 = 3^3 x^{27} = 27x^{27}$$

$$16) (3n^6)^4 = 3^4 n^{24} = 81n^{24}$$

$$17) (2x^2y^4)^5$$

$$= 2^5 x^{10} y^{20}$$

$$= 32x^{10}y^{20}$$

$$18) \frac{4^8}{4^{10}} = 4^{-2} = \frac{1}{4^2}$$

$$= \frac{1}{16}$$

$$19) \frac{4^9}{4^2} = 4^7$$

$$20) 3^0 = \text{ONE}$$

$$21) 3^3 = 27$$

4th grade problem

$$22) \frac{4r^7}{4r^5} = r^2$$

$$23) \frac{10m^8}{5m^9} = \frac{2}{m}$$

$$24) \frac{2x^2y^4}{9x^6y^8} = \frac{2x^{-4}y^{-4}}{9x^4y^4}$$

$$25) 2v^{-4}$$

Two over v to the fourth!

$$26) b^{-1} = \frac{1}{b}$$

Simplify completely. Use only positive exponents. BRING THE PAIN!

$$27) \frac{(2^4)^2}{2^3 \cdot 2^3} = \frac{2^8}{2^6} = 2^2$$

$$= 4$$

$$28) \left(\frac{2 \cdot 2^2}{2^2}\right)^2 = \left(\frac{2^3}{2^2}\right)^2 = (2^1)^2$$

$$= 2^2 = \text{Four}$$

$$29) \left(\frac{2m^5n^3}{(n^8)^2 \cdot m^4n^7}\right)^0 = \text{ONE}$$

$$30) \frac{(2yx^7)^9}{2x^9y^9 \cdot 2x^8}$$

9 9 63
2 y x
4 x⁹ y¹⁷

$$= \frac{512x^{54}y^{63}}{4y^8} = \frac{128x^{54}}{y^8}$$

$$31) \left(\frac{2m^9n^{10} \cdot 2m^8n^7}{(m^8n^3)^5}\right)^3 = \left(\frac{4m^{17}n^{17}}{m^{40}n^{15}}\right)^3$$

$$= (4m^{-23}n^2)^3 = 4^3 m^{-69} n^6 = \frac{64n^6}{m^{69}}$$

$$32) \frac{(x^7y^8)^9 \cdot 2y^8}{x^2y^9} = \frac{x^{63}y^{72} \cdot 2y^8}{x^2y^9} = \frac{2x^{63}y^{80}}{x^2y^9}$$

$$= 2x^{61}y^{71}$$

$$33) \frac{yx^2}{(2x^8y^{10})^7 \cdot 2x^8}$$

$$= \frac{yx^2}{2^7 x^{56} y^{70} \cdot 2x^8} = \frac{yx^2}{256x^{64}y^{70}}$$

$$= \frac{1}{256x^{62}y^{68}}$$

$$34) \frac{2m^5n^8 \cdot 2n^9}{(nm^5)^{10}}$$

$$= 4m^{-45}n^{17} = \frac{4n^{17}}{m^{45}}$$