

$$3. \quad [(-2)^2((-2)^3)]^4$$

$$= (-2)^2(-2)^{12}$$

$$= (-2)^{14}$$

$$= 2^{14}$$

5.

$$\frac{p^1 p^3}{p^3 p^3}$$

$$\frac{p^4}{p^3}$$

$$\frac{p}{3}$$

Multiplying
add the exponents
& leave the bases
alone.

Division

subtract the
exponents &
leave the bases
alone

$$11. \left(\frac{2}{2^4 \times 2^3} \right)^3$$

$$= \left(\frac{2^1}{2^7} \right)^3$$

$$= \left(\frac{2}{2^6} \right)^3$$

$$= \frac{2^1}{2^{18}}$$

Power of
a quotient

$$\begin{aligned}
 13. & -2v^4 \times 4v^0 \times 4v^{-4} \\
 &= -2v^4 \times 2v^{(0)} \times 2^2 v^{-4} \\
 &= -2^5 v^0 \\
 &= -2^5 (1) \\
 &= -32
 \end{aligned}$$

Anything to the power of zero equals 1.

14. Power with a negative exponent

$$-2x^{-2}x - 3x^1$$

$$= 6x^{-1}$$

$$= \frac{6}{x}$$

⇒ move negative exponent to the denominator

$$17. \left((-4)^3 \right)^{-4}$$

$$= (-4)^{-12}$$

$$= \frac{1}{(-4)^{12}}$$

23.

$$\begin{array}{r} 2 \cancel{7} 2 \quad y \quad 2 \\ \hline 3 \cancel{7} 2 \quad y \quad 3 \end{array}$$

$$\begin{array}{r} 1 \quad 2 \\ - \quad 1 \quad 3 \quad y \end{array}$$

$$21. (2y)^3 \times 2x^2y^3$$

$$= 2^3y^3 \times 2^1x^2y^3$$

$$= 2^4x^2y^6$$

$$= 16x^2y^6$$

36.

$$(2x^2y^3)^4$$

$$-2y^3x - 2x^0y^2$$

$$= \frac{2^4 x^8 y^{12}}{4x^0 y^3}$$

$$= \frac{16x^8 y^9}{4} = 4x^8 y^9$$

Finish assignments

#5 1 + 2

$$7. \quad \frac{(-4)^3}{1}$$

$$-4^1 \times (-4)^4$$

$$= \frac{(-4)^3}{-4^5}$$

$$= \frac{1}{-4^2}$$

$$\Rightarrow \frac{(-4)(-4)(-4)}{-4(4)(4)(4)(4)}$$

$$9. \left(- \frac{(2x^2 \times x^4)}{2x^2} \right)^3$$

$$= \left(- \frac{\cancel{2}x^6}{\cancel{2}x^2} \right)^3$$

$$= \left(-x^4 \right)^3$$

$$= -x^{12}$$

→ power to a power

multiply the exponents on the power line