

1. Simplify fully:

$$a^2 \times a^3 = a^5$$

$$b^3 \times b^4 = b^7$$

$$a^1 \times a^0 = a$$

$$b^0 \times b^0 = 1$$

$$x^3 \times x^{-1} = x^2$$

$$y^6 \times y^{-2} = y^4$$

$$c^5 \times c^3 = c^8$$

$$g^7 \times g^4 = g^{11}$$

$$h^1 \times h^0 = h$$

$$p^0 \times p^0 = 1$$

$$z^6 \times z^{-1} = z^5$$

$$q^6 \times q^{-4} = q^2$$

$$l^2 \times l^7 = l^9$$

$$m^1 \times m^4 = m^5$$

$$k^{-1} \times k^0 = k^{-1}$$

$$t^0 \times t^0 = 1$$

$$w^{-3} \times w^{-1} = w^{-4}$$

$$r^5 \times r^{-7} = r^{-2}$$

2. Simplify fully:

$$a^2 \times a^b = a^{b+2}$$

$$b^3 \times b^c = b^{c+3}$$

$$a^x \times a^0 = a^x$$

$$b^t \times b^c = b^{t+c}$$

$$x^{2y} \times x^{-1} = x^{2y-1}$$

$$y^{3w} \times y^{-2} = y^{3w-2}$$

$$c^r \times c^3 = c^{r+3}$$

$$g^{7t} \times g^4 = g^{7t+4}$$

$$h \times h^{4z} = h^{4z+1}$$

$$p^0 \times p^{3q} = p^{3q}$$

$$z^{6k} \times z^{-1} = z^{6k-1}$$

$$q^{6l} \times q^{-4} = q^{6l-4}$$

$$l^{2p} \times l^h = l^{2p+h}$$

$$m^{11y} \times m^{-4z} = m^{11y-4z}$$

$$k^{-v} \times k^{-k} = k^{-v-k}$$

$$t^{14r} \times t^{-14r} = 1$$

$$w^{-3t} \times w^{-6y} = w^{-3t-6y}$$

$$r^{51w} \times r^{-7m} = r^{51w-7m}$$

3. Simplify fully:

$$a^{2b} \times a^b \quad a^{3b}$$

$$b^{3c} \times b^c \quad b^{4c}$$

$$a^x \times a^{4x} \quad a^{5x}$$

$$b^t \times b^{5t} \quad b^{6t}$$

$$x^{2y+1} \times x^{3y-1} \quad x^{5y}$$

$$y^{3w+3} \times y^{2w-2} \quad y^{5w+1}$$

$$c^r \times c^{3r} \quad c^{4r}$$

$$g^{7t} \times g^{4t} \quad g^{11t}$$

$$h \times h^{4z+3} \quad h^{4z+4}$$

$$p^{q+1} \times p^{3q} \quad p^{4q+1}$$

$$z^{16k} \times z^{k-1} \quad z^{15k-1}$$

$$q^{6l+2} \times q^{l-4} \quad q^{7l-3}$$

$$l^{2p} \times l^{p+h} \quad l^{3p+h}$$

$$m^{11y} \times m^{y-4z} \quad m^{12y-4z}$$

$$k^{-v+1} \times k^{-k} \quad k^{-v-k+1}$$

$$t^{14r+4} \times t^{4-14r} \quad t^8$$

$$w^{4-3y} \times w^{-6y} \quad w^{4-9y}$$

$$r^{51w+4y+p} \times r^{-7m-3y-5p} \quad r^{-7m-4p+51w+y}$$

4. Simplify fully:

$$a^2 \div a^1 = a$$

$$b^3 \div b^2 = b$$

$$a^6 \div a^4 = a^2$$

$$b^5 \div b^5 = 1$$

$$\frac{x^2}{x^3} = x^{-1}$$

$$\frac{y^{13}}{y^2} = y^{11}$$

$$c^4 \div c^3 = c$$

$$g^7 \div g^4 = g^3$$

$$h \div h^4 = h^{-3}$$

$$p \div p^3 = p^{-2}$$

$$\frac{z^{16}}{z^{-1}} = z^{17}$$

$$\frac{q^6}{q^{-4}} = q^{10}$$

$$l^2 \div l^5 = l^{-3}$$

$$m^{11} \div m^{-4} = m^{15}$$

$$\frac{k^{11}}{k^2} = k^9$$

$$\frac{t^{14}}{t^4} = t^{10}$$

$$w^4 \div w^{-6} = w^{10}$$

$$r^{51w+4} \div r^{-7m-3} = r^{7m+51w+7}$$

5. Simplify fully:

$$a^{2b} \div a^b = a^b$$

$$b^{3c} \div b^c = b^{2c}$$

$$a^x \div a^{4x} = a^{-3x}$$

$$b^t \div b^{5t} = b^{-4t}$$

$$x^{2y+1} \div x^{3y-1} = x^{-y+2}$$

$$y^{3w+3} \div y^{2w-2} = y^{w+5}$$

$$c^r \div c^{3r} = c^{-2r}$$

$$g^{7t} \div g^{4t} = g^{3t}$$

$$h \div h^{4z+3} = h^{-4z-2}$$

$$p^{q+1} \div p^{3q} = p^{-2q+1}$$

$$z^{16k} \div z^{k-1} = z^{15k+1}$$

$$q^{6l+2} \div q^{l-4} = q^{5l+6}$$

$$l^{2p} \div l^{p+h} = l^{p-h}$$

$$m^{11y} \div m^{y-4z} = m^{10y+4z}$$

$$k^{-v+1} \div k^{-k} = k^{-v+k+1}$$

$$t^{14r+4} \div t^{4-14r} = t^{28r}$$

$$w^{4-3y} \div w^{-6y} = w^{4+3y}$$

$$r^{51w+4y+p} \div r^{-7m-3y-5p} = r^{7m+6p+51w+7y}$$

6. Simplify fully:

$$\frac{a^{2b}}{a^{3b}} a^{-b}$$

$$\frac{b^{3c}}{b^{2c}} b^c$$

$$\frac{a^x}{a^{5x}} a^{-4x}$$

$$\frac{b^{2t}}{b^{5t}} b^{-3t}$$

$$\frac{x^{2y+1}}{x^{4y-1}} x^{-2y+2}$$

$$\frac{y^{3w-3}}{y^{2w-2}} y^{w-1}$$

$$\frac{c^{2r}}{c^{3r}} c^{-r}$$

$$\frac{g^{7t}}{g^{4t+3}} g^{3t-3}$$

$$\frac{h^3}{h^{5z+2}} h^{-5z+1}$$

$$\frac{p}{p^{3q}} p^{-3q+1}$$

$$\frac{z^k}{z^{3k-1}} z^{-2k+1}$$

$$\frac{q^{2l+2}}{q^{2l-4}} q^6$$

$$\frac{l^{12p}}{l^{p+h}} l^{11p-h}$$

$$\frac{m^y}{m^{y-4z}} m^{4z}$$

$$\frac{k^{-v+1}}{k^{-2k}} k^{-v+2k+1}$$

$$\frac{t^{14r+4}}{t^{14-14r}} t^{28r-10}$$

$$\frac{w^{4-3y}}{w^{-8y}} w^{4+5y}$$

$$\frac{r^{51w+4y}}{r^{-m-3y-5p}} r^{m+5p+51w+7y}$$