## Exercise 2B

1f. $x^6y^4$

g. $15g^8$

h. $3h^8$

i. $8a^6 \times 9a^2$

$= 72a^8$

j. $p^4q^8 \times p^3q^9$

$= p^7q^{17}$

k. $16x^4y^2 \times 8x^3y^9$

$128x^7y^{11}$

l. $\frac{36a^2c^6}{9a^2c^5} = 4c$

m. $27m^{12}n^6 \times 4m^2n^4$

$= 108\ m^{14}n^{10}$

n. $\frac{7^4r^6s^4}{7^3r^3s^3} = 7rs$

o. $\frac{2^2x^2y^4z^6}{2xy^2z^3} = 2xy^2z^3$

2d. $8^2 = (2^3)^2 = 2^6$

e. $\frac{2^{15}}{2^{13}} = 2^2$

f. $\frac{2^5}{2^4} = 2$

g. $\frac{2^4}{2^4} = 2^0 = 1$

h. $\frac{2 \times 2^8}{2^9} = 2^0 = 1$

3h. $(3^{-1})^{-3} = 3^3 = 27$

i. $\left(\frac{5}{2}\right)^{-1} = \frac{2}{5}$

j. $2^{-7} = \frac{1}{2^7} = \frac{1}{128}$

k. $6^{-3} = \frac{1}{6^3} = \frac{1}{216}$

l. $\left(\frac{4}{3}\right)^{-3} = \left(\frac{3}{4}\right)^3 = \frac{27}{64}$

4c. $\frac{1}{4}2^{-3} = 2^{-2} \cdot 2^{-3} = 2^{-5} = \frac{1}{32}$

f. $\left(\frac{2}{4}\right)^{-3} = \left(\frac{1}{2}\right)^{-3} = 2^3 = 8$

5c. $\left(\frac{5}{2}\right)^{-1} = \frac{2}{5}$

f. $\frac{2}{5}$

6g. $\left(\frac{1}{2}y^{-2}\right)^{-3} = 2^3y^6$

l. $\frac{1}{p^8q^{16}r^{12}}$

n. $\frac{3^4n^{-8}}{9n} = 3^2n^{-9} = \frac{9}{n^9}$

p. $\frac{25a^6c^{-2}}{2a^{-1}c^2} = \frac{25a^7}{2c^4}$

r. $\frac{9x^{-4}y^2}{4^{-2}x^{-2}y^{-2}} = \frac{9 \times 16\ y^4}{x^2} = \frac{144\ y^4}{x^2}$

7a. $3^x = 3^{-2}$

$x = -2$

b $5^y = 5^0$

$y = 0$

c. $2^{2z+2-3} = 2^5$

$2z - 3 = 5$

$2z = 8$

$z = 4$

d. $\frac{7^{3x}}{7^{x-2}} = 7^{-2}$

$7^{3x-(x-2)} = 7^{-2}$

$3x - x + 2 = -2$

$2x = -4$

$x = -2$

e. $(4x2)^y = 8^{120}$

$8^y = 8^{120}$

$y = 120$

f. $3^t \times 3^{2(t+3)} = (3^3)^2$

$3^{t+2t+6} = 3^6$

$3t = 0$

$t = 0$

12. $\frac{3^{5x+2}}{9^{1-x}} = \frac{27^{4+3x}}{729}$

$\frac{3^{5x+2}}{3^{2-2x}} = \frac{3^{12+9x}}{3^6}$

$5x + 8 = 7x + 14$

$-6 = 2x$

$x = -3$