

1) Write as a power of 8

a)  $8^4 \times 8^3$

b)  $8^{12} \div 8^7$

2) Write as a power of 3

a)  $3^2 \times 3^9$

b)  $3^{10} \div 3^3$

3) Simplify

a)  $k^5 \times k^2$

b)  $x^4 \div x^2$

c)  $\frac{k^{11}}{k^6}$

d)  $(k^8)^2$

4) Simplify

eg.  $(2xy^3)^4 = 2xy^3 \times 2xy^3 \times 2xy^3 \times 2xy^3 = 16x^4y^{12}$

a)  $(2xy^5)^3$

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

c)  $(4xy^4)^2$

d)  $(3xy^2)^4$

5)  $2^x \times 2^y = 2^{10}$

and

$2^x \div 2^y = 2^2$

Work out the value of  $x$  and the value of  $y$ .

6)  $5^x \times 5^y = 5^{12}$

and

$5^x \div 5^y = 5^6$

Work out the value of  $x$  and the value of  $y$ .

7)  $a = 2^x$ ,  $b = 2^y$

Express in terms of  $a$  and  $b$

a)  $2^{x+y}$

b)  $2^{2x}$

c)  $2^{3y}$

d)  $2^{x+2y}$

## Index Notation

- 1) a) Simplify  $d \times d \times d \times d$   
b) Simplify  $t \times t^2$   
c) Simplify  $m^5 \div m^3$
  
- 2) a) Simplify  $(2x^2)^3$   
b) Simplify  $3x^2 \times 4x^5y^4$
  
- 3) a) Simplify  $t^4 \times t^5$   
b) Simplify  $x^8 \div x^5$   
c) Simplify  $(c^4)^3$
  
- 4) a) Simplify  $x^6 \times x^2$   
b) Simplify  $\frac{x^8}{x^3}$   
c) Simplify  $(2t)^3$   
d) Simplify  $3x^2y \times 4x^5y^4$
  
- 5) a) Simplify  $x^3 \times x^4$   
b) Simplify  $t^7 \div t^3$   
c) Simplify  $4x^2y^4 \times 3xy^2$
  
- 6) a) Simplify  $x \times x \times x \times x$   
b) Simplify  $2x \times 3y$