

Powers

Evaluate:

a) 7^2

b) 1^{12}

c) 2^5

d) 13^0

e) 3^4

Roots

Work out the value of:

a) $\sqrt{25}$

b) $\sqrt[3]{8}$

c) $\sqrt[3]{-27}$

d) $\sqrt[4]{10000}$

e) $\sqrt{\frac{1}{16}}$

Working with indices

Indices and products

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

b) $t^5 \times t \times t^3$

c) $g^5 \times g^{-2}$

d) $h \times h^{-4} \times h^3$

e) $f^{-4} \times d^3$

Indices and division

a) $p \div p^2$

b) $w^{-3} \div w^{-5}$

c) $u^2 \div u^3$

d) $q^2 \div q^{-8}$

e) $3 \div r^{-2}$

Indices and brackets

a) $(r^3)^2$

b) $(x^4)^{-3}$

c) $(3j^2)^3$

d) $5(h^2)^{-4}$

Negative indices

Write as a fraction in simplest form:

a) 5^{-1}

b) 3^{-2}

c) 2^{-4}

Write in the form x^{-n} :

d) $\frac{1}{7}$

e) $\frac{1}{1000} \quad (n \neq 1)$

f) $\frac{1}{25} \quad (n \neq 1)$

Indices and algebraic fractions

Simplify fully:

a) $\frac{r^7}{r^3}$

b) $\frac{e^3 \times e^7}{e^6}$

Simplify by writing in the form $c^n g^m$
where n and m are integers:

c) $\frac{c^4 \times g^2 \times g^5 \times c^3}{c^2 \times g^8}$

Further simplification

Simplify fully:

a) $3a^2b^5 \times 4a^3b^6$

b) $5d^{-3}e \times 2d^4e^{-3}$

c) $\frac{3w^8}{15w^2}$

d) $\frac{2g^3h \times 9g^2h^5}{6g^5h^2}$

Calculations with brackets

Evaluate, leaving your answer as
a fraction when necessary:

a) $(-2)^3$

b) $(\frac{3}{4})^3$

c) $(\frac{2}{3})^{-4}$

Rewrite as a fraction in its simplest
form:

d) $(\frac{a^2}{b^3})^{-2} \quad (a \neq b)$