POWERS AND ROOTS INTEGER POWERS

Ref: G133 1R1

| A1 Write as a single power of 5 $5 \times 5 \times 5 \times 5 \times 5 \times 5$ | A2 Write as a single power of 3 $3 \times 3^{4} \times 3^{7}$ | A3 Write as a single power of 4 $4^{5} \times 4^{2} \times 4$ | A4 Write as a single power of 2 $2^{6} \times 2^{4} \times 2^{-3}$ |
| :---: | :---: | :---: | :---: |
| B1 Write as a single power of 6 $\frac{6^{5}}{6^{3}}$ | B2 Write as a single power of 4 $4^{8} \div 4^{2}$ | B3 Write as a single power of 5 $\frac{5^{4}}{5^{7}}$ | B4 Write as a single power of 3 $3^{-2} \div 3^{5}$ |
| C1 Find the value of $n$ $\frac{4^{n} \times 4^{5}}{4^{3}}=4^{7}$ | C2 Find the value of $n$ $\frac{2^{5} \times 2^{n}}{2^{2}}=2^{8}$ | C3 Find the value of $n$ $\frac{5^{3} \times 5^{6}}{5^{n}}=5^{5}$ | C4 Find the value of $n$ $\frac{7^{n} \times 7^{n}}{7^{9}}=7^{-3}$ |
| D1 Write as a single power of 5 $\left(5^{4}\right)^{3}$ | D2 Write as a single power of 7 $\left(7^{2}\right)^{5}$ | D3 Write as a single power of 2 $\left(2^{3}\right)^{-2}$ | D4 Write as a single power of 4 $\left(4^{3}\right)^{2} \times\left(4^{2}\right)^{5}$ |

## POWERS AND ROOTS

## INTEGER POWERS

Ref: G133.

| A1 Write as a single power of 5 $5 \times 5 \times 5 \times 5 \times 5 \times 5$ $=5^{6}$ | A2 Write as a single power of 3 $\begin{gathered} 3 \times 3^{4} \times 3^{7} \\ =3^{12} \end{gathered}$ | A3 Write as a single power of 4 $\begin{gathered} 4^{5} \times 4^{2} \times 4 \\ =4^{8} \end{gathered}$ | A4 Write as a single power of 2 $\begin{gathered} 2^{6} \times 2^{4} \times 2^{-3} \\ =2^{7} \end{gathered}$ |
| :---: | :---: | :---: | :---: |
| B1 Write as a single power of 6 $\frac{6^{5}}{6^{3}}=6^{2}$ | B2 Write as a single power of 4 $\begin{gathered} 4^{8} \div 4^{2} \\ =4^{6} \end{gathered}$ | B3 Write as a single power of 5 $\frac{5^{4}}{5^{7}}=5^{-3}$ | B4 Write as a single power of 3 $\begin{gathered} 3^{-2} \div 3^{5} \\ =3^{-7} \end{gathered}$ |
| C1 Find the value of $n$ $\begin{aligned} \frac{4^{n} \times 4^{5}}{4^{3}} & =4^{7} \\ n+5-3 & =7 \\ n & =5 \end{aligned}$ | C2 Find the value of $n$ $\begin{aligned} \frac{2^{5} \times 2^{n}}{2^{2}} & =2^{8} \\ n+5-2 & =8 \\ n & =5 \end{aligned}$ | C3 Find the value of $n$ $\begin{aligned} \frac{5^{3} \times 5^{6}}{5^{n}} & =5^{5} \\ 3+6-n & =5 \\ n & =4 \end{aligned}$ | C4 Find the value of $n$ $\begin{aligned} \frac{7^{n} \times 7^{n}}{7^{9}} & =7^{-3} \\ 2 n-9 & =-3 \\ n & =3 \end{aligned}$ |
| D1 Write as a single power of 5 $\begin{aligned} & \left(5^{4}\right)^{3} \\ = & 5^{12} \end{aligned}$ | D2 Write as a single power of 7 $\left(7^{2}\right)^{5}$ $=7^{10}$ | D3 Write as a single power of 2 $\left(2^{3}\right)^{-2}$ $=2^{-6}$ | D4 Write as a single power of 4 $\begin{aligned} & \left(4^{3}\right)^{2} \times\left(4^{2}\right)^{5} \\ & =4^{6} \times 4^{10} \\ & =4^{16} \end{aligned}$ |

