



## POWERS AND ROOTS

### NO CALCULATOR

Ref: G133. **1R1**

#### INTEGER POWERS

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



## POWERS AND ROOTS INTEGER POWERS

### NO CALCULATOR

Ref: G133. **1R1**

<p><b>A1</b> Write as a single power of 5</p> $5 \times 5 \times 5 \times 5 \times 5 \times 5$ $= 5^6$	<p><b>A2</b> Write as a single power of 3</p> $3 \times 3^4 \times 3^7$ $= 3^{12}$	<p><b>A3</b> Write as a single power of 4</p> $4^5 \times 4^2 \times 4$ $= 4^8$	<p><b>A4</b> Write as a single power of 2</p> $2^6 \times 2^4 \times 2^{-3}$ $= 2^7$
<p><b>B1</b> Write as a single power of 6</p> $\frac{6^5}{6^3} = 6^2$	<p><b>B2</b> Write as a single power of 4</p> $4^8 \div 4^2$ $= 4^6$	<p><b>B3</b> Write as a single power of 5</p> $\frac{5^4}{5^7} = 5^{-3}$	<p><b>B4</b> Write as a single power of 3</p> $3^{-2} \div 3^5$ $= 3^{-7}$
<p><b>C1</b> Find the value of <math>n</math></p> $\frac{4^n \times 4^5}{4^3} = 4^7$ $n + 5 - 3 = 7$ $n = 5$	<p><b>C2</b> Find the value of <math>n</math></p> $\frac{2^5 \times 2^n}{2^2} = 2^8$ $n + 5 - 2 = 8$ $n = 5$	<p><b>C3</b> Find the value of <math>n</math></p> $\frac{5^3 \times 5^6}{5^n} = 5^5$ $3 + 6 - n = 5$ $n = 4$	<p><b>C4</b> Find the value of <math>n</math></p> $\frac{7^n \times 7^n}{7^9} = 7^{-3}$ $2n - 9 = -3$ $n = 3$
<p><b>D1</b> Write as a single power of 5</p> $(5^4)^3$ $= 5^{12}$	<p><b>D2</b> Write as a single power of 7</p> $(7^2)^5$ $= 7^{10}$	<p><b>D3</b> Write as a single power of 2</p> $(2^3)^{-2}$ $= 2^{-6}$	<p><b>D4</b> Write as a single power of 4</p> $(4^3)^2 \times (4^2)^5$ $= 4^6 \times 4^{10}$ $= 4^{16}$