

Calculations Using Indices (B)

ANSWERS



Section A *Work out the unknown value.*

1) $8^a \times 8^a = 8^{-12}$

$a = -6$

2) $2^b \times 10 = 5$

$b = -1$

3) $\frac{1}{3} \times 4^t = \frac{1}{48}$

$t = -2$

4) $(-5^{-1})^x = 1$

$x = 0$

5) $\sqrt[4]{9} = 9^y$

$y = \frac{1}{4}$

6) $\sqrt[3]{49} = 7^z$

$z = \frac{2}{3}$

Section B *Evaluate the following without a calculator.*

$144^{\frac{1}{2}}$	12
$277^{\frac{1}{3}}$	3
$(-1)^{\frac{1}{5}}$	-1
$\left(\frac{1}{8}\right)^{\frac{1}{3}}$	$\frac{1}{2}$

$4^{\frac{5}{2}}$	32
$64^{\frac{2}{3}}$	16
$(-1000)^{\frac{4}{3}}$	10000
$\left(-\frac{8}{343}\right)^{\frac{2}{3}}$	$\frac{4}{29}$

5^{-1}	$\frac{1}{5}$
3^{-2}	$\frac{1}{9}$
$(-2)^{-4}$	$\frac{1}{16}$

$\left(\frac{3}{4}\right)^{-2}$	$\frac{16}{9}$
0.2^{-3}	125

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Section C Draw a line matching the correct answer for each question.

1) $16^{\frac{1}{2}} \times 216^{\frac{1}{3}}$	A) 125
2) $8^{-\frac{1}{3}} \times 100^{-\frac{3}{2}}$	B) 24
3) $0.04^{-\frac{3}{2}}$	C) $\frac{1}{1000}$
4) $(5\frac{1}{16})^{-\frac{3}{4}}$	D) $\frac{8}{27}$
	E) 0.0005

Extension Express the following in the form 3^k

A) $\frac{1}{81}$

3^{-4}

B) $(\frac{1}{27})^{-5}$

3^{15}