



Calculations Using Indices (B)

Section A: Work out the unknown value.

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

a =

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

b =

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

t =

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

x =

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

y =

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

z =

Section B: Evaluate the following without a calculator.

$144^{\frac{1}{2}}$	
$27^{\frac{1}{3}}$	
$(-1)^{\frac{1}{5}}$	
$\left(\frac{1}{8}\right)^{\frac{1}{3}}$	

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

5^{-1}	
3^{-2}	
$(-2)^{-4}$	

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

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

1) $16^{\frac{1}{2}} \times 216^{\frac{1}{3}}$

2) $8^{-\frac{1}{3}} \times 100^{-\frac{3}{2}}$

3) $0.04^{-\frac{3}{2}}$

4) $\left(5\frac{1}{16}\right)^{-\frac{3}{4}}$

A) 125

B) 24

C) 1/1000

D) 8/27

E) 0.0005

Extension

Express the following in the form 3^k

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

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

How confidently can you solve calculations using fractional and negative indices?



Not confident



Fairly confident



Very confident

Your Score
