

# Index Notation 6



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

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