L9
Grade A
Progression: Quick

Powers, Roots & Indices

Section A: *Work out the following to 2 decimal places.*

With a calculator	***Without a calculator***
$(0.42)^5$ $\quad 3^2 \times 2^7$ $\quad \sqrt{16900}$ $\quad \sqrt[3]{7457.14}$ $\quad \sqrt[3]{-15.2}$ $\quad \left(\frac{0.8}{1.3}\right)^3$	3^4 $\quad \sqrt[3]{27}$ $\quad 2^5$ $\quad \left(\frac{2}{3}\right)^2$ $\quad \sqrt[3]{64}$ $\quad (-2)^3$ $\quad (0.8)^2$ $\quad \sqrt{12100}$

Section B: *Simplify the following into index form.*

Simplify into..	***....index form***
$7^2 \times 7^3$	
$8^2 \div 8^5$	
$9^5 \times 9^{-6}$	
$2^{-4} \div 2^{-9}$	
6^0	
$(2^2)^3$	
$(3^2)^2$	
$\frac{3^5 \times 3^{-7}}{3^2}$	
$2a^2b^{-3} \times 5a^{-1}b$	

Section C *Write the following as fractions.*

Index form	***Fraction***
7^{-1}	
3^{-1}	
2^{-1}	
2^{-2}	
3^{-2}	
2^{-3}	
10^{-5}	
w^{-3}	

Index form	***Fraction***
	$\frac{1}{5}$
	$\frac{1}{3^2}$
	$\frac{1}{16}$
	$\frac{1}{25}$
	$\frac{1}{27}$

Section D

Index form	*Work out the value*
$36^{\frac{1}{2}}$	
$100^{\frac{1}{2}}$	
$27^{\frac{1}{3}}$	
$512^{\frac{1}{3}}$	
$\left(\frac{64}{81}\right)^{\frac{1}{2}}$	
$\left(\frac{8}{512}\right)^{\frac{1}{3}}$	
$4^{-\frac{1}{2}}$	

Index form	
	$\sqrt{t}$
	$\sqrt[3]{w}$
	$\sqrt{d^3}$
	$\frac{1}{\sqrt{h}}$
	$\frac{1}{\sqrt[3]{q}}$
	$\frac{2}{\sqrt{x}}$

Section E: *Simplify the following into an algebraic fraction.*

Index form	*Algebraic fraction*
w^{-2}	
$w^{\frac{1}{2}}$	
$w^{-\frac{1}{2}}$	
$w^{\frac{1}{3}}$	
$w^{-\frac{1}{3}}$	
$w^{\frac{2}{3}}$	
$w^{-\frac{2}{3}}$	

Index form	*Algebraic fraction*
$4x^{-1}$	
$5x^{-2}$	
$\frac{1}{2}x^{-1}$	
$\frac{1}{4}x^{-1}$	
$\frac{1}{2}x^{-2}$	
$\frac{1}{5}x^{-3}$	
$6x^{-\frac{1}{2}}$	