National 5 & Int. 2   Indices

2018 P1 Q15	Remove the brackets and simplify $\left(\dfrac{2}{3}p^4\right)^2$.	2
Ans	$\dfrac{4}{9}p^8$	
2017 P2 Q12	Express $\dfrac{1}{\sqrt[3]{x}}$ in the form x^n.	2
Ans	$x^{-\frac{1}{3}}$	
2016 P2 Q2	A pollen sample weighs 12 grams and contains $1 \cdot 5 \times 10^9$ pollen grains. Calculate the weight of **one** pollen grain in grams. Give your answer in scientific notation.	2
Ans	8×10^{-9} grams	
2016 P2 Q10	Simplify $\left(n^2\right)^3 \times n^{-10}$. Give your answer with a **positive** power.	3
Ans	$\dfrac{1}{n^4}$	
2015 P1 Q14	Evaluate $8^{\frac{5}{3}}$.	2
Ans	32	

2015 P2 Q6	(a) The Earth is approximately spherical with a radius of 6400 kilometres. Calculate the volume of the Earth giving your answer in scientific notation, correct to 2 significant figures.	3
	(b) The approximate volume of the Moon is $2 \cdot 2 \times 10^{10}$ cubic kilometres. Calculate how many times the Earth's volume is greater than the Moon's.	2
Ans	(a) $1 \cdot 1 \times 10^{12}$ km³ (b) 50 times greater	
2015 P2 Q7	Simplify $\dfrac{5p^7 \times 4p^{-2}}{2p}$.	3
Ans	$10p^4$	
2014 P2 Q8	Simplify $\dfrac{n^5 \times 10n}{2n^2}$.	3
Ans	$5n^4$	
2014 P2 Q8	Simplify $\dfrac{8p^6}{2p^3 \times p}$.	3
Ans	$4p^2$	
2013 P2 Q9	Simplify $\dfrac{x^6}{y^2} \times \dfrac{y^3}{x^3}$.	2
Ans	x^3y	
2012 P2 Q11	Simplify, expressing your answer with positive indices. $(x^2 y^4) \div (x^{-3} y^6)$	2
Ans	$\dfrac{x^5}{y^2}$	
2011 P1 Q6	Evaluate $9^{\frac{3}{2}}.$	2
Ans	27	

2010 P1 Q7	Express $$p^3(p^2 - p^{-3})$$ in its simplest form.	2
Ans	$p^5 - 1$	
2009 P2 Q12	Simplify $\dfrac{ab^6}{a^3b^2}$.	2
Ans	$a^{-2}b^4$	
2008 P2 Q7a	Simplify $$\dfrac{m^5}{m^3}.$$	1
Ans	m^2	
2007 P2 Q12	Simplify the expression below, giving your answer with a positive power. $$m^5 \times m^{-8}$$	2
Ans	$\dfrac{1}{m^3}$	
2006 P1 Q9	Evaluate $$16^{\frac{3}{4}}.$$	2
Ans	8	
2005 P1 Q5	Simplify $$k^8 \times (k^2)^{-3}.$$	2
Ans	k^2	
2005 P2 Q10b	Express $\dfrac{a}{b} \times \dfrac{3b}{a^2}$ as a fraction in its simplest form.	2
Ans	$\dfrac{3}{a}$	
2004 P2 Q11c	Simplify $\dfrac{3a^5 \times 2a}{a^2}$	3
Ans	$6a^4$	

2003 P2 Q11a	Express $$a^{\frac{2}{3}}(a^{\frac{2}{3}} - a^{-\frac{2}{3}})$$ in its simplest form.	2
Ans	$a^{4/3} - 1$	
2002W P1 Q5b	Evaluate $4a^{\frac{2}{3}}$ when $a = 27$.	2
Ans	36	
2002W P2 Q12a	Simplify $$\frac{b^{\frac{5}{2}} \times b^{-\frac{1}{2}}}{b}.$$	2
Ans	b	
2002 P2 Q11a	Simplify $$6x^{\frac{3}{2}} \div 2x^{\frac{1}{2}}.$$	2
Ans	$3x$	
2001 P2 Q9a	Express $a^2(2a^{-\frac{1}{2}} + a)$ in its simplest form.	2
Ans	$2a^{3/2} + a^3$	