Nat 5/Credit/Int 2: Indices

Nat 5 2019 P2 Q16	**16.** Simplify $\frac{a^4 \times 3a}{\sqrt{a}}$. **3**	
Ans	$3a^{\frac{9}{2}}$	
Nat 5 2018 P1 Q15	**15.** Remove the brackets and simplify $\left(\frac{2}{3}p^4\right)^2$. **2**	
Ans	$\frac{4}{9}p^8$	
Nat 5 2017 P2 Q12	Express $\frac{1}{\sqrt[3]{x}}$ in the form x^n.	2
Ans	$x^{-\frac{1}{3}}$	
Nat 5 2016 P2 Q10	Simplify $\left(n^2\right)^3 \times n^{-10}$. Give your answer with a **positive** power.	3
Ans	$\frac{1}{n^4}$	
Nat 5 2015 P1 Q14	Evaluate $8^{\frac{5}{3}}$.	2
Ans	32	

Int 2 2015 P2 Q7	Simplify $\frac{5p^7 \times 4p^{-2}}{2p}$.	3
Ans	$10p^4$	
Nat 5 2014 P2 Q8	Simplify $\frac{n^5 \times 10n}{2n^2}$.	3
Ans	$5n^4$	
Int 2 2014 P2 Q8	Simplify $\frac{8p^6}{2p^3 \times p}$.	3
Ans	$4p^2$	
Nat 5 Specimen P1 Q1	(a) Multiply out the brackets and simplify: $x^{\frac{1}{2}}\left(x^{-\frac{3}{2}} + x^{-\frac{1}{2}}\right)$. (b) Find the exact value of this expression when $x = 6$.	3
Ans	(a) $x^{-1} + 1$ (b) $1\frac{1}{6}$	
Int 2 2012 P2 Q11	Simplify, expressing your answer with positive indices. $(x^2\, y^4) \div (x^{-3}\, y^6)$	2
Ans	$\frac{x^5}{y^2}$	
Int 2 2011 P1 Q6	Evaluate $9^{\frac{3}{2}}$.	2
Ans	27	

Int 2 2010 P1 Q7	Express $p^3(p^2 - p^{-3})$ in its simplest form.	2
Ans	$p^5 - 1$	
Int 2 2008 P2 Q7a	Simplify $\frac{m^5}{m^3}$.	1
Ans	m^2	
Credit 2008 P1	**9.** Simplify $m^3 \times \sqrt{m}$.	2
Ans	$m^{\frac{7}{2}}$	
Int 2 2007 P2 Q12	Simplify the expression below, giving your answer with a positive power. $m^5 \times m^{-8}$	2
Ans	$\frac{1}{m^3}$	
Credit 2007 P1 Q7	**7.** Remove brackets and simplify $a^{\frac{1}{2}}(a^{\frac{1}{2}} - 2)$.	2
Ans	$a - 2a^{1/2}$	
Int 2 2006 P1 Q9	Evaluate $16^{\frac{3}{4}}$.	2
Ans	8	
Credit 2006 P2	(b) Expand $m^{\frac{1}{2}}(2 + m^2)$.	2
Ans	$2m^{1/2} + m^{5/2}$	

Int 2 2005 P1 Q5	Simplify $k^8 \times (k^2)^{-3}$.	2
Ans	k^2	
Int 2 2005 P2 Q10b	Express $\frac{a}{b} \times \frac{3b}{a^2}$ as a fraction in its simplest form.	2
Ans	$\frac{3}{a}$	
Int 2 2004 P2 Q11c	Simplify $\frac{3a^5 \times 2a}{a^2}$	3
Ans	$6a^4$	
Credit 2004 P1	(*b*) Evaluate $2^0 + 3^{-1}$.	2
Ans	(*b*) $1\frac{1}{3}$	
Int 2 2003 P2 Q11a	Express $a^{\frac{2}{3}}(a^{\frac{2}{3}} - a^{-\frac{2}{3}})$ in its simplest form.	2
Ans	$a^{4/3} - 1$	
Credit 2003 P1	**12.** (*a*) Evaluate $8^{\frac{2}{3}}$.	2
Ans	4	
Int 2 2002W P1 Q5b	Evaluate $4a^{\frac{2}{3}}$ when $a = 27$.	2

Ans	36	
Int 2 2002W P2 Q12a	Simplify $\frac{b^{\frac{5}{2}} \times b^{-\frac{1}{2}}}{b}$.	2
Ans	b	
Int 2 2002 P2 Q11a	Simplify $6x^{\frac{3}{2}} \div 2x^{\frac{1}{2}}$.	2
Ans	3x	
Credit 2002 P1	**11.** Express in its simplest form $y^8 \times (y^3)^{-2}$.	2
Ans	**11.** y^2	
Int 2 2001 P2 Q9a	Express $a^2(2a^{-\frac{1}{2}} + a)$ in its simplest form.	2
Ans	$2a^{\frac{3}{2}} + a^3$	
Credit 2001 P1 Q11	**11.** The intensity of light, I, emerging after passing through a liquid with concentration, c, is given by the equation $I = \frac{20}{2^c} \quad c \geq 0.$ (*a*) Find the intensity of light when the concentration is 3. (*b*) Find the concentration of the liquid when the intensity is 10. (*c*) What is the maximum possible intensity?	6
Ans	**11.** (*a*) $I = \frac{20}{8}$ (*b*) $c = 1$ (*c*) 2^c is a Minimum $2^c = 1$ $I = 20$	

Credit 2000 P1 Q9	**9.** (*a*) Remove the brackets and simplify $a^{\frac{1}{2}}\left(a+\frac{1}{a}\right)$.	2
Ans	**9.** (*a*) $a^{\frac{3}{2}}+\frac{1}{a^{\frac{1}{2}}}$ **OR** $a^{\frac{3}{2}}+a^{-\frac{1}{2}}$	