1	Work out the value of	$\frac{3^7 \times 3^{-2}}{3^3}$	
			(Total for Question 1 is 2 marks)

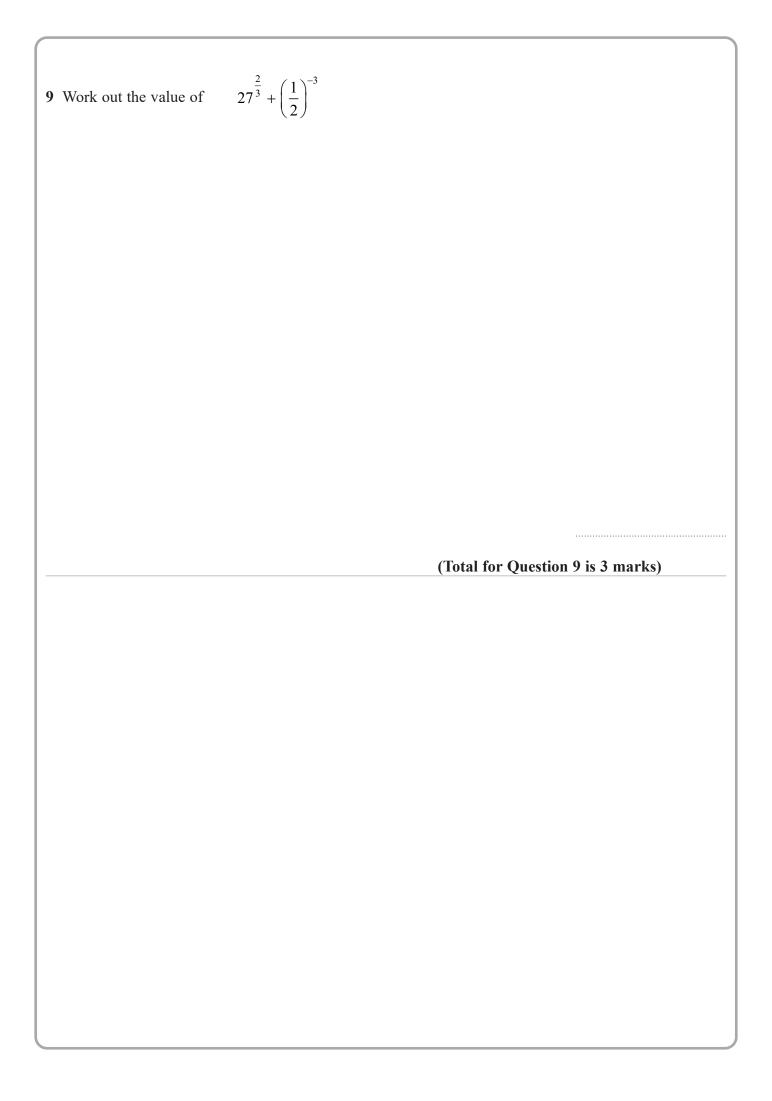
Patrick has to work out the exact value of $64^{\frac{1}{4}}$				
Patrick says,				
" $\frac{1}{4}$ of 64 is 16 so $64^{\frac{1}{4}} = 16$ "				
Explain what is wrong with what Patrick sa	ys.			
	(Total for Question 2 is 1 mark)			
	(100011011 Question 2 15 1 110111)			
(a) Write down the value of 7°				
	(1)			
(b) Find the value of $3 \times 3^6 \times 3^{-6}$				
(a) Find the value of 2-4	(1)			
(c) Find the value of 2^{-4}				
	(1)			
(d) Find the value of $27^{\frac{1}{3}}$	(1)			
	(1)			
	(Total for Question 3 is 4 marks)			

4	$p^3 \times p^x = p^9$		
	(a) Find the value of x.		
		<i>x</i> =	
		(1	
	$(7^2)^y = 7^{10}$		
	(b) Find the value of y.		
	(b) Find the value of y.		
		$y = \dots $ (1	
	100 ^a 1000 ^b 1 1 1 1 1 1 1 W	(1	,
	$100^a \times 1000^b$ can be written in the form 10^w		
	(c) Show that $w = 2a + 3b$		
		(2)
_	(Total for Ques	stion 4 is 4 marks)

5	(a) Write down the value of $36^{\frac{1}{2}}$	
	(b) Write down the value of 23 ^o	(1)
	(c) Work out the value of $27^{-\frac{2}{3}}$	(1)
		(2) (Total for Question 5 is 4 marks)

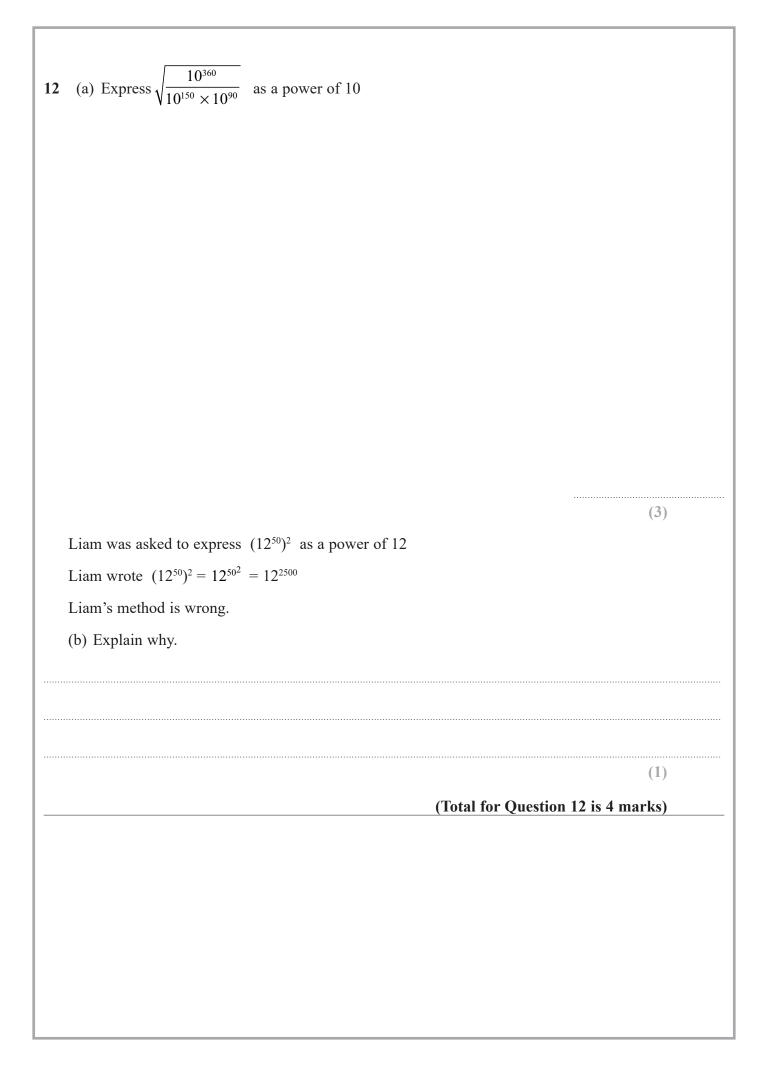
(a) Write down the value of $100^{\frac{1}{2}}$,
(b) Find the value of $125^{\frac{2}{3}}$	(1)	
	(2)	
	(Total for Question 6 is 3 marks)	
(a) Find the value of $81^{-\frac{1}{2}}$		
(b) Find the value of $\left(\frac{64}{125}\right)^{\frac{2}{3}}$	(2)	
	(2)	
	(Total for Question 7 is 4 marks)	
	(a) Write down the value of $100^{\frac{1}{2}}$ (b) Find the value of $125^{\frac{2}{3}}$ (a) Find the value of $81^{-\frac{1}{2}}$	(a) Write down the value of $100^{\overline{3}}$ (1) (b) Find the value of $125^{\frac{2}{3}}$ (2) (a) Find the value of $81^{-\frac{1}{2}}$ (2) (b) Find the value of $\left(\frac{64}{125}\right)^{\frac{2}{3}}$ (2)







(a) Work out an estimate for the value of $\sqrt{63.5 \times 101.7}$	
	(2)
$(2.3)^6 = 148$ correct to 3 significant figures.	
(b) Find the value of $(0.23)^6$ correct to 3 significant figures.	
	(1)
(c) Find the value of 5 ⁻²	
	(1)
(Total for Quest	ion 11 is 4 marks)
(Total for Quest	ion 11 is i marks)



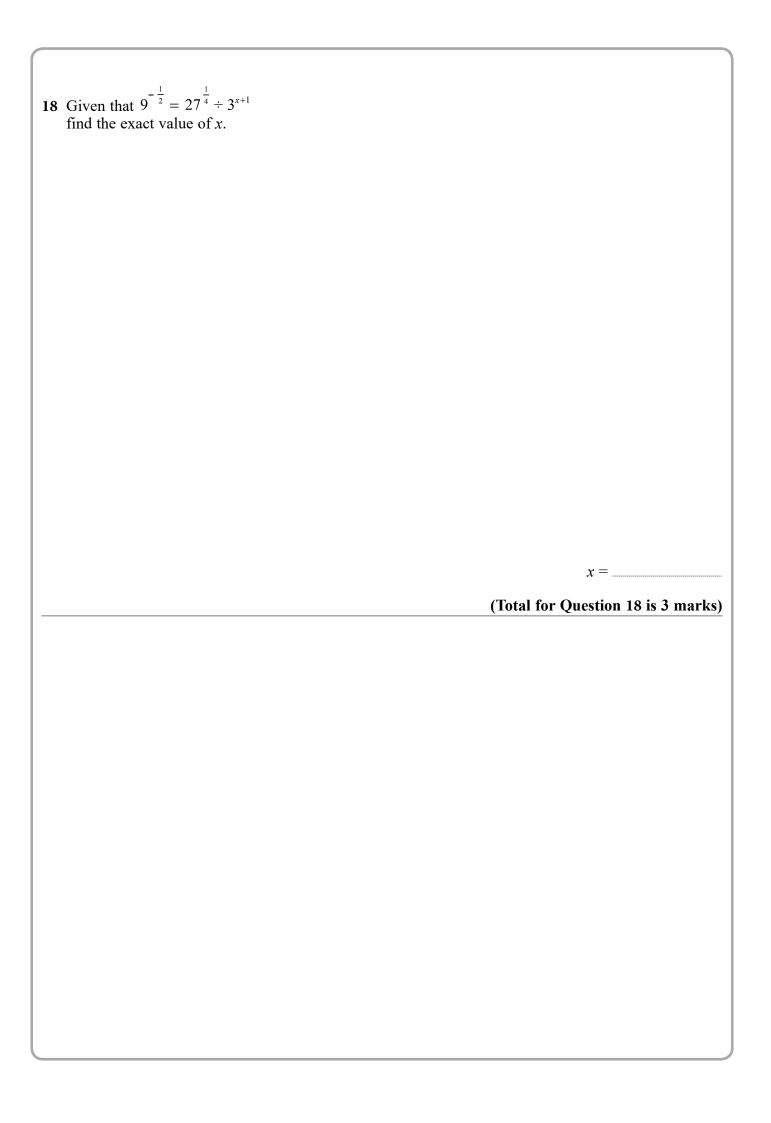
13	Here is a list of five nu	mbers.				
		98 ⁵³	9864	9873	9888	9891
	Find the lowest commo	on multiple	of these fiv	e numbers.		
					(Total for	Question 13 is 1 mark)

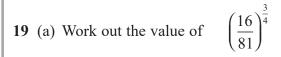
14 (a) Find the value of	$\sqrt[3]{8 \times 10^6}$		
(b) Find the value of	$144^{\frac{1}{2}} \times 64^{-\frac{1}{3}}$		(1)
(c) Solve $3^{2x} = \frac{1}{81}$			(2)
		<i>x</i> =	
			(2)
		(Total for Question 14	is 5 marks)

15		
(a) Find the value of $\sqrt[4]{81 \times 10^8}$		
•		
1		(2)
(b) Find the value of $64^{-\frac{1}{2}}$		
		(2)
3^n		
(c) Write $\frac{3^n}{9^{n-1}}$ as a power of 3		
		(2)
		(2)
	(Total for Question	15 is 6 marks)

16	
$16^{\frac{1}{5}} \times 2^x = 8^{\frac{3}{4}}$	
Work out the exact value of x .	
	(Total for Question 16 is 3 marks)
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17			
$(ax^6)^{\frac{1}{n}} = 7x^3$			
Work out the value of a and the value of n .			
	<i>a</i> =		
	<i>n</i> =		
	(Total for Question 17 is 2 marks)		





(2)

$$3^a = \frac{1}{9} \qquad \qquad 3^b = 9\sqrt{3} \qquad \qquad 3^c = \frac{1}{\sqrt{3}}$$

(b) Work out the value of a + b + c

(2)

(Total for Question 19 is 4 marks)

20

(a) Simplify $8^2 \times \sqrt[3]{4^6}$

Give your answer in the form 2^a where a is an integer.

Show each stage of your working clearly.

(2)

(3)

Given that $n^{\left(-\frac{4}{5}\right)} = \left(\frac{1}{2}\right)^4$ where n > 0

(b) find the value of n.

i =

(Total for Question 20 is 7 marks)



$$2^{2y} \times 2^{3y+2} = \frac{8^{5y}}{4^n}$$

Find an expression for n in terms of y.

Show clear algebraic working and simplify your expression.

(Total for Question 21 is 4 marks)

22	$\frac{18 \times \left(\sqrt{27}\right)^{4n+6}}{6 \times 9^{2n+8}} = 3^x$
	Express x in terms of n Show your working clearly and simplify your expression.
	$x = \dots$
	(Total for Question 22 is 3 marks)