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

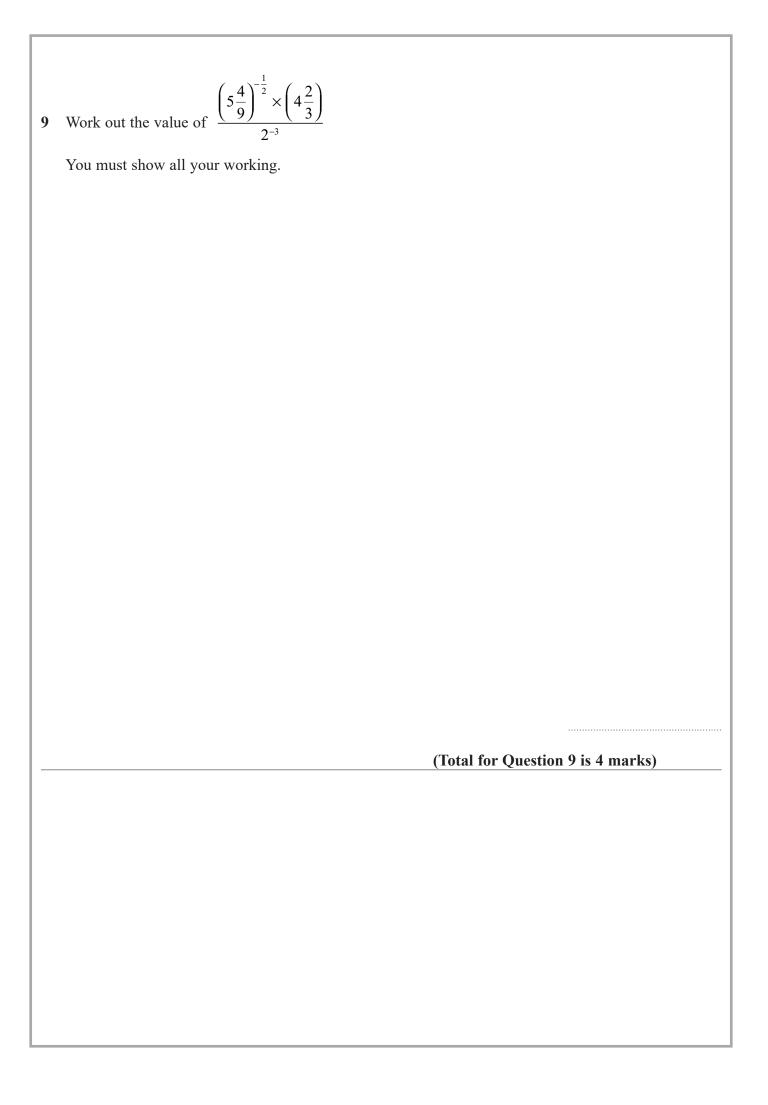
Patrick has to work out the exact value of	$64^{\frac{7}{4}}$
Patrick says,	
" $\frac{1}{4}$ of 64 is 16 so $64^{\frac{1}{4}} = 16$ "	
Explain what is wrong with what Patrick sa	ys.
	(Total for Question 2 is 1 mark)
	(2000.20. Quoosso. 2.20. 2.00.2.)
(a) Write down the value of 70	
	(1)
(b) Find the value of $3 \times 3^6 \times 3^{-6}$	
(c) Find the value of 2 <sup>-4</sup>	(1)
(c) I find the value of 2	
	(1)
(d) Find the value of $27^{\frac{1}{3}}$	
	(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 <sup>a</sup> 1000 <sup>b</sup> 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	)

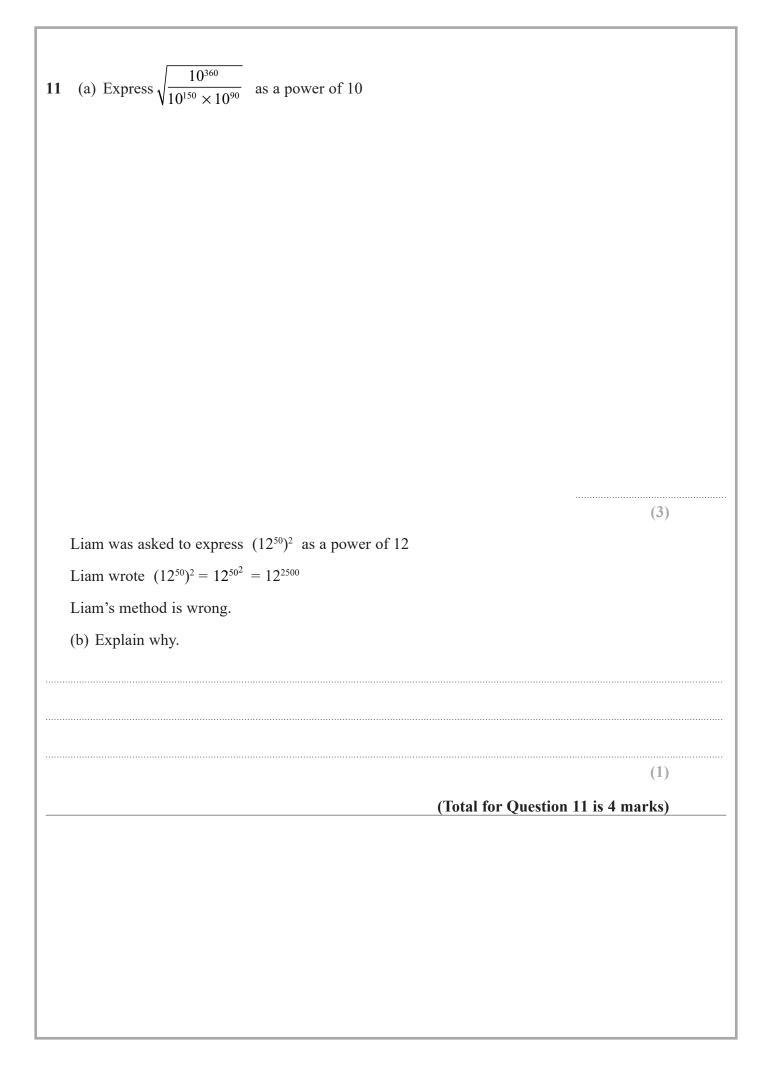
5	(a) Write down the value of $36^{\frac{1}{2}}$	
	(b) Write down the value of 23 <sup>o</sup>	(1)
	(c) Work out the value of $27^{-\frac{2}{3}}$	(1)
		(2) (Total for Question 5 is 4 marks)

(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)

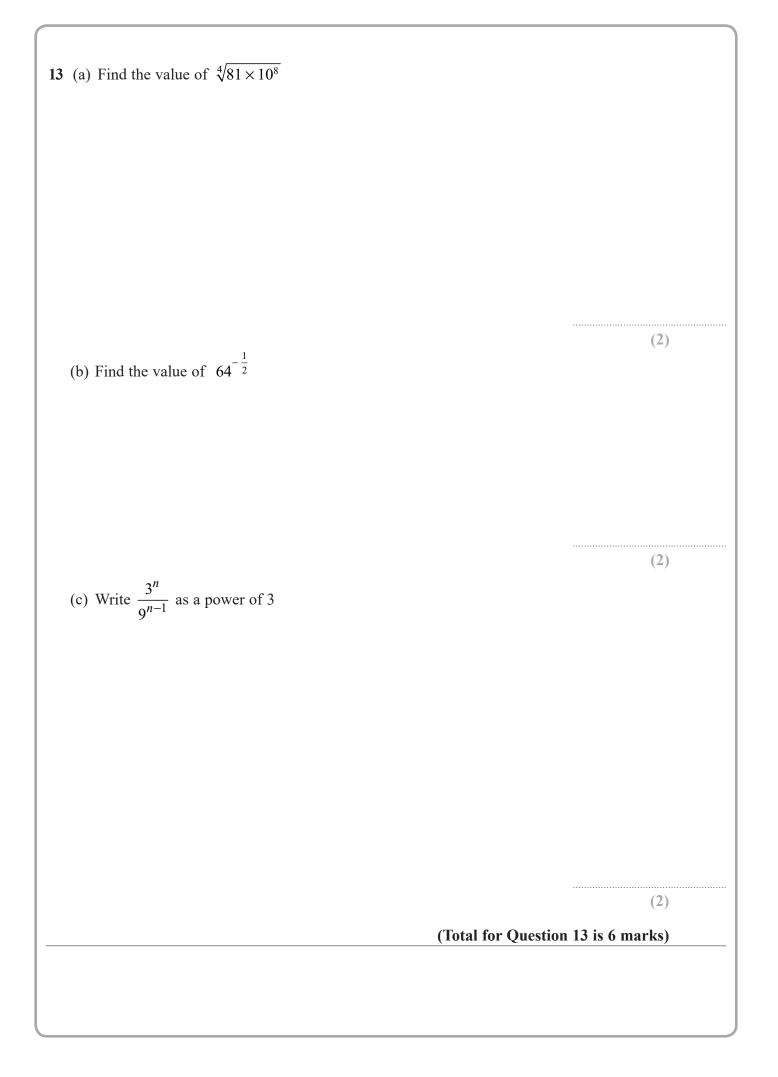




10	(a) Work out an estimate for the value of $\sqrt{63.5 \times 101.7}$	
	(a) Work out an estimate for the value of \$\infty\$ 03.3 \times 101.7	
		(2)
	$(2.3)^6 = 148$ correct to 3 significant figures.	
	(b) Find the value of $(0.23)^6$ correct to 3 significant figures.	
		(1)
	(c) Find the value of $5^{-2}$	
		(1)
_	(Total for Question	10 is 4 marks)

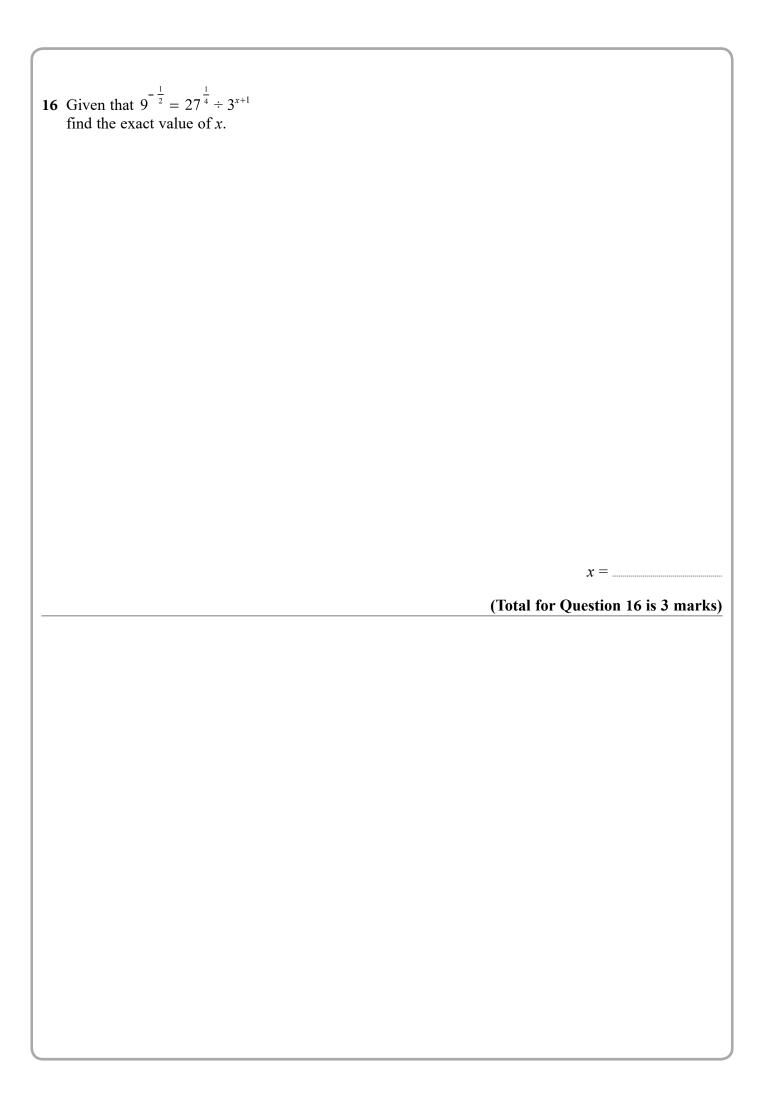


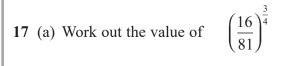
12	Here is a list of five n	numbers.				
		9853	$98^{64}$	9873	$98^{88}$	9891
	Find the lowest comn	non multiple	of these fiv	ve numbers.		
					(Total for	Question 12 is 1 mark)



14 $(ax^6)^{\frac{1}{n}} = 7x^3$	
Work out the value of $a$ and the value of $n$ .	
	<i>a</i> =
	<i>n</i> =
	(Total for Question 14 is 2 marks)

$16^{\frac{1}{5}} \times 2^x = 8^{\frac{3}{4}}$
Work out the exact value of $x$ .
 (Total for Question 15 is 3 marks)
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(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 17 is 4 marks)

18

(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.

 $\eta = \dots$ 

(Total for Question 18 is 7 marks)

19 (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.

(3)

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

(b) find the value of n.



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

Find an expression for n in terms of y.

Show clear algebraic working and simplify your expression.



(Total for Question 20 is 7 marks)

21	$\frac{18 \times \left(\sqrt{27}\right)^{4n+6}}{6 \times 9^{2n+8}} = 3^x$
	Express $x$ in terms of $n$ Show your working clearly and simplify your expression.
	$\chi = \dots$
	(Total for Question 21 is 3 marks)