

Indices

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NAME _____

DATE _____

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- 1 (a) Simplify $t^7 \times t^6$  NON-CALCULATOR 3 MARKS
 (b) Simplify $t^{12} \div t^4$
 (c) Simplify $(t^2)^2$

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- 2 (a) Write down the value of 5^0  NON-CALCULATOR 3 MARKS
 (b) Work out 3^{-2}
 Give your answer as a fraction.
 (c) Write $\frac{1}{k^3}$ as a power of k

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- 3 (a) Simplify fully $4w^2 \times 2w^3$  NON-CALCULATOR 4 MARKS
 (b) Simplify fully $\frac{8w^5}{4w^2}$

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- 4 (a) $10^x = \frac{1}{1000}$  NON-CALCULATOR 2 MARKS
 Calculate the value of x .
 (b) $3^x = 27$
 Calculate the value of x .
-

5 Hannah and Oscar are each checking some index working.

NON-CALCULATOR 3 MARKS

(a) Hannah writes $(7^8)^6 = 7^{14}$

Is Hannah correct? Give a reason for your answer.

(b) Oscar wants to simplify

He $7t^4 \times 5t^2$
 $12t^8$

says,

"Add

7

and

5,

then

multiply

4

and

2."

His

answer

is

Write

correct

or

not

correct

for

each

part

of

his

method,

and

show

the

working

that

decides

each

one.

Part of the method	Correct or not correct
Add 7 and 5	
Multiply 4 and 2	

6 Simplify fully $\frac{(p^2)^4}{p^6}$

NON-CALCULATOR 2 MARKS

7 Work out the value of $(2 \times 2^3) \div (2^2 \times 2^4)$

NON-CALCULATOR 3 MARKS

Give your answer as a decimal.

8 Give each answer as a single power of the prime number named in the part.

NON-CALCULATOR 5 MARKS

(a) Write $16 \times 2^7 \times 2^3$ as a single power of 2.

(b) Simplify $32^3 \times 16^4$

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

9 $16t^6 = (at^3)^b$

NON-CALCULATOR 2 MARKS

where a and b are positive integers.

Work out the value of a and the value of b .

10 (a) Simplify fully $6c^4d^3 \times 3c^3d^3$

NON-CALCULATOR 4 MARKS

(b) Simplify fully $\frac{36c^8d^7}{6c^4d^3}$

1	(a) t^{13} (b) t^8 (c) t^4	2	(a) 1 (b) $\frac{1}{9}$ (c) k^{-3}
3	(a) $8w^5$ (b) $2w^3$	4	(a) -3 (b) 3
5	(a) No: a power of a power multiplies the indices, $8 \times 6 = 48$, so $(7^8)^6 = 7^{48}$ (b) Add 7 and 5: not correct. Multiply 4 and 2: not correct.	6	p^2
7	0.25	8	(a) 2^{14} (b) 2^{31}
9	$a = 4$ and $b = 2$	10	(a) $18c^7d^6$ (b) $6c^4d^4$