Laws of Indices

GCSE Maths · Foundation and Higher tier · Grades 4–6 · About 20 minutes · 8 questions

Name _____ Date _____ Score / 8

WHAT YOU WILL PRACTISE

- Multiply and divide powers of the same base
- Raise a power to another power
- Evaluate zero and negative indices

WORKED EXAMPLE

Simplify $(2x^3)^2 \times x^4$.

1. Square everything inside the bracket: $2^2 = 4$ and $(x^3)^2 = x^6$, giving $4x^6$.
2. Multiply by x^4 by adding the indices: $6 + 4 = 10$.
3. Write the result: $4x^{10}$.

Answer: $4x^{10}$

Questions

Show your working in the space under each question.

1. Simplify $a^3 \times a^4$

2. Simplify $x^9 \div x^4$

3. Simplify $(y^3)^4$

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4. Simplify $3a^2 \times 4a^5$

5. Simplify $12x^8 \div 3x^2$

6. Work out the value of 5^0

7. Work out the value of 2^{-3}

8. Work out the value of $4^3 \times 4^{-1}$

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Answers: Laws of Indices

Mark your own work, then go back to any question you got wrong before reading the tutor tip.

Q	QUESTION	ANSWER
1	Simplify $a^3 \times a^4$	a^7
2	Simplify $x^9 \div x^4$	x^5
3	Simplify $(y^3)^4$	y^{12}
4	Simplify $3a^2 \times 4a^5$	$12a^7$
5	Simplify $12x^8 \div 3x^2$	$4x^6$
6	Work out the value of 5^0	1
7	Work out the value of 2^{-3}	1/8
8	Work out the value of $4^3 \times 4^{-1}$	16

TUTOR TIP

Multiplying means add the indices, dividing means subtract them, and a power of a power means multiply them. Numbers in front are multiplied or divided as normal.

Stuck on a question? Work through it live with a tutor.

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