Laws of Indices

Year 10–11 Maths · Years 10–11 · NCEA Level 1 · 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.

YFCampus offers one-to-one online Maths tutoring matched to your school curriculum. Book a free trial class at **www.yfcampus.com/nz**

Written for students aged 13 to 16 and suitable for Years 10–11. Check your school's curriculum for the exact order of topics. YFCampus is independent and is not affiliated with any exam board or education ministry.