

Interleaved: laws of indices

ANSWERS

1

Write $5^4 \times 5^3$ as a single power of 5.

Which method? Add the powers

Subtract the powers Multiply the powers

multiplying: add the powers, $4 + 3$

Answer 5^7

2

Simplify $x^9 \div x^4$

Which method? Add the powers

Subtract the powers Multiply the powers

dividing: $9 - 4$

Answer x^5

3

Write $(2^3)^4$ as a single power of 2.

Which method? Add the powers

Subtract the powers Multiply the powers

power of a power: 3×4

Answer 2^{12}

4

Write $7^{10} \div 7^3$ as a single power of 7.

Which method? Add the powers

Subtract the powers Multiply the powers

$10 - 3$

Answer 7^7

5

Simplify $(y^5)^3$

Which method? Add the powers

Subtract the powers Multiply the powers

5×3

Answer y^{15}

6

Simplify $a^2 \times a^6 \times a$

Which method? Add the powers

Subtract the powers Multiply the powers

a is a^1 : $2 + 6 + 1$

Answer a^9

7

Simplify $6x^8 \div 2x^3$

Which method? Add the powers

Subtract the powers Multiply the powers

$6 \div 2 = 3$, and $8 - 3 = 5$

Answer $3x^5$

8

Simplify $(3a^4)^2$

Which method? Add the powers

Subtract the powers Multiply the powers

$3^2 = 9$, and $4 \times 2 = 8$

Answer $9a^8$

Interleaved: laws of indices *further practice*

ANSWERS

9

Simplify $4x^3 \times 5x^6$

$4 \times 5 = 20$, and $3 + 6 = 9$

Answer $20x^9$

10

Find the value of n when $(5^n)^3 = 5^{24}$

$3n = 24$

Answer $n = 8$

11

Work out $2^{10} \div 2^7$. Give your answer as an ordinary number.

$2^3 = 8$

Answer 8

12

Find the value of n when $3^n \times 3^5 = 3^{12}$

$n + 5 = 12$

Answer $n = 7$

13

Simplify $(2x^5)^3$

$2^3 = 8$, and $5 \times 3 = 15$

Answer $8x^{15}$

14

A rectangle has area $12a^7 \text{ cm}^2$. Its width is $4a^2 \text{ cm}$. Find an expression for its length.

length = area $\div$ width: $12 \div 4$, and $7 - 2$

Answer $3a^5 \text{ cm}$

15

A crate holds 2^5 bags. Each bag holds 2^4 sweets. How many sweets are in the crate? Give your answer as a power of 2.

$5 + 4$

Answer 2^9

16

Leo says $(x^4)^3 = x^7$. Explain his mistake and give the right answer.

he added the powers; a power of a power multiplies them, 4×3

Answer x^{12}