Index Laws

1

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

$\square \times \square \times \square \times \square \times \square \times \square \times \square \times \square \times \square \times \square$

Multiply, so add the powers.

$3^4 \times 3^5 = 3^{\square}$

2

Write $7^8 \div 7^3$ as a single power of 7.

$$\frac{7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7}{7 \times 7 \times 7}$$

Cancel the 7s. Divide, so subtract the powers.

$7^8 \div 7^3 = 7^{\square}$

3

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

$$\underbrace{2^4 \times 2^4 \times 2^4}_{3 \text{ lots}}$$

A power of a power: multiply the powers.

$(2^4)^3 = 2^{\square}$

4

Work out $6^5 \div 6^5$. Write it as a power of 6, then as a number.

Divide, so subtract the powers.

$6^5 \div 6^5 = 6^{\square} = \square$

5

Simplify $2x^3 \times 6x^4$

Numbers _____

Powers _____

Answer _____

6

Simplify $\dfrac{18y^9}{3y^5}$

Numbers _____

Powers _____

Answer _____

7

Simplify $(m^5)^2 \times m^3$

_____

_____

Answer _____

8

Kai writes $(3x^2)^4 = 3x^8$.

Explain what Kai has done wrong.

Then write the right answer.

_____

_____

Answer _____

Index Laws *further practice*

9

Simplify

$$7p^3 \times 3p^6$$

Answer _____

10

Simplify

$$\frac{24t^{10}}{6t^4}$$

Answer _____

11

Write an expression for the area of this rectangle. Simplify it.



Area = _____

12

A collector has 3^7 stamps. Each page of her album holds 3^3 stamps.
How many pages does she fill?
Give your answer as a power of 3 and as an ordinary number.

Answer _____

13

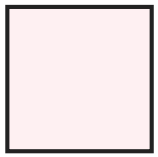
Which is bigger? Show how you know.

$$(2^3)^4 \text{ or } 2^5 \times 2^6$$

Answer _____

14

This square has sides of the length shown. Find its area. Simplify your answer.



Area = _____

15

Simplify fully

$$\frac{(2x^3)^2 \times 5x^4}{10x^6}$$

Answer _____

16

Ella says $9^0 = 0$, because there are no nines. Is Ella right?
Explain how you know.

Answer _____