

Indices

Think Tae Toe

Name:

Simplifying indices

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Indices Rules

An index tells us how many times a term has been multiplied by itself. The plural of index is indices. Indices can be positive or negative numbers.

Below is an example of a term written in index form:

4³ 4 is the base and 3 is the index.

Laws of indices provide us with rules for simplifying calculations or expressions involving powers of the same base.

The first rule:
$$a^n \times a^m = a^{m+n}$$

The second rule: $(a^n)^m = a^{mn}$

The third rule: $a^m \div a^n = a^{m-n}$

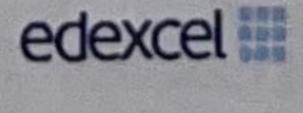
The fourth rule: $a^n = 1$

The fifth rule: $a^n = \frac{1}{a}$

The sixth rule: $a^n = \sqrt{a}$
 $a^n = (a^n)^n = (\sqrt[n]{a})^n$















Let's start! Choose three rectangles to simplify. They must go in a straight line.

Can you solve more?

$(3^7 \times 3^4)^2 = 3^{22}$	$14^8 \times 14^5 = 14^{13}$	$7^8 \div 7^5 = 7^3$
3^{10} 3^{10} $= 3^{12}$	$6^9 \times 6^{-6} = 6^3$	$2^5 \div 2^5 = 1$
$(5^6 \times 5^3)^3 = 5^{27}$	$4^{-4} \times 4^4 = 4^0 = 1$	$3^7 \div 3^9 = 3^{-2} = \frac{1}{3^2}$
5 ¹¹ 5" = 5 16		
$8^2 \times 8^5 = 8^7$	$(2^7 \times 2)^3 = 2^{24}$	$31^7 \times 31^6 = 31^3$
$11^9 \times 11^{-8} = 11^9$	2^{10} 2^{10} $= 2^{14}$	$13^{12} \times 13^{-11} = 13$
$7^{-5} \times 7^{5} = 7 = 1$	$\frac{(13^8 \times 13^3)^2 = 13^{22}}{13^{14}}$	$1^{-7} \times 1^7 = - $
	= 138	
$26^8 \div 26^5 = 26$	$8^8 \times 8^5 = 8^{13}$	$\frac{(5^6 \times 5^3)^3}{5^{11}} = 5^{27}$ 5 11
$2^5 \div 2^5 = 1$	$7^9 \times 7^{-6} = 7^3$	$= 5^{16}$ $= 5^{16}$ $(117 \times 114)^2 = 11^{22}$
$3^7 \div 3^9 = 3^{-2}$	$20^{-7} \times 20^7 = 20^\circ$	$\frac{(11' \times 11')^{-}}{11^{10}} = \frac{11}{11^{10}}$ $= \frac{11^{10}}{11^{12}}$
$\frac{3^2}{3^2}$		
You can solve more!		

You can solve more!

How many straight lines did you get? _____