Indices: Negative Powers

ANSWERS

1

Work out 6^{-2}

a negative power means one over

$= \frac{1}{6^2}$

work out the power

$= \frac{1}{36}$

Answer $\frac{1}{36}$

2

Work out 2^{-5}

a negative power means one over

$= \frac{1}{2^5}$

work out the power

$= \frac{1}{32}$

Answer $\frac{1}{32}$

3

Work out 10^{-3}

a negative power means one over

$= \frac{1}{10^3}$

work out the power

$= \frac{1}{1000}$

Answer $\frac{1}{1000}$

4

Work out 3^{-4}

a negative power means one over

$= \frac{1}{3^4}$

work out the power

$= \frac{1}{81}$

Answer $\frac{1}{81}$

5

Work out $\left(\frac{2}{5}\right)^{-3}$

the minus flips it over

$= \left(\frac{5}{2}\right)^3$

use the power on the top and the bottom

$= \frac{5^3}{2^3}$

Answer $\frac{125}{8}$

6

Work out $\left(\frac{1}{6}\right)^{-2}$

flip: 6^2

Answer 36

7

Simplify $x^5 \times x^{-9}$
Give your answer with no negative powers.

$x^{5+(-9)} = x^{-4}$

Answer $\frac{1}{x^4}$

8

Write $\frac{1}{125}$ as a power of 5.

$\frac{1}{125} = \frac{1}{5^3}$

5^{-3}

Answer

Indices: Negative Powers *further practice*

ANSWERS

9

Work out

$$4^{-1} + 2^{-2}$$

$\frac{1}{4} + \frac{1}{4}$

Answer $\frac{1}{2}$

10

Write in order, smallest first.

$$4^{-1} \quad 5^{0} \quad 2^{-3} \quad 3^{-2}$$

$\frac{1}{9}, \frac{1}{8}, \frac{1}{4}, 1$

Order $3^{-2}, 2^{-3}, 4^{-1}, 5^{0}$

11

Simplify. Give your answer with no negative powers.

$$\frac{x^{-2} \times x^{5}}{x^{7}}$$

x^{3}, x^{3-7}

Answer $\frac{1}{x^{4}}$

12

The number of bacteria, N, on a surface t hours after it is cleaned is given by the formula below.
Find N when $t = 4$.

$$N = 512 \times 2^{-t}$$

$2^{-4} = \frac{1}{16}$

Answer 32

13

Find the value of n.

$$3^{n} = \frac{1}{81}$$

$81 = 3^{4}$

Answer $n = -4$

14

A rectangle is 2^{-3} m long and 2^{-1} m wide. Write its area as a power of 2.

$\frac{1}{8} \times \frac{1}{2} = \frac{1}{16}$

Answer $2^{-4}\ m^{2}$

15

A fair coin is flipped 6 times.
The probability of 6 heads is $\left(\frac{1}{2}\right)^{6}$.
Write this probability as a power of 2.

$\frac{1}{2^{6}} = \frac{1}{64}$

Answer 2^{-6}

16

Sam says 10^{-3} is bigger than 10^{-2}, because 3 is bigger than 2.
Is Sam right? Explain.

$\frac{1}{1000}$ and $\frac{1}{100}$

Answer No, 10^{-3} is smaller