Text Explanation

This is an equation that involves powers and we are asked to find the value of the unknown exponent n.

When asked to solve for an exponent, we try to get the equation into the form $x^a = x^b$, where the bases are equal, so that we can then equate the exponents a = b. (Note that this will not work for bases of 1, 0, or –1.)

To arrive at this form we will make use of some laws of exponents indicated in the brackets below:

$$\left(\frac{2^{-n}}{3}\right)\left(\frac{3^{-n}}{2}\right) = \frac{1}{36}$$

$$\frac{2^{-n} \times 3^{-n}}{3 \times 2} = \frac{1}{36}$$

$$\frac{(2 \times 3)^{-n}}{6} = \frac{1}{36}$$ [law of exponents: $a^n \times b^n = (a \times b)^n$]

$$\frac{6^{-n}}{6} = \frac{1}{36}$$

$$\frac{1}{6 \times 6^n} = \frac{1}{36}$$ [law of exponents: $\frac{1}{a^n} = a^{-n}$]

$$\frac{1}{6^{n+1}} = \frac{1}{36}$$ [law of exponents: $a^m \times a^n = a^{m+n}$]

$6^{n+1} = 36$

$6^{n+1} = 6^2$

$n + 1 = 2$

$n = 1$