

Fractional Powers

When using **fractional powers**, the **denominator** is the **root** of the number.

 **Example** Evaluate $64^{\frac{1}{3}}$

The denominator **3** means we are finding the **cube root** of 64 $64^{\frac{1}{3}} = \sqrt[3]{64} = 4$

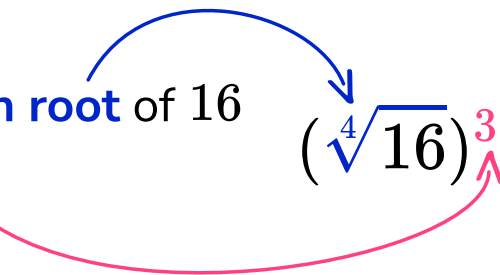
If the numerator is not 1, we raise the answer **to the power of** that **numerator**.

 **Example** Evaluate $16^{\frac{3}{4}}$

The denominator **4** means we are finding the **fourth root** of 16

The numerator **3** means we then **cube our answer**.

$$\text{So } 16^{\frac{3}{4}} = (\sqrt[4]{16})^3 = 2^3 = 8$$


$$(\sqrt[4]{16})^3$$