Exercise 4

Explain what $4^{3/2}$ means, then calculate $4^{3/2}$ in two different ways:

$$(4^{1/2})^{\blacksquare} = \_\_\_\_\_ \quad \text{or} \quad (4^3)^{\blacksquare} = \_\_\_\_\_$$

Solution

$4^{3/2}$ can be interpreted as the square root of 4^3.

$$4^{3/2} = 4^{3\left(\frac{1}{2}\right)} = (4^3)^{1/2} = (64)^{1/2} = \sqrt{64} = 8$$

$4^{3/2}$ can also be interpreted as the cube of $\sqrt{4}$.

$$4^{3/2} = 4^{\left(\frac{1}{2}\right)(3)} = (4^{1/2})^3 = (\sqrt{4})^3 = (2)^3 = 8$$