

Name: Class:

Exponents with decimal bases

Evaluate the following exponents with decimal bases.

$$\begin{aligned}
 (2.4)^3 &= \left(\frac{24}{10}\right)^3 \\
 &= \frac{(24)^3}{(10)^3} \\
 &= \frac{24 \times 24 \times 24}{10 \times 10 \times 10} \\
 &= \frac{13,824}{1,000} \\
 &= 13.824
 \end{aligned}$$



$(0.91)^1 =$

$(0.01)^5 =$

$(0.0033)^2 =$

$(1.008)^2 =$

$(3.5)^3 =$

► In each case, solve and tick the correct answer.



$(0.4)^3 ?$

0.064

0.64

$(3.0067)^1 ?$

30.0067

3.0067

$(0.027)^2 ?$

0.000729

0.0729

$(13.00025)^0 ?$

0

1

$(9.5)^4 ?$

814,506.625

8,1450.625

$(0.6)^5 ?$

0.07776

0.7776

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$$\begin{aligned} (2.4)^3 &= \left(\frac{24}{10}\right)^3 \\ &= \frac{(24)^3}{(10)^3} \\ &= \frac{24 \times 24 \times 24}{10 \times 10 \times 10} \\ &= \frac{13,824}{1,000} \\ &= 13.824 \end{aligned}$$

$$\begin{aligned} (0.91)^1 &= \left(\frac{91}{100}\right)^1 \\ &= \frac{(91)^1}{(100)^1} \\ &= \frac{91}{100} \\ &= 0.91 \end{aligned}$$

$$\begin{aligned} (0.01)^5 &= \left(\frac{1}{100}\right)^5 \\ &= \frac{(1)^5}{(100)^5} \\ &= \frac{1 \times 1 \times 1 \times 1 \times 1}{100 \times 100 \times 100 \times 100 \times 100} \\ &= \frac{1}{10,000,000,000} \\ &= 0.0000000001 \end{aligned}$$



$$\begin{aligned} (0.0033)^2 &= \left(\frac{33}{10,000}\right)^2 \\ &= \frac{(33)^2}{(10,000)^2} \\ &= \frac{33 \times 33}{10,000 \times 10,000} \\ &= \frac{1,089}{100,000,000} \\ &= 0.00001089 \end{aligned}$$

$$\begin{aligned} (1.008)^2 &= \left(\frac{1,008}{1,000}\right)^2 \\ &= \frac{(1,008)^2}{(1,000)^2} \\ &= \frac{1,008 \times 1,008}{1,000 \times 1,000} \\ &= \frac{1,016,064}{1,000,000} \\ &= 1.016064 \end{aligned}$$

$$\begin{aligned} (3.5)^3 &= \left(\frac{35}{10}\right)^3 \\ &= \frac{(35)^3}{(10)^3} \\ &= \frac{35 \times 35 \times 35}{10 \times 10 \times 10} \\ &= \frac{42,875}{1,000} \\ &= 42.875 \end{aligned}$$

► In each case, solve and tick the correct answer.

$(0.4)^3$? 0.064 0.64

$(3.0067)^1$? 30.0067 3.0067

$(0.027)^2$? 0.000729 0.0729

$(13.00025)^0$? 0 1

$(9.5)^4$? 814,506.625 8,145.0625

$(0.6)^5$? 0.07776 0.7776