

Name: Class:

Exponents with decimal bases

Evaluate the following exponents with decimal bases.

$(2.4)^3 =$

$(0.91)^1 =$

$(0.01)^5 =$

$(0.0033)^2 =$

$(1.008)^2 =$

$(3.5)^3 =$

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

$(0.4)^3 ?$

0.064

0.64

0

1

$(3.0067)^1 ?$

30.0067

3.0067

814,506.625

8,1450.625

$(0.027)^2 ?$

0.000729

0.0729

0.07776

0.7776

$(13.00025)^0 ?$

$(9.5)^4 ?$

$(0.6)^5 ?$

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Exponents with decimal bases

Evaluate the following exponents with decimal bases.

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

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

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

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

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

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

► 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