

Topic: Powers of fractions**Question:** Simplify the expression.

$$\left(\frac{1}{2}\right)^2$$

Answer choices:

A $\frac{1}{4}$

B 1

C 2

D $\frac{2}{4}$



Solution: A

If we start with

$$\left(\frac{1}{2}\right)^2$$

it's like saying that we're multiplying $1/2$ by itself. So the problem becomes

$$\left(\frac{1}{2}\right) \left(\frac{1}{2}\right)$$

Now we've got a fraction multiplication problem. When we multiply fractions, we multiply the numerators and the denominators separately.

$$\frac{1 \cdot 1}{2 \cdot 2}$$

$$\frac{1}{4}$$



Topic: Powers of fractions**Question:** Simplify the expression.

$$\left(\frac{3}{5}\right)^3$$

Answer choices:

A $\frac{3}{125}$

B $\frac{27}{5}$

C $\frac{27}{125}$

D $\frac{9}{15}$



Solution: C

We can solve this problem in two ways. The first way is to cube the numerator, and then separately cube the denominator.

$$\frac{3^3}{5^3} = \frac{27}{125}$$

The second is to cube the entire fraction and multiply it by itself three times.

$$\left(\frac{3}{5}\right) \left(\frac{3}{5}\right) \left(\frac{3}{5}\right)$$

$$\left(\frac{9}{25}\right) \left(\frac{3}{5}\right)$$

$$\frac{27}{125}$$



Topic: Powers of fractions**Question:** Simplify the expression.

$$\left(\frac{x^2}{y^4}\right)^3$$

Answer choices:

A $\frac{x^6}{y^{12}}$

B $\frac{x^2}{y^{12}}$

C $\frac{x^6}{y^4}$

D $\frac{x^5}{y^7}$



Solution: A

We can solve this problem in two ways. The first way is to cube the numerator, and then separately cube the denominator.

$$\frac{x^{2 \cdot 3}}{y^{4 \cdot 3}} = \frac{x^6}{y^{12}}$$

The second is to cube the entire fraction and multiply it by itself three times.

$$\left(\frac{x^2}{y^4}\right) \left(\frac{x^2}{y^4}\right) \left(\frac{x^2}{y^4}\right)$$

$$\frac{x^2 \cdot x^2 \cdot x^2}{y^4 \cdot y^4 \cdot y^4}$$

$$\frac{x^{2+2+2}}{y^{4+4+4}}$$

$$\frac{x^6}{y^{12}}$$

