

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 twice. 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 together, and we multiply the denominators together.

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

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



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

$$x^2 \cdot x^{\frac{1}{3}}$$

Answer choices:

A x^3

B $x^{\frac{2}{3}}$

C $x^{\frac{7}{3}}$

D $x^{2\frac{2}{3}}$



Solution: C

If we start with

$$x^2 \cdot x^{\frac{1}{3}}$$

we have like bases because the base of both terms is x . When that's the case, we add the exponents.

$$x^{2+\frac{1}{3}}$$

Now the problem is just about fraction addition in the exponent. To add the fractions, we have to find a common denominator.

$$x^{2\left(\frac{3}{3}\right)+\frac{1}{3}}$$

$$x^{\frac{6}{3}+\frac{1}{3}}$$

$$x^{\frac{7}{3}}$$



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

$$x^{\frac{1}{3}} \cdot x^{\frac{1}{4}} \cdot x^{\frac{2}{5}}$$

Answer choices:

A $x^{\frac{59}{60}}$

B $x^{\frac{4}{7}}$

C $x^{\frac{4}{5}}$

D $x^{\frac{7}{8}}$



Solution: A

If we start with

$$x^{\frac{1}{3}} \cdot x^{\frac{1}{4}} \cdot x^{\frac{2}{5}}$$

we have like bases because the base of all three terms is x . When that's the case, we add the exponents.

$$x^{\frac{1}{3} + \frac{1}{4} + \frac{2}{5}}$$

Now the problem is just about fraction addition in the exponent. To add the fractions, we have to find a common denominator.

$$x^{\frac{1}{3}\left(\frac{20}{20}\right) + \frac{1}{4}\left(\frac{15}{15}\right) + \frac{2}{5}\left(\frac{12}{12}\right)}$$

$$x^{\frac{20}{60} + \frac{15}{60} + \frac{24}{60}}$$

$$x^{\frac{59}{60}}$$

