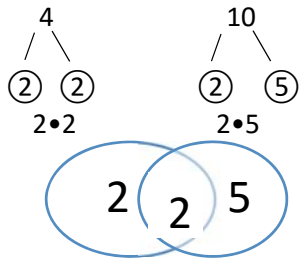
Ex) Find the sum of $\frac{1}{4x^2} + \frac{x}{10x^2}$

① Factor the denominators, if possible, of each fraction to help find the LCD. Denominators cannot be factored.

②Find the least common denominator (LCD)

For the numbers, make a factor tree of each, find the prime factorization, and make a venn diagram



LCD of the numbers: 2•2•5 = 20

LCD of the variables (highest power): x^2

LCD: $20x^2$

③ Rewrite each fraction, each with a new denominator being the LCD. To find the new numerators for each fraction, multiply the original numerator by what you multiplied to that denominator to get the LCD.

- For $\frac{1}{4x^2}$ what do you do to the denominator to make it $20x^2$? → I multiplied it by 5. So, I multiply the numerator by 5 as well to get the new fraction $\frac{5}{20x^2}$
- For $\frac{x}{10x^2}$ what do you do to the denominator to make it $20x^2$? → I multiplied it by 2. So, I multiply the numerator by 2 as well to get the new fraction $\frac{2x}{20x^2}$
- So, we now have $\frac{5}{20x^2} + \frac{2x}{20x^2}$

④ Combine the fraction by adding or subtracting the numerators and keeping the denominator. (When subtracting, you have to distribute the negative- or subtraction sign- to the entire second numerator)

$$\frac{5}{20x^2} + \frac{2x}{20x^2} = \frac{5+2x}{20x^2}$$

⑤Simplify the numerator by combining like terms→for this ex, the numerator has no like terms to combine

⑥ Simplify by factoring the numerator and the denominator to see if anything with cancel out. → Neither the numerator or denominator can be factored, so the final answer is $\boxed{\frac{5+2x}{20x^2}}$