ADDING AND SUBTRACTING FRACTIONS

Adding and Subtracting like fractions

- There are 3 simple steps to subtract fractions
- **Step 1**. Make sure the bottom numbers (the denominators) are the same
- **Step 2**. Add or Subtract the top numbers (the numerators). Put the answer over the same denominator.
- **Step 3**. Simplify the fraction.

$$^{1}/_{5} + {}^{2}/_{5} + {}^{4}/_{5} = {}^{7}/_{5}$$

$$\frac{3}{4} - \frac{1}{4} = \frac{3-1}{4} = \frac{2}{4}$$

Practice time!

1) $\frac{1}{3} + \frac{2}{3} =$

2) $\frac{1}{4} + \frac{3}{4} =$

3) $\frac{2}{5} + \frac{4}{5} =$

4) $\frac{3}{10} + \frac{8}{10} =$

5) $\frac{3}{3} - \frac{2}{3} =$

6) $\frac{6}{7} - \frac{3}{7} =$

7) $\frac{5}{10} - \frac{3}{10} =$

8) $\frac{12}{15} - \frac{7}{15} =$

You can't add fractions with different denominators without getting them ready first. They will be ready to add when they have common denominators.

$$\frac{1}{3} + \frac{1}{4} =$$

How can you do it?

Adding or subtracting Fractions with Unlike Denominators

Steps:

1. Determine the denominators
2. Find the least common multiple (LCM).
3. Your least common multiple will become your least common denominator (LCD).
4. Generate Equivalent Fractions using the LCM as the LCD.
5. Add or Subtract Fractions.

1. Determine the denominators

$$\frac{1}{10} + \frac{1}{3}$$

Denominators

2. Find the least common multiple (LCM).

10	3	2
5	3	3
5	1	5
1		

$2 \times 3 \times 5 = 30$ LCM

- The Least common multiple of two numbers is the lowest number in both lists of multiples

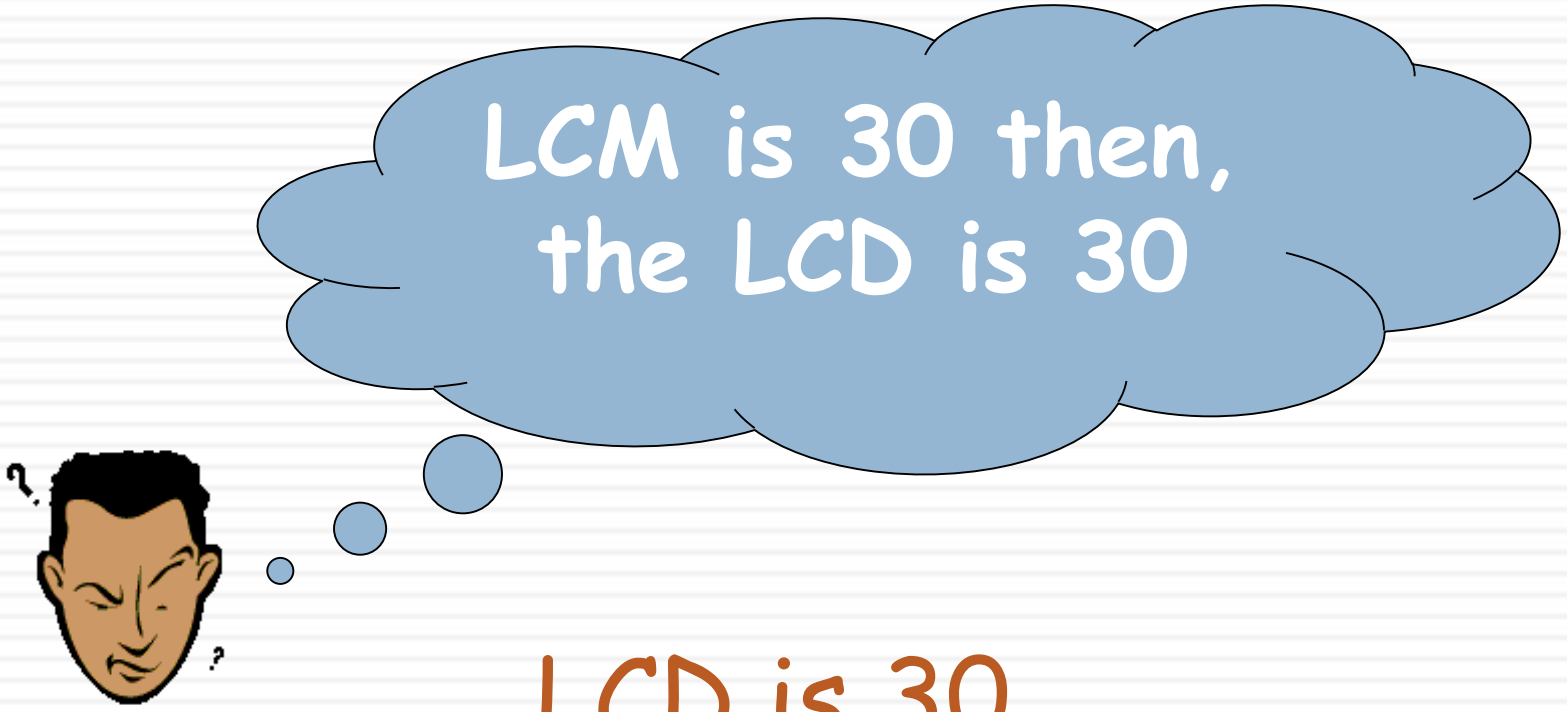
$$\frac{1}{10}+\frac{1}{3}$$

Multiples of 10 are 10, 20, 30, 40, 50…
Multiples of 3 are 3, 6, 9, 12,15,21,24,27,30 …

What is the least common multiple?

LCM is 30

3. Your least common multiple will become your least common denominator (LCD).



LCD is 30

4. Generate Equivalent Fractions using the LCM as the LCD.

$$\frac{1}{10}+\frac{1}{3}$$

Least common denominator is 30, so make all fractions thirtieths

$$\frac{1}{10}$$

Find a factor that when multiplying it by ten (denominator) the product is 30

This is the amplification method.

What ever you do to the top number .You must do to the bottom number.

$$\frac{1}{10} x \frac{3}{3} = \frac{3}{30}$$

Find a factor that when multiplying it by 3 (denominator) the product is 30

$$\frac{1}{3} x \frac{10}{10} = \frac{10}{30}$$

5. Add or Subtract Fractions.

$$\frac{3}{30} + \frac{10}{30} = \frac{13}{30}$$

Once more!

1. Determine the denominators → $\frac{3}{7}+\frac{2}{3}$

2. Find the least common multiple (LCM).

7	3
	1
1	

3

7

3x7= **21** LCM

3. Your least common multiple will become your least common denominator (LCD).

21 LCM Then it is the LCD 21

4. Generate Equivalent Fractions using the LCD.

$\frac{3}{7}+\frac{2}{3}=$ LCD **21**

Once more!

$$\frac{3}{7} x \frac{3}{3} = \frac{9}{21}$$

$$\frac{2}{3} x \frac{7}{7} = \frac{14}{21}$$

5. Add or Subtract Fractions.

$$\frac{9}{21} + \frac{14}{21} = \frac{23}{21}$$

Let´s try with a subtratcion

Subtracting fractions

- Determine the denominators $\frac{1}{3} - \frac{1}{15} =$ ← denominators

- Find the least common multiple (LCM).

3	15	3
1	5	5
	1	

3x5 = 15 LCD

- Generate Equivalent Fractions using the LCD.

$\frac{1}{3} x \frac{5}{5} = \frac{5}{15}$

$\frac{1}{15} x \frac{1}{1} = \frac{1}{15}$

- Add or Subtract Fractions.

$\frac{5}{15} - \frac{1}{15} = \frac{4}{15}$

CROSS- METHOD

- **1. Cross-multiply the two fractions and add the results together to get the numerator of the answer.**
- Suppose you want to add the fractions 1/3 and 2/5. To get the numerator of the answer, cross-multiply. In other words, multiply the numerator of each fraction by the denominator of the other:

$\frac{1}{3}+\frac{2}{5}$ 1X5 3X2

- **2. Multiply the two denominators together to get the denominator of the answer.**
- To get the denominator, just multiply the denominators of the two fractions:

$\frac{1}{3}+\frac{2}{5}$ 3 X 5 = 15

- The denominator of the answer is 15.

Adding fractions

Write your answer as a fraction.

$$\frac{1 \times 5 + 3 \times 2}{3 \times 5} = \frac{6 + 5}{15} = 11/15$$

$$\frac{1}{3} + \frac{2}{5} = \frac{11}{15}$$

Your turn!

Adding Fractions

1) $\frac{1}{3} + \frac{3}{10} =$

2) $\frac{3}{5} + \frac{2}{3} =$

3) $\frac{1}{2} + \frac{2}{10} =$

4) $\frac{1}{2} + \frac{2}{10} =$

5) $\frac{2}{3} + \frac{4}{10} =$

6) $\frac{1}{2} + \frac{2}{5} =$

Practice time!

Subtracting Fractions

1) $\frac{1}{2} - \frac{1}{5} =$

2) $\frac{1}{2} - \frac{2}{4} =$

3) $\frac{4}{10} - \frac{1}{3} =$

4) $\frac{9}{10} - \frac{1}{3} =$

5) $\frac{8}{10} - \frac{3}{4} =$

6) $\frac{4}{5} - \frac{1}{2} =$