

# FRACTIONS -Module- 4/4

ADDITION AND SUBTRACTION OF  
FRACTIONS

# PROBLEMS

Calculate:

$$(a) \quad \frac{1}{5} + \frac{2}{5}$$

$$(b) \quad \frac{5}{6} - \frac{1}{6}$$

Solution:

- (a) As the denominator is the same in both fractions, we simply add the numbers on the top of the fraction to give

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

- (b) The denominator is the same in both fractions, so

$$\frac{5}{6} - \frac{1}{6} = \frac{5-1}{6} = \frac{4}{6} = \frac{2}{3}$$

# ADDITION OF LIKE FRACTIONS

Reduce to its lowest terms

$$\frac{6}{10} + \frac{2}{10} = \frac{8}{10} = \frac{4}{5}$$

# SUBTRACTION OF LIKE FRACTIONS



$$\frac{3}{4}$$

-



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

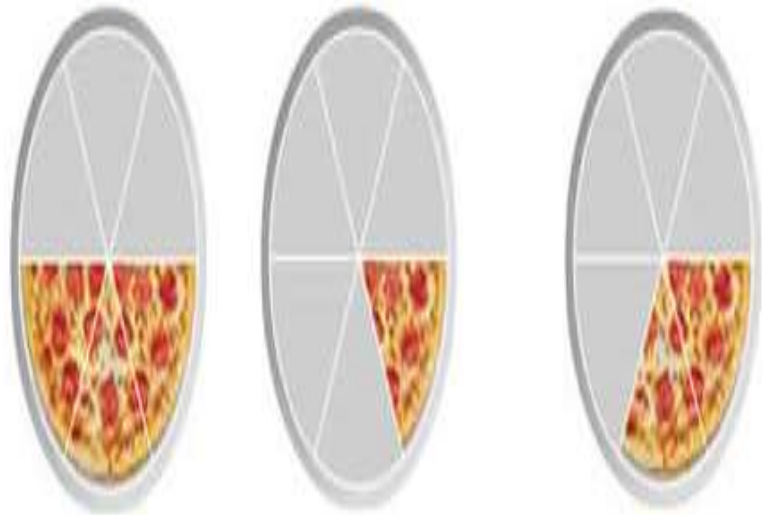
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$$\frac{2}{4} = \frac{1}{2}$$

# PROBLEMS

$$\frac{3}{6} - \frac{1}{6} = \frac{2}{6}$$



Subtract the **numerators**  
Keep the same **denominator**

$$\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$$

# ADDITION & SUBTRACTION OF FRACTIONS

$$\frac{11}{15} - \frac{3}{5} = ?$$

$$\frac{11}{15} - \frac{3 \times 3}{5 \times 3}$$

$$\frac{11}{15} - \frac{9}{15} = \frac{11 - 9}{15} = \frac{2}{15}$$

Same

$$\frac{2}{15} + \frac{3}{5} = \frac{2}{15} + \frac{3}{5} \left( \frac{3}{3} \right)$$

$$= \frac{2}{15} + \frac{9}{15}$$

$$= \frac{11}{15}$$

Same  
denominator

# PROBLEMS

$$\begin{aligned} \frac{5}{2} + \frac{9}{3} &= \frac{5}{2} \begin{pmatrix} 9 \\ 9 \end{pmatrix} + \frac{9}{3} \begin{pmatrix} 5 \\ 5 \end{pmatrix} \\ &= \frac{18}{45} + \frac{15}{45} \\ &= \frac{33}{45} \div 3 \\ &= \frac{11}{15} \end{aligned}$$

# PROBLEM

$$\begin{aligned}\frac{9}{10} - \frac{5}{6} &= \frac{9}{10} \left( \frac{3}{3} \right) - \frac{5}{6} \left( \frac{5}{5} \right) \\ &= \frac{27}{30} - \frac{25}{30} \\ &= \frac{27 - 25}{30} \\ &= \frac{2}{30} \\ &= \frac{1}{15}\end{aligned}$$



# PROBLEMS ON MIXED PROBLEMS

$$9\frac{1}{2} + 5\frac{3}{4}$$

$$= \frac{19}{2} + \frac{23}{4}$$

Change to improper fractions

$$= \frac{19 \times 2}{2 \times 2} + \frac{23}{4}$$

Change to common denominators

$$= \frac{38}{4} + \frac{23}{4}$$

Add the numerators

$$= \frac{61}{4}$$

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

Change back to mixed number

## Subtract Mixed Numbers

$$9\frac{1}{2} - 5\frac{1}{4}$$

$$= \frac{19}{2} - \frac{21}{4}$$

$$= \frac{19 \times 2}{2 \times 2} - \frac{21}{4}$$

$$= \frac{38}{4} - \frac{21}{4}$$

$$= \frac{17}{4} = 4\frac{1}{4}$$

Change to improper fractions

Change to common denominator

Subtract the numerators

Change to mixed numbers

# PRACTICE PROBLEM

- Nandini house is  $\frac{9}{10}$  km from her school. She walked some distance and then took a bus for  $\frac{1}{2}$  km to reach the school. How far did she walk?
- Sol: Distance between her school and house is  $\frac{9}{10}$  km
- Distance she travelled by bus is  $\frac{1}{2}$  km
- Distance she walked =  $\frac{9}{10} - \frac{1}{2} = \frac{9}{10} \times \frac{1}{1} - \frac{1}{2} \times \frac{5}{5} = \frac{9}{10} - \frac{5}{10} = \frac{4}{10}$  km.



THANK YOU