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P.6 MATHEMATICS

LESSON WEEK SIX

TOPIC : FRACTIONS

SUBTOPIC : MULTIPLICATION OF FRACTIONS BY FRACTIONS AND WHOLE NUMBERS

Examples.

1. $^1/_2 \times {}^1/_2$

$$\frac{1 \times 1}{2 \times 2}$$

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

2. $^1/_8 \times {}^4/_5$

$$\frac{1}{\cancel{8}_{2}} \times \frac{\cancel{4}^{1}}{5}$$

$$\frac{1 \times 1}{2 \times 5}$$

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

3. ¼ x 3

= ¼ x 3

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

= **¾**

4. $21 \times {}^2/_3$

$= 21 \times {}^2/_3$

$= \frac{\cancel{21}^{7} \times 2}{\cancel{13}}$

$= \frac{7 \times 2}{1}$ = **14**

EXERCISE

Work out the following

1. $^1/_{12} \times {}^4/_5$
2. $^2/_3 \times {}^5/_6$
3. $^1/_9 \times {}^4/_9$
4. $^1/_3 \times 3$
5. $^2/_3$ of 15
6. $2^2/_5$ of 20

TOPIC : FRACTIONS
SUBTOPIC : RECIPROCAL

Note:

A reciprocal is a number multiplied by the given number to give a product as 1.

Examples.

1. What is the reciprocal of 4?

   Let the reciprocal be m

   So m x 4 = 1

   $\frac{4\,m}{4} = \frac{1}{4}$

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

Therefore the reciprocal of 4 is = $\frac{1}{4}$

2. The reciprocal of $^1/_2$

Let the reciprocal be y

$^1/_2 \times y = 1$

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

$2^1 \times \frac{y}{2_1} = 1 \times 2$

$y = 2$

Therefore the reciprocal of $\frac{1}{2}$ is = 2

Observation.

Every reciprocal of fraction changes the denominator to become a numerator and vice versa.

ACTIVITY.

Find the reciprocal of each of the following.

i)	$^1/_5$	iv)	7
ii)	$^5/_3$	v)	23
iii)	¾	vi)	14

TOPIC : FRACTIONS

SUBTOPIC :DIVIDING FRACTIONS

Example

1. Divide. $2 \div {}^{1}/_{2}$

$=2 \times {}^{2}/_{1}$ **Change (÷) to (x) then reciprocal of ${}^{1}/_{2}$ to ${}^{2}/_{1}$**

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

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

=4

2. Divide: ${}^{1}/_{5} \div 4$ **Make 4 a fraction**

$={}^{1}/_{5} \div {}^{4}/_{1}$ **Change (÷) to (x) then reciprocal of ${}^{4}/_{1}$= ¼**

$={}^{1}/_{5} \times ¼$

$$= \frac{1 \times 1}{5 \times 4}$$

$={}^{1}/_{20}$

3. Work out. ${}^{1}/_{2} \div {}^{1}/_{4}$

$={}^{1}/_{2} \times {}^{4}/_{1}$

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

$= {}^{4}/_{2}$

= 2

EXERCISE

Work out the following:

i) $^{1}/_{6} \div 4$

ii) $^{2}/_{3} \div 4$

iii) $5 \div ½$

iv) $2 \div ¾$

v) $^{8}/_{9} \div {}^{2}/_{3}$

vi) $^{5}/_{16} \div {}^{3}/_{8}$

TOPIC : FRACTIONS
SUBTOPIC : MIXED OPERATIONS IN FRACTIONS
CONTENT: **Combined operations**
Brackets
Of
Division
Multiplication
Addition
Subtraction

Examples:
1. Simplify

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

$\frac{2^{1}}{3_{1}} \times \frac{3^{1}}{4_{2}} - \frac{1}{3}$

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

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

$= \frac{1}{6}$

2. $\frac{5}{6} - \frac{3}{4} \div 1\ 1/2$

$\frac{5}{6} - \frac{3}{4} \div \frac{3}{2}$

$\frac{5}{6} - \frac{3^{1}}{4_{2}} \times \frac{2^{1}}{3_{1}}$

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

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

ACTIVITY.
Workout the following

1. $\frac{1}{2} \times \frac{1}{4} + \frac{1}{3}$

2. $\frac{4}{7}$ of $\frac{1}{2} + \frac{1}{3}$

3. $\frac{1}{5} + \frac{1}{3} - \frac{1}{2} \times \frac{3}{5}$

4. $\frac{1}{3} - \frac{1}{6} + \frac{6}{9}$

5. $\frac{1}{5} - \frac{1}{2} + \frac{4}{10}$

ORDERING FRACTIONS

1. To order fractions is to arrange fractions in ascending or descending order.
2. Ascending order means increasing order, i.e. starting with the smallest.
3. Descending order means decreasing order, i.e. starting with the biggest.
4. We can use the LCM to determine the size of the fraction in natural numbers.

Example I

Arrange $^{1}/_{3}$, ½, ¼ in ascending order.

LCM of 3, 2 and 4 = 12

$^{1}/_{\cancel{3}}$ x $\cancel{12}^{2}$ $\quad$ $^{1}/_{\cancel{2}}$, x $\cancel{12}^{6}$ $\quad$ $^{1}/_{4}$ x $\cancel{12}^{3}$

1 x 2 = **2** $\quad$ 1 x 6 = **6** $\quad$ 1 x 3 = **3**

Ascending order = ¼, $^{1}/_{3}$, ½.

Example II

Arrange $^{7}/_{12}$, $^{3}/_{8}$, $^{5}/_{6}$ in descending order.

LCM of 12 and 8 = 24

$^{7}/_{\cancel{12}}$ x $\cancel{24}^{2}$ $\quad$ $^{3}/_{8}$, x $\cancel{24}^{3}$ $\quad$ $^{5}/_{8}$ x $\cancel{24}^{3}$

7 x 2 = **14** $\quad$ 3 x 3 = **9** $\quad$ 5 x 3 = **15**

Descending order = $^{5}/_{8}$, $^{7}/_{12}$, $^{3}/_{8}$

EXERCISE

Arrange the following fractions as instructed in brackets

1. $^{3}/_{4}$, $^{2}/_{3}$, ½. (ascending)
2. $^{5}/_{6}$, $^{5}/_{8}$, $^{5}/_{12}$. (ascending)
3. $^{1}/_{2}$, $^{1}/_{3}$, $^{1}/_{4}$, $^{1}/_{6}$. (ascending)
4. $^{5}/_{6}$, $^{4}/_{5}$, $^{7}/_{10}$, $^{2}/_{3}$. (descending)
5. $^{3}/_{4}$, $^{2}/_{3}$, $^{5}/_{6}$. (descending order