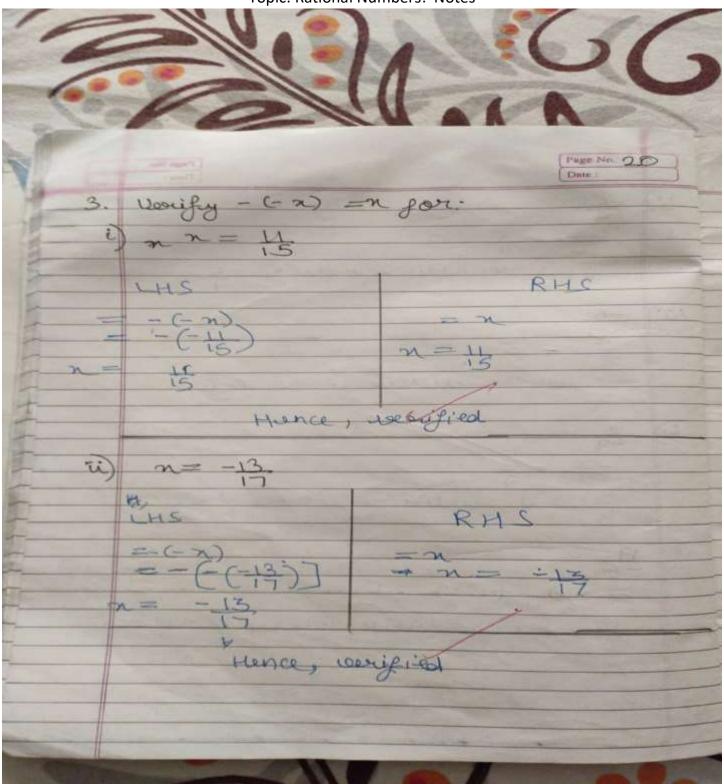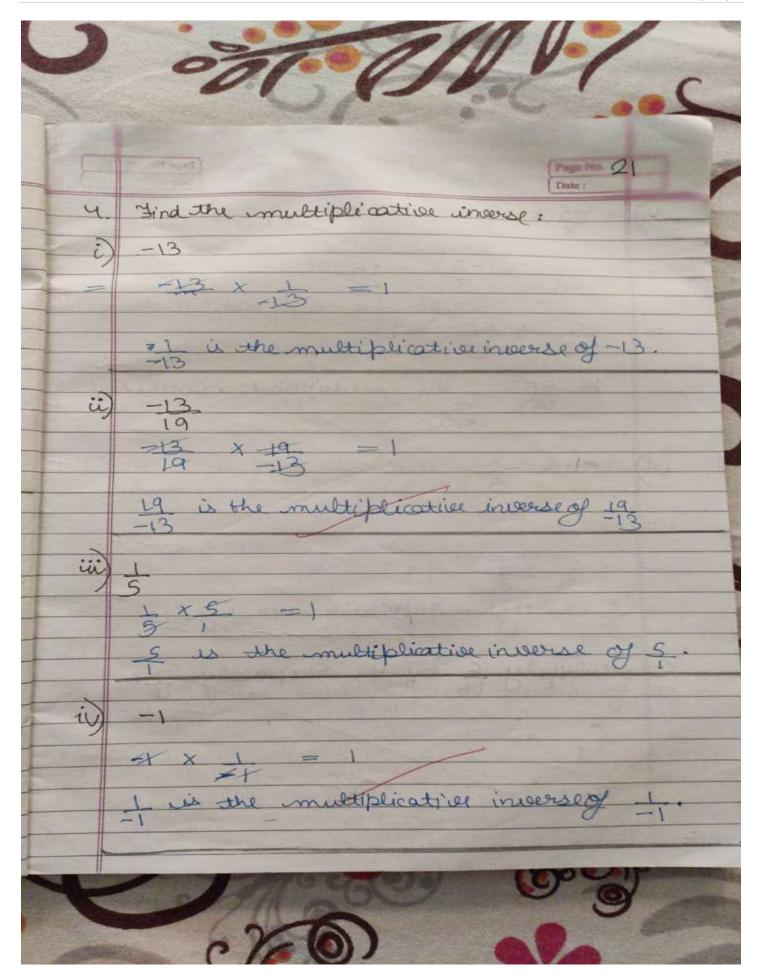Worksheet-4   Subject: - Mathematics   Class: - VIII   Teacher: - Ms. Neeru

Name: _____ Class & Sec: _____ Roll No. _____ Date: 14.03.2020

Topic: Rational Numbers: Notes

Page No. 20
Date :

3. Verify $-(-x) = x$ for:

i) $x = \frac{11}{15}$

LHS	RHS
$= -(-x)$	$= x$
$= -\left(-\frac{11}{15}\right)$	$x = \frac{11}{15}$
$x = \frac{11}{15}$	

Hence, verified

ii) $x = \frac{-13}{17}$

LHS	RHS
$= -(-x)$	$= x$
$= -\left[-\left(\frac{-13}{17}\right)\right]$	$x = \frac{-13}{17}$
$x = \frac{-13}{17}$	

Hence, verified

& Ex 1.1 H.W

4. Find the multiplicative inverse :

i) -13

$= \quad -13 \times \dfrac{1}{-13} = 1$

$\therefore \dfrac{1}{-13}$ is the multiplicative inverse of -13.

ii) $\dfrac{-13}{19}$

$\dfrac{-13}{19} \times \dfrac{19}{-13} = 1$

$\dfrac{19}{-13}$ is the multiplicative inverse of $\dfrac{19}{-13}$

iii) $\dfrac{1}{5}$

$\dfrac{1}{5} \times \dfrac{5}{1} = 1$

$\dfrac{5}{1}$ is the multiplicative inverse of $\dfrac{5}{1}$.

iv) -1

$-1 \times \dfrac{1}{-1} = 1$

$\dfrac{1}{-1}$ is the multiplicative inverse of $\dfrac{1}{-1}$.

ii) $-\frac{5}{9}$

$-\frac{5}{9} + \frac{5}{9} = 0$

$\frac{5}{9}$ is the additive inverse of $-\frac{5}{9}$

iii) $\frac{-6}{-5}$

$\frac{6}{5} - \frac{6}{5} = 0$

$-\frac{6}{5}$ is the additive inverse of $\frac{-6}{-5}$.

iv) $\frac{2}{-9}$

$\frac{-2}{9} + \frac{2}{9}$

$\frac{2}{9}$ is the additive inverse of $-\frac{2}{9}$

v) $\frac{19}{-6}$

$\Rightarrow -\frac{19}{6} + \frac{19}{6} = 0$

$\frac{19}{6}$ is the additive inverse of $-\frac{19}{6}$.

6/4/19

$$Ch - 1$$
$$Ex - 1.1$$

Q1 Find:

i) $\dfrac{-2}{3} \times \dfrac{3}{5} + \dfrac{5}{2} - \dfrac{3}{5} \times \dfrac{1}{6}$

$= \dfrac{-2}{3} \times \dfrac{3}{5} - \dfrac{3}{5} \times \dfrac{1}{6} + \dfrac{5}{2}$

$= \dfrac{3}{5} \times \left(\dfrac{-2}{3} - \dfrac{1}{6} \right) + \dfrac{5}{2}$ using associative property

$= \dfrac{3}{5} \times \left(\dfrac{-4-1}{6} \right) + \dfrac{5}{2}$

$= \dfrac{3}{5} \times \dfrac{-5}{6\,2}^{-1} + \dfrac{5}{2}$

$= \dfrac{-1}{2} + \dfrac{5}{2}$

$= \dfrac{4}{2}^{2} = \dfrac{2}{1}$

ii) $\dfrac{2}{5} \times \left(\dfrac{-3}{7} \right) - \dfrac{1}{6} \times \dfrac{3}{2} + \dfrac{1}{14} \times \dfrac{2}{5}$

$= \dfrac{2}{5} \times \left(\dfrac{-3}{7} \right) - \dfrac{1}{6\,2} \times \dfrac{3}{2} + \dfrac{1}{14} \times \dfrac{2}{5}$

$$= \frac{2}{5} \times \left(\frac{-3}{7}\right) - \frac{1}{4} + 14 \times \frac{2}{5}$$

$$= \frac{2}{5} \times \left[\frac{(-3)}{7} + \frac{1}{\frac{14}{7}}\right] - \frac{1}{4}$$

$$= \frac{2}{5} \times \left(\frac{(-6)+1}{14}\right) - \frac{1}{4}$$

$$= \frac{2}{5} \times \frac{-5}{14} - \frac{1}{4}$$

$$= \frac{-1}{7} - \frac{1}{4}$$

$$= \frac{-4}{28} - \frac{7}{28}$$

$$= \frac{-11}{28}$$

Q2. write the additive inverse of the following:

i) $\frac{2}{8} - \frac{2}{8} = 0$

$= \frac{-2}{8}$ is the additive inverse of $\frac{2}{8}$

4/4/19

Ch-1
Rational Numbers

Examples:

Ex-1 Find $\frac{3}{7} + \left(\frac{-6}{11}\right) + \left(\frac{-8}{21}\right) + \frac{5}{22}$

Sol. $\left(\frac{3}{7} + \frac{(-8)}{21}\right) + \left(\frac{-6}{11} + \frac{5}{22}\right)$ using commutative property

$= \left(\frac{9-8}{21}\right) + \left(\frac{-12+5}{22}\right)$

$= \frac{1}{21} + \frac{(-7)}{22}$

$= \frac{1}{21} - \frac{7}{22}$

$= \left(\frac{1 \times 22}{21 \times 22}\right) - \left(\frac{7 \times 21}{22 \times 21}\right)$

$= \frac{22 - 147}{462}$

$= \frac{-126}{22} - \frac{-125}{462}$

11. Fill in the blanks:

i) Zero has ___no___ reciprocal.

ii) The numbers ___1___ and ___1___ are their own reciprocals.

iii) The reciprocal of −5 is $\dfrac{1}{-5}$.

iv) Reciprocal of $\dfrac{1}{x}$, where $x \neq 0$ is $\dfrac{x}{1}$.

v) The product of 2 rational numbers is always a ration ___rational number___.

vi) The reciprocal of a positive rational no. is ___positive___ .

9. Is 0.3 the multiplicative inverse of $3\frac{1}{3}$? Why or why not?

Sa. $0.3 = \frac{3}{10}$

Reciprocal $= \frac{10}{3}$

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

$\frac{10}{3} = \frac{10}{3}$

∴ 0.3 is the reciprocal of $3\frac{1}{3}$.

10. Write.

i) The rational number that does not have a reciprocal.

= 0

ii) The rational numbers that are equal to their reciprocals.

= 1

iii) The rational number that is equal to its negative.

= 0

6. Multiply $\frac{6}{13}$ by the reciprocal of $-\frac{7}{16}$

Sol. Reciprocal of $\frac{-7}{16}$ is $\frac{-16}{7}$

Multiply $\frac{6}{13}$ $\times$ $\frac{-16}{7}$

$= \frac{6 \times -16}{13 \times 7}$

$= \frac{-96}{91}$

7. Tell what property allows you to compute $\frac{1}{3} \times \left(6 \times \frac{4}{3}\right)$ as $\left(\frac{1}{3} \times 6\right) \times \frac{4}{3}$

$= \frac{1}{3} \times \left(6 \times \frac{4}{3}\right) = \left(\frac{1}{3} \times 6\right) \times \frac{4}{3}$

$= a \times (b \times c) = (a \times b) \times c$

$\therefore$ Associative property

8. Is $\frac{8}{9}$ the multiplicative inverse of $-1\frac{1}{8}$? Why or why not?

Sol. $-1\frac{1}{8} = \frac{-9}{8}$

Reciprocal $= -\frac{8}{9}$

$\therefore \frac{8}{9}$ is not the multi. inverse of $-1\frac{1}{8}$ bec. it is $\frac{-8}{9}$

v) $\dfrac{-5}{8} \times \dfrac{-3}{7}$

6

$= \dfrac{-5}{8} \times \dfrac{-3}{7} = \dfrac{15}{56}$

$= \dfrac{15}{56} \times \dfrac{56}{15} = 1$

$\dfrac{56}{15}$ is the multiplicative inverse of $\dfrac{15}{56}$.

vi) $-1 \times \dfrac{-2}{5}$

7

$= \dfrac{2}{5}$

$= \dfrac{2}{5} \times \dfrac{5}{2} = 1$

$\dfrac{5}{2}$ is the multiplicative inverse of $\dfrac{5}{2}$.

6. Multiply $\dfrac{6}{13}$ by the reciprocal of $\dfrac{-7}{16}$.

$= \dfrac{6}{13} \times \dfrac{-7}{16}$

$= \dfrac{6}{13} \times \dfrac{-16}{7} = \dfrac{-96}{119} \qquad \dfrac{-96}{91}$