ODM EDUCATIONAL GROUP
Changing your Tomorrow

RATIONAL NUMBERS

PERIOD 6

SUBJECT : MATHEMATICS
CHAPTER NUMBER: 1
CHAPTER NAME : RATIONAL NUMBERS

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Learning outcome

- Students will be able to understand and apply properties of division.

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Previous Knowledge:

1) Can you find a rational number whose multiplicative inverse is -1?
2) Find the two rational numbers whose absolute value is 15
3) From a rope 40 m long, pieces of equal size are cut. If the length of one piece is 10/3 m, find the number of such pieces.
4) Find the product of additive inverse and multiplicative inverse of −1/3.

Closure Property of Division of Rational Numbers

If a/b and c/d are any two rational numbers such that c/d ≠ 0 then

(a/b ÷ c/d) is also a rational number.

For example:

2/3 and 4/9 are any two rational numbers and clearly 4/9 ≠ 0 then

(2/3 ÷ 4/9) = (2/3 × 9/4) = (2 × 9)/(3 × 4) = 18/12 = 3/2 is also a rational number.

Commutativity

Division of Rational Numbers isn't commutative. Consider two rational number a/b, c/d then a/b÷c/d ≠ c/d÷a/b

1/4÷3/2 = 1/4*2/3 = 1*2/4*3 = 2/12 = 1/6

3/2÷1/4 = 3/2*4/1 = 3*4/2*1 = 12/2 = 6

Therefore, 1/4÷3/2 ≠3/2÷1/4

Thus, Commutative Property is not true for Division.

Exercise- 1(D)

1.

$$(i)\ 1 \div \frac{1}{3}$$

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

$$(ii)\ 3 \div \frac{3}{5}$$

$$= 3 \times \frac{5}{3} = \frac{1 \times 5}{1 \times 1} = 5$$

$$(iii)\ -\frac{5}{12} \div \frac{1}{16}$$

$$= -\frac{5}{12} \times \frac{16}{1}$$

$$= \frac{-5 \times 4}{3 \times 1} = \frac{-20}{3} = -5\frac{5}{3}$$

Exercise- 1(D)

3. The product of two rational numbers is -2. If one of them is 4/7, find the other.

4. The product of two numbers is −49. If one of them is −22/7, find the other

6. By what number must −3/4 be multiplied so that the product is −9/16 ?

3.Sol:

$\because$ The product of two numbers is $= -2$

And, one of them is $\frac{4}{7}$

$\therefore$ The other number $= -2 \div \frac{4}{7}$

$= -2 \times \frac{7}{4}$

$= \frac{-1 \times 7}{1 \times 2} = \frac{-7}{2}$

4. Sol:

$\because$ The product of two numbers is $= -\frac{4}{9}$

And, one of them is $= \frac{-2}{27}$

$\therefore$ The other number $= -\frac{4}{9} \div \left(\frac{-2}{27}\right)$

$= -\frac{4}{9} \times \frac{27}{-2}$

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

6.Sol:

$\because$ The product of two numbers is $= -\frac{9}{16}$

And, one of them is $= -\frac{3}{4}$

$\therefore$ The other number $= -\frac{9}{16} \div \left(-\frac{3}{4}\right)$

$= -\frac{9}{16} \times \left(-\frac{4}{3}\right)$

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

Home Assignment

Exercise 1(A) -Q no-3

THANKING YOU

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