Problem solving on the above concept (Multiplication of Rational Numbers)

SUBJECT : MATHEMATICS
CHAPTER NUMBER: 02
CHAPTER NAME : RATIONAL NUMBERS

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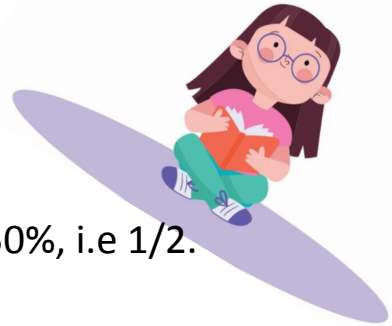
Learning outcomes

Students will be able to

- multiply rational numbers
- Implement its use in real life situation
  like taxes ,banks greatly for calculation of interest and loan ,
  share a pizza or anything ,
  specifying home work half portion ; you say that you completed 50%, i.e 1/2.



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Video on rules of multiplication of rational numbers
https://www.youtube.com/watch?v=VMp7bm9khis (6:46 minutes
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Exercise 2 D

Q.No.1

(iv) -45/39 × -13/ 15

It can be written as

= (-45 × -13)/ (39 × 15)

By further calculation

= (-3 × -1)/ (3 × 1)

So we get

= 3/3

= 1

(v) 3 1/8 × (-2 2/5)

It can be written as

= (3 × 8 + 1)/ 8 × (-2 × 5 + 2)/ 5

By further calculation

= 25/8 × (-12/5)

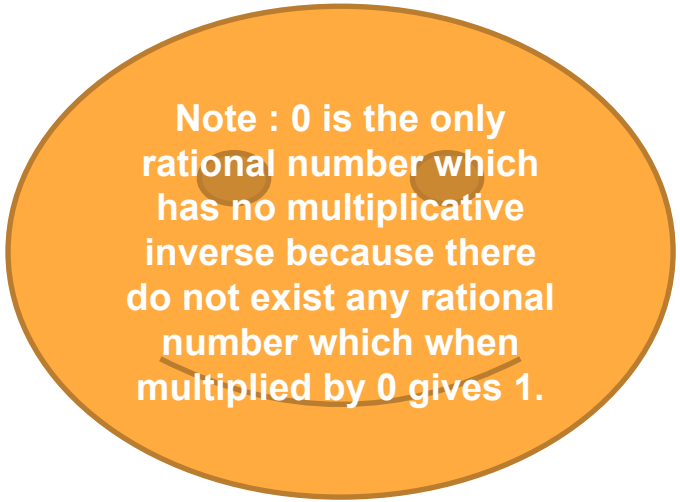
So we get

= (25 × -12)/ (8 × 5)

On further simplification

= (5 × -3)/ (2 × 1)

= -15/2



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(vii) (-8/9) × (-3/ 16)
It can be written as
= (-8 × -3)/ (9 × 16)
By further calculation
= (-1 × -1)/ (3 × 2)
= 1/6

(viii) (5/-27) × (-9/ 20)
It can be written as
= (5 × -9)/ (-27 × 20)
By further calculation
= (1 × 1)/ (3 × 4)
= 1/12

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2.ix) 6 2/3 and -3/8
It can be written as
= 20/3 × -3/8
By further calculation
= (20 × -3)/ (3 × 8)
So we get
= (5 × -1)/ (1 × 2)
= -5/2

(x) 3 3/5 and -10
It can be written as
= (3 × 5 + 3)/ 5 × -10
By further calculation
= 18/5 × -10
So we get
= 18 × -2
= -36

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(xi) 27/28 and -14
It can be written as
= 27/28 × -14
By further calculation
= (27 × -1)/ 2
= -27/2

(xii) -24 and 5/16
It can be written as
= (-24 × 5)/ 16
By further calculation
= (-3 × 5)/ 2
So we get
= -15/2

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3. (iv) (-5/9 × 6/-25) + (24/21 × 7/8)
= (5/9 × 6/25) + (24/21 × 7/8)
= 2/ (3 × 5) + 1
= 2/15 + 1
LCM of 15 and 1 is 15
= (2 + 15)/ 15
= 17/15
= 1 2/15

(v) (-35/39 × -13/7) – (7/90 × -18/14)
= (-35/39 × -13/7) – (7/90 × -18/14)
= (-5 × -1)/ (3 × 1) – (1 × -1)/ (5 × 2)
= 5/3 – (-1/10)
LCM of 3 and 10 is 30
= (5 × 10)/ (3 × 10) + 1/ (10 × 3)
= (50 + 3)/ 30
= 53/30
= 1 23/30

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3.(vi) (-4/5 × 3/2) + (9/-5 × 10/3) – (-3/2 × -1/4)

= (-2 × 3)/ (5 × 1) + (3 × 2)/ (-1 × 1) – (-3 × -1)/ (2 × 4)

= -6/5 + -6/1 – 3/8

LCM of 5, 1 and 8 is 40

= = (-6 × 8)/ (5 × 8) – (6 × 40)/ (1 × 40) – (3 × 5)/ (8 × 5)

= (-48 – 240 – 15)/ 40

= – 303/40

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4. Find the cost of 3 ½ m cloth, if one metre cloth costs Rs 325 ½.
Solution:

It is given that cost of one metre cloth = ₹ 325 ½
We can write it as
= (2 × 325 + 1)/ 2
By further calculation
= (650 + 1)/ 2
= ₹ 651/2
Cost of 3 ½ m cloth
(2 × 3 + 1)/ 2 = 7/2 m
We get
= 651/2 × 7/2
It can be written as
= (651 × 7)/ (2 × 2)
= 4557/4
= Rs 1139 ¼

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5. A bus is moving with a speed of 65 ½ km per hour. How much distance will it cover in 1 1/3 hours.

Solution:

It is given that

Speed of bus = 65 ½ km per hour

We can write it as

= (2 × 65 + 1)/ 2

By further calculation

= (130 + 1)/ 2

= 131/ 2 km

Distance covered in 1 1/3 hour = 4/3 hour can be written as

= 131/2 × 4/3

We get

= 131/1 × 2/3

We know that distance covered = speed × time

= 131/2 × 4/3

= (131 × 2)/ (1 × 3)

So we get

= 262/3

= 87 1/3 km

Question 6.

(iv) -7 by -14/5

= -7 ÷ – 14/5

= -7 × 5/-14

= 1 × 5/2

= (1 × 5)/ 2

= 5/2

= 2 ½

(v) -14 by 7/-2

= -14 ÷ 7/-2

= -14 × -2/7

= (-2 × -2)/ (1 × 1)

= 4

(vi) -22/9 by 11/18

= – 22/9 ÷ 11/18

= -22/9 × 18/11

= -2/1 × 2/1

= (-2 × 2)/ (1 × 1)

= – 4/1

= – 4

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6. v) -14 by 7/-2

$= -14 \div 7/-2$

$= -14 \times -2/7$

$= (-2 \times -2)/ (1 \times 1)$

$= 4$

(vi) -22/9 by 11/18

$= – 22/9 \div 11/18$

$= -22/9 \times 18/11$

$= -2/1 \times 2/1$

$= (-2 \times 2)/ (1 \times 1)$

$= – 4/1$

$= – 4$

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6.(vii) 35 by -7/9
= 35 ÷ -7/9
= 35 × 9/-7
= 5 × 9/-1
= (5 × 9)/ -1
= 45/-1
= -45

(viii) 21/44 by -11/9
= 21/44 ÷ -11/9
= 21/44 × -9/11
= (21 × -9)/ (44 × 11)
= -189/484

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7.(ii) 3 5/12 – 1 2/3
= (12 × 3 + 5)/ 12 – (3 × 1 + 2)/ 3
= 41/12 – 5/3
LCM of 12 and 3 is 12
= (41 × 1)/ (12 × 1) – (5 × 4)/ (3 × 4)
= (41 – 20)/ 12
= 21/12
= 2/4
= 1 ¾

(iii) (3 5/12 + 1 2/3) ÷ (3 5/12 – 1 2/3)
= [(12 × 3 + 5)/ 12 + (3 × 1 + 2)/ 3] ÷ [(12 × 3 + 5)/ 12 – (3 × 1 + 2)/ 3]
= (41/12 + 5/3) ÷ (41/12 – 5/3)
LCM of 12 and 3 is 12
= (41 + 20)/ 12 ÷ (41 – 20)/ 12
= 61/12 ÷ 21/12
= 61/12 × 12/21
= 61/21
= 2 19/21

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8. The product of two numbers is 14. If one of the numbers is -8/7, find the other.

Solution:

It is given that

Product of two numbers = 14

One of the number = -8/7

Other number = 14 ÷ -8/7

We can write it as

= 14 × -7/8

= -98/8

= – 49/4

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H.W.

Exercise 2 D Q.No.4

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THANKING YOU

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