

10. MULTIPLICATION AND DIVISION OF RATIONAL NUMBERS

(2025/26)

Class: 6th, MATHEMATICS

FOUNDATION. SOLUTIONS

TEACHING TASK
TEEMAINS LEVEL

01. $\frac{1}{1 + \frac{1}{(\frac{3}{2})}} = \frac{1}{1 + \frac{2}{3}} = \frac{1}{(\frac{5}{3})} = \frac{3}{5}$ Ans. A

02. $\frac{24}{39} \times \frac{43}{4} = \frac{6}{13}$ Ans. D

03. $\frac{5}{2} \times 20 = 50 \text{ kg}$ Ans. A

04. $\frac{a+y}{a-y} = \frac{\frac{2}{3} + \frac{3}{2}}{\frac{2}{3} - \frac{3}{2}} = \frac{4+9}{4-9} = -\frac{13}{5}$ Ans. —

05. $-\frac{5}{7} \times 9 = -\frac{45}{7}$ Ans. C

06. $\frac{3}{13} \times -\frac{65}{4} = -\frac{15}{4}$ Ans. B

07. $-\frac{6}{5} - \frac{4}{7} = \frac{-42-20}{35} = -\frac{62}{35}$ Ans. A

08 $12 \times \frac{3}{4} = 9 \text{ ft}$ Ans: B
(2)

09 $x \times \frac{16}{-21} = \frac{4}{7}$ Ans: B
 $\Rightarrow x = \frac{4}{7} \times \frac{-21}{16} = -\frac{3}{4}$

10 $\left(\frac{15}{16} + \frac{5}{4}\right) \div \left(\frac{7}{12} - \frac{2}{3}\right)$
 $= \left(\frac{15+20}{16}\right) \div \left(\frac{7-8}{12}\right)$
 $= \left(\frac{35}{16}\right) \div \left(\frac{-1}{12}\right)$ Ans: C
 $= \frac{35}{16} \times \frac{-12}{1} = -\frac{105}{4}$

JEE ADVANCED LEVEL

01 Conceptual Ans: B, C

02 $\frac{3}{4} \times \left(\frac{1}{2} + \frac{1}{3}\right)$
 $= \frac{3}{4} \times \left(\frac{5}{6}\right) = \frac{15}{8}$ Ans: A, B

03 Statement I: Mathematically (True)
Statement II: Conceptual (True) Ans: A

04 Statement I: Conceptual (True)
Statement II: Conceptual (True) Ans: A

05

Assertion: $\left(\frac{9}{10} \div \frac{3}{2}\right) \div \frac{2}{5}$

$$= \left(\frac{9}{10} \times \frac{2}{3}\right) \div \frac{2}{5}$$

$$= \frac{3}{5} \times \frac{5}{2} = 1 \text{ (True)}$$

Reason: Conceptual (True)

Ans. A

06

Assertion: $-\frac{8}{9} \times -\frac{27}{32} = \frac{3}{4}$

clearly $0 < \frac{3}{4} < 1$ (True)

Reason: Conceptual (False)

Ans: C

07

$$-\frac{3}{8} \times \frac{4}{7} = -\frac{3}{14}$$

multiplicative inverse $-\frac{14}{3}$

Ans. B

08

$$-2x - \frac{1}{5} = \frac{2}{5}$$

Multiplicative inverse $\frac{5}{2}$

Ans B

09

$$\frac{x \times -\frac{5}{7}}{\left(\frac{10}{21}\right)} = \frac{15}{4}$$

$$\Rightarrow x \times \left(-\frac{3}{2}\right) = \frac{15}{4}$$

$$\Rightarrow x = -\frac{5}{2}$$

Ans: -

$$10 \quad \frac{\left(\frac{a}{b}\right) \times -\frac{5}{7}}{\left(\frac{10}{21}\right)} > 0$$

$$\Rightarrow -\frac{3 \times \left(\frac{a}{b}\right)}{2} > 0$$

$$= -\frac{3a}{2b} > 0$$

$$\Rightarrow \frac{a}{b} < 0.$$

Ans: C

11.

$$-\frac{16}{7} \times \frac{-7}{6} = \frac{16}{6} = \frac{8}{3} = 2.66$$

Ans: 2

Integral value = 2

12

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

Ans: 1

13

a) Not defined (s)

b) $-\frac{1}{x}$ (p)

c) positive (q)

d) Negative (r)

Ans: s, p, q, r

14

$$a) \frac{a}{b} \div \left(\frac{c}{d} \times \frac{f}{e}\right)$$

$$= \frac{a}{b} \div \frac{cf}{de}$$

$$= \frac{a}{b} \times \frac{de}{cf} = \frac{ade}{bcf} \quad (s)$$

$$b) \left(\frac{a}{c} \div \frac{e}{d} \right) \div \frac{e}{f}$$

⑤

$$= \left(\frac{a}{c} \times \frac{d}{e} \right) \div \frac{e}{f}$$

$$= \frac{ad}{c^2} \times \frac{f}{e} = \frac{adf}{c^2 e} \quad \underline{(-)}$$

$$c) \frac{c}{d} \div \left(\frac{a}{b} \times \frac{f}{e} \right)$$

$$= \frac{c}{d} \times \frac{be}{af} = \frac{bce}{daf} \quad (p)$$

$$d) \frac{e}{f} \div \left(\frac{c}{d} \times \frac{b}{a} \right)$$

$$= \frac{e}{f} \div \frac{bc}{ad} = \frac{e}{f} \times \frac{ad}{bc} = \frac{ade}{bcf} \quad (r)$$

Ans: - P, r

LEARNERS TASK (QUESTIONS)

01. $\frac{6}{25} \times \frac{25}{7} = \frac{6}{7}$

Ans: A

02. Conceptual

Ans: B

03. $-\frac{y}{x}$

Ans: C

04. $\frac{a}{b} \times \frac{d}{c} = \frac{ad}{bc}$

Ans: C

05. 1

Ans: C

06. $\frac{2}{4} \times \frac{5}{7} \times \frac{8^2}{93} = \frac{10}{21} \quad (\text{or}) \quad \frac{120}{252}$

Ans: D



07 $\left(\frac{2}{5} \times 40\right) + \left(\frac{3}{4} \times 64\right)$ (6)
 $= 16 + 48 = 64$ Ans: A

08 $\frac{4}{15}$ Ans: B

09 1 Ans: B

10 $\frac{1}{x}$ Ans: B

JEE MAINS LEVEL

01. $\frac{2}{5} \times \frac{5}{7} \times \frac{16}{18} \times \frac{3}{4}$
 $= \frac{8}{35}$ Ans: D

02 $\frac{1}{2} \times \left(\frac{3}{4} + \frac{5}{6}\right)$
 $= \frac{1}{2} \times \left(\frac{9+10}{12}\right) = \frac{19}{24}$ Ans: A

03 $\frac{-3}{10} \rightarrow$ Multiplicative Inverse $\frac{-10}{3}$ Ans: C

04 $\frac{1}{2} \times \frac{-1}{10} = \frac{-1}{20}$ Ans: B

05 $36 \times \frac{1}{4} = 9$ Ans: A

06 $\frac{\left(\frac{3}{4}\right)}{\left(\frac{3}{4}\right)} = \frac{3}{4} \times \frac{4}{3} = 1$ Ans: A

$$07 \quad \frac{100}{5} = 20$$

⑦ Ans. B

$$08 \quad \frac{12}{13} \times \frac{7}{6} = \frac{14}{13}$$

Ans. D

$$09 \quad \text{Dividend} = \text{Divisor} \times \text{Quotient} + \text{Remainder}$$

$$\frac{90}{12} = x \times \frac{56}{78} + 0$$

$$\Rightarrow x = \frac{90}{12} \times \frac{78}{56} = \frac{585}{56}$$

Ans. C

$$10 \quad \text{Area} = \frac{5}{2} \times \frac{7}{2} = \frac{35}{4}$$

Ans. B

JEE ADVANCED LEVEL

$$01 \quad \frac{a}{b} \times \frac{d}{c} = \frac{ad}{bc} \quad (\text{or}) \quad \frac{a}{b} \times \frac{1}{\left(\frac{c}{d}\right)}$$

Ans. A, B

02 Please, correct the values.
 $a = \frac{2}{3}, b = \frac{3}{2}, c = \frac{2}{3}, d = \frac{3}{2}$

$$A) a \times b \times c \times d = \frac{2}{3} \times \frac{3}{2} \times \frac{2}{3} \times \frac{3}{2} = 1 \checkmark$$

$$B) \frac{a \times c}{b \times d} = \frac{\frac{2}{3} \times \frac{2}{3}}{\frac{3}{2} \times \frac{3}{2}} \neq 1$$

$$C) \frac{a}{d} \times \frac{b}{c} = \frac{\left(\frac{2}{3}\right)}{\left(\frac{2}{3}\right)} \times \frac{\left(\frac{3}{2}\right)}{\left(\frac{3}{2}\right)} = 1 \checkmark$$

$$D) \frac{ad}{bc} = \frac{\frac{2}{3} \times \frac{3}{2}}{\frac{3}{2} \times \frac{2}{3}} = 1 \checkmark$$

Ans. A, C, D

03 statement I:

$$\frac{3}{2} \times \left(\frac{4}{3} + \frac{2}{3} \right) = \frac{3}{2} \times \frac{4}{3} + \frac{3}{2} \times \frac{2}{3} \quad (\text{False})$$

Ans: B

statement II: Conceptual (False)

04 statement I: $\left(\frac{4}{9} \times \frac{-3}{2} \right) \times \frac{-3}{2} = 1$ (True)

Ans: A

statement II: Conceptual (True)

05 Assertion: $1 \times \frac{8}{5} = -\frac{5}{8} \times \frac{8}{5} = -1$ (True)

Ans: A

Reason: Conceptual (True)

06 Assertion: Mathematically (True)

Ans: A

Reason: Conceptually (True)

07. Area = $18\frac{2}{5} \times 12\frac{1}{2}$

$$= \frac{92}{5} \times \frac{25}{2} = 230 \text{ m}^2$$

Ans: B

08 perimeter = $2(l+b)$

$$= 2 \left(\frac{92}{5} + \frac{25}{2} \right) = \frac{309}{5} = 61\frac{4}{5} \text{ m}$$

Ans: A

09 $R_1 \times R_2 = \frac{5}{6} \times \frac{-3}{4} = -\frac{5}{8} \text{ or } -\frac{15}{24}$

Ans: B, C

10 $\frac{R_1}{R_2} = \frac{\left(\frac{5}{6} \right)}{\left(\frac{-3}{4} \right)} = \frac{5}{6} \times \frac{-4}{3} = -\frac{10}{9}$

Ans: A

$$11. a + b = 2 + 5 = 7$$

(9) Ans: 7

$$\boxed{12} \text{ Area} = \frac{7}{5} \times \frac{10}{21}$$

$$= \frac{2}{3}$$

(Please change,
length = $\frac{7}{5}$ mt
breadth = $\frac{10}{21}$ mt)

Ans: 5

$$\therefore \text{Ans} = 2 + 3 = 5$$

$$13 \text{ a) } \frac{1}{4} \times \left(\frac{2}{3} + \frac{1}{3} \right) = \frac{1}{4} \times 1 = \frac{1}{4} \text{ (r)}$$

$$\text{b) } \frac{5}{2} \div \left(\frac{2}{3} \right) = \frac{5}{2} \times \frac{3}{2} = \frac{15}{4} \text{ (s)}$$

$$\text{c) } \frac{4}{9} \times \frac{6}{24} \times \frac{3}{2} = \frac{1}{6} \text{ (p)}$$

$$\text{d) } \frac{6}{54} \times \frac{54}{6} = 1 \text{ (q)}$$

Ans: r, s, p, q

$$\boxed{14} \text{ a) } -\frac{3}{4} \times \frac{8}{9} \times \frac{3}{2} = -1 \text{ (p)}$$

$$\text{b) } -\frac{5}{6} \div \left(\frac{5}{6} \right) = -\frac{5}{6} \times \frac{6}{5} = -1 \text{ (p)}$$

$$\text{c) } -\frac{7}{10} \times \frac{5}{-14} = \frac{1}{4} \text{ (r)}$$

$$\text{d) } \frac{1}{2} \div \left(-\frac{1}{2} \right) = \frac{1}{2} \times -\frac{2}{1} = -1 \text{ (p)}$$

Ans: p, p, r, p

$\Rightarrow$ THE END $\Leftarrow$