

9. ADDITION AND SUBTRACTION OF RATIONAL NUMBERS ①

Class: VI, MATHEMATICS

FOUNDATION. SOLUTIONS

TEACHING TASK

JEE MAINS LEVEL

01

$$x + 4\frac{1}{7} = 5\frac{1}{7}$$

$$\Rightarrow x = \frac{31}{7} - \frac{29}{7} = \frac{2}{7} =$$

Ans. D

02

$$-\frac{2}{3} - x = \frac{5}{2}$$

$$\Rightarrow x = -\frac{2}{3} - \frac{5}{2} = \frac{-4-15}{6} = -\frac{19}{6}$$

Ans. —

03

$$\frac{7}{8} - \frac{5}{11} = \frac{77-40}{88} = \frac{37}{88}$$

Ans. B

04

$$-\frac{1}{8} - \left(-\frac{2}{5}\right) = -\frac{1}{8} + \frac{2}{5} = \frac{-5+16}{40} = \frac{11}{40}$$

Ans. A

05

$$x + \left(-\frac{3}{5}\right) = 5 \Rightarrow x = 5 + \frac{3}{5} = \frac{28}{5}$$

Ans. D

06

$$-\frac{3}{8} + x = \frac{6}{7}$$

$$\Rightarrow x = \frac{6}{7} + \frac{3}{8} = \frac{48+21}{56} = \frac{69}{56}$$

Ans. B



67. $-\frac{3}{8} + \frac{5}{2} = \frac{2}{8} = \frac{1}{4}$

Ans: —

08 $\frac{4}{3} + \frac{3}{5} + \left(-\frac{2}{5} - \frac{11}{3}\right)$
 $= \frac{4}{3} + \frac{3}{5} + \left(\frac{-6-55}{15}\right)$
 $= \frac{4}{3} + \frac{3}{5} - \frac{61}{15}$
 $= \frac{20+9-61}{15} = \frac{-32}{15}$

Ans: D

09 $\frac{1}{6} + \frac{-2}{5} - \left(-\frac{2}{15}\right)$
 $= \frac{1}{6} - \frac{2}{5} + \frac{2}{15}$
 $= \frac{5-12+4}{30} = \frac{-3}{30} = -\frac{1}{10}$

Ans: B

10 $\frac{4}{3} + \left\{ \frac{5}{8} + \left(\frac{3}{4} - \frac{1}{3}\right) \right\}$
 $= \frac{4}{3} + \left\{ \frac{5}{8} + \left(\frac{9-4}{12}\right) \right\}$
 $= \frac{4}{3} + \left\{ \frac{5}{8} + \frac{5}{12} \right\}$
 $= \frac{4}{3} + \left\{ \frac{15+10}{24} \right\}$
 $= \frac{4}{3} + \frac{25}{24}$
 $= \frac{32+25}{24} = \frac{57}{24} = \frac{19}{8}$

Ans: —

JEE ADVANCED LEVEL (3)

01. $\frac{10}{x} - \frac{8}{x} + \frac{1}{6} = 1$ $\Rightarrow x = \frac{12}{5}$ or $\frac{24}{10}$
 $= \frac{2}{x} = 1 - \frac{1}{6} = \frac{5}{6}$ Ans: B, C

02 $\frac{1}{6} - \frac{5}{6} = -\frac{4}{6} = -\frac{2}{3}$ or $-\frac{4}{6}$ Ans A, D

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

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

05 Assertion: $\frac{4}{9} + \frac{2}{3}$
 $= \frac{4+6}{9} = \frac{10}{9}$ (True)
Reason: Conceptual (True) Ans: A

07 $\frac{3}{4} + \frac{7}{2} + \frac{3}{2}$
 $= \frac{3+14+6}{4} = \frac{23}{4}$ Ans: —

08 $\frac{3}{4} - \frac{7}{2} + \frac{9}{2}$
 $= \frac{3-14+18}{4}$
 $= \frac{7}{4}$ Ans: B

(4)

09.

$$\frac{4}{9} - \frac{3}{5}$$

$$= \frac{20-27}{45} = \frac{-7}{45}$$

Ans-B

10

Conceptual

Ans: B

11

$$\frac{3}{8} - \frac{11}{8} + 2$$

$$= \frac{3-11+16}{8} = \frac{8}{8} = 1$$

Ans: 1

12

$$\frac{111-11}{5} = \frac{100}{5} = 20$$

Ans: 20

13

$$a) \frac{3-1}{5} = \frac{2}{5} (x)$$

$$b) \frac{5}{3} - \frac{1}{3} - \frac{5}{8}$$

$$= \frac{-8-15}{24} = \frac{-23}{24} (p)$$

$$c) -\frac{1}{12} + \frac{6}{11}$$

$$= \frac{-11+72}{132} = \frac{61}{132} (s)$$

$$d) \frac{1}{10} - \frac{2}{3}$$

$$= \frac{3-20}{30} = \frac{-17}{30} (v)$$

Ans: x, p, s, v

14

$$a) -\frac{4}{3} + \frac{6}{7} - \frac{8}{3}$$

$$= \frac{-28+18-56}{21}$$

$$= \frac{-66}{21} = \frac{-22}{7} (s)$$



(5)

$$b) \frac{-7}{6} - \frac{8}{3} - \frac{4}{6}$$

$$= \frac{-7-16-4}{6} = \frac{-27}{6} = \frac{-9}{2} (q)$$

$$c) \frac{-5}{8} - \frac{9}{2} - \frac{3}{8}$$

$$= \frac{-5-36-3}{8} = \frac{-44}{8} = \frac{-11}{2} (p)$$

$$d) \frac{2}{8} + \frac{7}{4} - \frac{9}{8}$$

$$= \frac{-2+14-9}{8} = \frac{3}{8} (r)$$

Ans: s, q, p, r

LEARNERS TASK (CQs)

01

$$\frac{7}{12} + \frac{1}{2}$$

$$= \frac{7+6}{12} = \frac{13}{12}$$

$$\text{Average} = \frac{\left(\frac{13}{12}\right)}{2} = \frac{13}{24}$$

Ans: A

02

$$\frac{1}{2} - \frac{3}{4} + \frac{5}{6} - \frac{7}{8}$$

$$= \frac{12-18+20-21}{24} = \frac{-7}{24}$$

Ans: A

03

$$\frac{-3}{11} + \frac{5}{11} = \frac{2}{11}$$

Ans: A

04

$$\frac{6}{13} - \frac{9}{13} = \frac{-3}{13}$$

Ans: B

(6)

05

$$-\frac{7}{27} + \frac{11}{18}$$

$$= \frac{-14 + 33}{54} = \frac{19}{54}$$

Ans: —

06

Conceptual (B)

Ans: B

07

$$\left(-\frac{4}{7}\right) - (-7)$$

$$= -\frac{4}{7} + 7 = \frac{-4 + 49}{7} = \frac{45}{7}$$

Ans: B

08

$$-\frac{8}{5} - \frac{4}{3}$$

$$= \frac{-24 - 20}{15} = -\frac{44}{15}$$

Ans: A

09

$$\frac{4}{3} + \frac{3}{5} - \frac{2}{5} - \frac{11}{3}$$

$$= \frac{20 + 9 - 6 - 55}{15} = -\frac{32}{15}$$

Ans: B

10

$$\frac{8}{5} + \frac{5}{8}$$

$$= \frac{64 + 25}{40} = \frac{89}{40}$$

Ans: C

JEE MAINS

01

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

$$= \frac{-5 - 2}{6} = -\frac{7}{6}$$

Ans: C

02

$$x + \frac{5}{6} = -\frac{1}{2} \Rightarrow x = -\frac{1}{2} - \frac{5}{6}$$

$$= \frac{-3 - 5}{6} = -\frac{8}{6} = -\frac{4}{3}$$

Ans: A

(9)

03

$$-\frac{5}{8} + x = -\frac{3}{2}$$

$$\Rightarrow x = -\frac{3}{2} + \frac{5}{8}$$

$$= \frac{-12+5}{8} = -\frac{7}{8}$$

Ans. C

04

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

$$\Rightarrow x = -\frac{2}{3} + \frac{1}{6}$$

$$= \frac{-4+1}{6} = -\frac{3}{6} = -\frac{1}{2}$$

Ans. D

05

$$-\frac{9}{7} + \frac{1}{3} - \frac{3}{4}$$

$$= \frac{-108+28-63}{84} = -\frac{143}{84}$$

Ans. A

06

$$x - (-\frac{5}{6}) = \frac{9}{10}$$

$$x = \frac{9}{10} - \frac{5}{6}$$

$$= \frac{54-50}{60} = \frac{4}{60} = \frac{2}{30} = \frac{1}{15}$$

Ans: C

07

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

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

$$= \frac{3}{4} + \frac{1}{10}$$

$$= \frac{15+2}{20} = \frac{17}{20}$$

Ans. D



(8)

08

$$x - \frac{3}{8} = -\frac{2}{11}$$

$$\Rightarrow x = -\frac{2}{11} + \frac{3}{8} = \frac{-16 + 33}{88} = \frac{17}{88}$$

Ans. A

09

$$-\frac{4}{5} + \frac{1}{5} = \frac{-4+1}{5} = -\frac{3}{5}$$

Ans. C

10

$$\frac{-23+5}{28} = \frac{-18}{28} = -\frac{9}{14}$$

Ans. C

JEE ADVANCED

01.

$$-\frac{2}{7} + \frac{9}{7} = \frac{7}{7} = 1$$

Ans. A, C

02

$$A) \frac{-5-1}{6} = \frac{-6}{6} = -1 \checkmark$$

$$C) \frac{-2+3}{7} = \frac{1}{7} \times$$

$$B) \frac{3-5}{4} = \frac{-2}{4} = -\frac{1}{2} \checkmark$$

$$D) \frac{4-2}{5} = \frac{2}{5} \times$$

Ans. A, B

03

Statement I: Mathematically (True)Statement II: Conceptual (True)

Ans. A

04

Statement I: $\frac{2}{3} + \frac{1}{4} = \frac{8+3}{12} = \frac{11}{12}$ (False)Statement II: Conceptual (True)

Ans. D

05

Assertion: $-\frac{5}{8} + \frac{3}{8} = -\frac{2}{8} = -\frac{1}{4}$ (False)Reason: Conceptual (True)

Ans. D



06 Assertion: Conceptual (True)
Reason: Conceptual (True)

⑨

Ans: A

07. $\frac{2}{3} + \frac{3}{2} = \frac{4+9}{6} = \frac{13}{6}$

Ans: C

08 $\left| \frac{2}{3} - \frac{3}{2} \right| = \left| \frac{4-9}{6} \right| = \left| \frac{-5}{6} \right| = \frac{5}{6}$

Ans: A

09 $\frac{6}{11} - \frac{4}{11} = \frac{2}{11}$

Ans: A

Ans: B

10. Conceptual

Ans: O

11. 0

12 $x + \frac{2}{3} + \frac{5}{6} = 0 \Rightarrow x + \frac{9}{6} = 0$
 $\Rightarrow x + \frac{4+5}{6} = 0 \Rightarrow x = -\frac{3}{2}$

Ans: -3

13 a) $\frac{x}{y}(x)$ | c) $\frac{y}{x}(s)$
 b) $0(q)$ | d) $-\frac{x}{y}(p)$

Ans: x, q, s, p

14 a) $\frac{2}{5} + \frac{2}{5} = \frac{5}{5} = 1 (P)$

b) $\frac{10}{9} - \frac{10}{9} = -\frac{0}{9} (Q)$

c) $\frac{1}{2} + \frac{1}{3} = \frac{5}{6} (R)$

d) $\frac{9}{10} + \frac{8}{10} = \frac{17}{10} (S)$

Ans: P, Q, R, S

⇒ THE END

