

Rational number

ch-1 ,class 8

EXERCISE # 1

By Using property find value of (Q.1 to Q.3)

Q.1 $-\frac{2}{3} \times \frac{3}{5} + \frac{5}{2} - \frac{3}{5} \times \frac{1}{6}$

Q.2 $\frac{2}{5} \times \left(-\frac{3}{7}\right) - \frac{1}{6} \times \frac{3}{2} + \frac{1}{14} \times \frac{2}{5}$

Q.3 $\frac{5}{7} + \frac{1}{3} + \frac{8}{9} + \frac{1}{14}$

Q.4 Subtract the first rational number from the second in each of the following:

(i) $\frac{3}{8}, \frac{5}{8}$

(ii) $\frac{-7}{9}, \frac{4}{9}$

(iii) $\frac{-2}{11}, \frac{-9}{11}$

(iv) $\frac{11}{13}, \frac{-4}{13}$

(v) $\frac{1}{4}, \frac{-3}{8}$

(vi) $\frac{-2}{3}, \frac{5}{6}$

(vii) $\frac{-6}{7}, \frac{-13}{14}$

(viii) $\frac{-8}{33}, \frac{-7}{22}$

Q.5 The sum of the two numbers is $\frac{5}{9}$. If one of the numbers is $\frac{1}{3}$, find the other.

Q.6 The sum of two numbers is $\frac{-1}{3}$. If one of the numbers is $\frac{-12}{3}$, find the other.

Q.7 The sum of two numbers is $\frac{-4}{3}$. If one of the numbers is -5 , find the other.

Q.8 The sum of two rational numbers is -8 . If one of the numbers is $\frac{-15}{7}$, find the other.

Q.9 What should be added to $\frac{-7}{8}$ so as to get $\frac{5}{9}$?

Q.10 What number should be added to $\frac{-5}{11}$ so as to get $\frac{26}{33}$?

Q.11 What number should be added to $\frac{-5}{7}$ to get $\frac{-2}{3}$?

Q.12 What number should be subtracted from $\frac{-5}{3}$ to get $\frac{5}{6}$?

Q.13 What number should be subtracted from $\frac{3}{7}$ to get $\frac{5}{4}$?

Q.14 What should be added to $\left(\frac{2}{3} + \frac{3}{5}\right)$ to get $\frac{-2}{15}$?

Q.15 What should be added to $\left(\frac{1}{2} + \frac{1}{3} + \frac{1}{5}\right)$ to get 3?

Q.16 What should be subtracted from $\left(\frac{3}{4} - \frac{2}{3}\right)$ to get $\frac{-1}{6}$?

Q.17 Simply each of the following and write as a rational number of the form $\frac{p}{q}$:

(i) $\frac{3}{4} + \frac{5}{6} + \frac{-7}{8}$

(ii) $\frac{2}{3} + \frac{-5}{6} + \frac{-7}{9}$

(iii) $\frac{-11}{2} + \frac{7}{6} + \frac{-5}{8}$

(iv) $\frac{-4}{5} + \frac{-7}{10} + \frac{-8}{15}$

(v) $\frac{-9}{10} + \frac{22}{15} + \frac{13}{-20}$

(vi) $\frac{5}{3} + \frac{3}{-2} + \frac{-7}{3} + 3$

Q.18 Express each of the following as a rational number of the form $\frac{p}{q}$:

(i) $\frac{-8}{3} + \frac{-1}{4} + \frac{-11}{6} + \frac{3}{8} - 3$

(ii) $\frac{6}{7} + 1 + \frac{-7}{9} + \frac{19}{21} + \frac{-12}{7}$

(iii) $\frac{15}{2} + \frac{9}{8} + \frac{-11}{3} + 6 + \frac{-7}{6}$

(iv) $\frac{-7}{4} + 0 + \frac{-9}{5} + \frac{19}{10} + \frac{11}{14}$

(v) $\frac{-7}{4} + \frac{5}{3} + \frac{-1}{2} + \frac{-5}{6} + 2$

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Q.19 Simplify:

(i) $\frac{-3}{2} + \frac{5}{4} - \frac{7}{4}$

(ii) $\frac{5}{3} - \frac{7}{6} + \frac{-2}{3}$

(iii) $\frac{5}{4} - \frac{7}{6} - \frac{-2}{3}$

(iv) $\frac{-2}{5} - \frac{-3}{10} - \frac{-4}{7}$

(v) $\frac{5}{6} + \frac{-2}{5} - \frac{-2}{15}$

(vi) $\frac{3}{8} - \frac{-2}{9} + \frac{-5}{36}$

Q.20 Multiply:

(i) $\frac{7}{11}$ by $\frac{5}{4}$

(ii) $\frac{5}{7}$ by $\frac{-3}{4}$

(iii) $\frac{-2}{9}$ by $\frac{5}{11}$

(iv) $\frac{-3}{17}$ by $\frac{-5}{-4}$

(v) $\frac{9}{-7}$ by $\frac{36}{-11}$

(vi) $\frac{-11}{13}$ by $\frac{-21}{7}$

(vii) $-\frac{3}{5}$ by $-\frac{4}{7}$

(viii) $-\frac{15}{11}$ by 7

Q.21 Multiply:

(i) $\frac{-5}{17}$ by $\frac{51}{-60}$

(ii) $\frac{-6}{11}$ by $\frac{-55}{36}$

(iii) $\frac{-8}{25}$ by $\frac{-5}{16}$

(iv) $\frac{6}{7}$ by $\frac{-49}{36}$

(v) $\frac{8}{-9}$ by $\frac{-7}{-16}$

(vi) $\frac{-8}{9}$ by $\frac{3}{64}$

Q.22 Simplify each of the following and express the result as a rational number in standard form:

(i) $\frac{-16}{21} \times \frac{14}{5}$

(ii) $\frac{7}{6} \times \frac{-3}{28}$

(iii) $\frac{-19}{36} \times 16$

(iv) $\frac{-13}{9} \times \frac{27}{-26}$

(v) $\frac{-9}{16} \times \frac{-64}{-27}$

(vi) $\frac{-50}{7} \times \frac{14}{3}$

(vii) $\frac{-11}{9} \times \frac{-81}{-88}$

(viii) $\frac{-5}{9} \times \frac{72}{-25}$

Q.23 Simplify:

(i) $\left(\frac{25}{8} \times \frac{2}{5}\right) - \left(\frac{3}{5} \times \frac{-10}{9}\right)$

(ii) $\left(\frac{1}{2} \times \frac{1}{4}\right) + \left(\frac{1}{2} \times 6\right)$

(iii) $\left(-5 \times \frac{2}{15}\right) - \left(-6 \times \frac{2}{9}\right)$

(iv) $\left(\frac{-9}{4} \times \frac{5}{3}\right) + \left(\frac{13}{2} \times \frac{5}{6}\right)$

(v) $\left(\frac{-4}{3} \times \frac{12}{-5}\right) + \left(\frac{3}{7} \times \frac{21}{15}\right)$

(vi) $\left(\frac{13}{5} \times \frac{8}{3}\right) - \left(\frac{-5}{2} \times \frac{11}{3}\right)$

(vii) $\left(\frac{13}{7} \times \frac{11}{26}\right) - \left(\frac{-4}{3} \times \frac{5}{6}\right)$

(viii) $\left(\frac{8}{5} \times \frac{-3}{2}\right) + \left(\frac{-3}{10} \times \frac{11}{16}\right)$

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ANSWER KEY

EXERCISE # 1

1. 2 2. $-\frac{11}{28}$ 3. $\frac{253}{126}$

4. (i) $\frac{1}{4}$ (ii) $\frac{11}{9}$ (iii) $-\frac{7}{11}$ (iv) $-\frac{15}{13}$ (v) $-\frac{5}{8}$ (vi) $\frac{3}{2}$ (vii) $-\frac{1}{14}$ (viii) $-\frac{5}{66}$ 5. $\frac{2}{9}$ 6. $\frac{11}{3}$ 7. $\frac{11}{3}$

8. $-\frac{41}{7}$ 9. $\frac{103}{72}$ 10. $\frac{41}{32}$ 11. $\frac{1}{21}$ 12. $\frac{-5}{2}$ 13. $\frac{-23}{28}$

14. $\frac{-7}{5}$ 15. $\frac{59}{30}$ 16. $\frac{1}{4}$

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EXERCISE # 2

- Q.1** Give examples of
- The rational number that does not have a reciprocal.
 - The rational numbers that are equal to their reciprocals.
 - The rational number that is equal to its negative.
- Q.2** Fill in the blanks.
- Zero has _____ reciprocal.
 - The numbers _____ and _____ are their own reciprocals.
 - The reciprocal of -5 is _____.
 - Reciprocal of $\frac{1}{x}$, where $x \neq 0$ is _____.
 - The product of two rational numbers is always a _____.
 - The reciprocal of a positive rational number is _____.
- Q.3** Represent these numbers on the number line.
- $\frac{7}{4}$
 - $\frac{-5}{6}$
- Q.4** Represent $\frac{-2}{11}$, $\frac{-5}{11}$, $\frac{-9}{11}$ on the number line.
- Q.5** Write five rational numbers which are smaller than 2.
- Q.6** Find ten rational numbers between $\frac{-2}{5}$ and $\frac{1}{2}$.
- Q.7** Find five rational numbers between.
- $\frac{2}{3}$ and $\frac{4}{5}$
 - $\frac{-3}{2}$ and $\frac{5}{3}$
 - $\frac{1}{4}$ and $\frac{1}{2}$
- Q.8** Write five rational numbers greater than -2 .
- Q.9** Find ten rational numbers between $\frac{3}{5}$ and $\frac{3}{4}$.
- Q.10** What expression to be added to $(5x^2 - 7x + 2)$ to produce $(7x^2 - 1)$.
- (A) $2x^2 + 7x + 3$ (B) $2x^2 + 7x - 3$
(C) $12x^2 - 7x + 1$ (D) $2x^2 - 3$
- Q.11** What must be added to $1 - x + x^2 - 2x^3$ to obtain x^3 ?
- (A) $x^3 - x^2 + x - 1$
(B) $-1 + x + x^2 - 3x^3$
(C) $3x^3 - x^2 + x - 1$
(D) None of these
- Q.12** What must be added to the sum of $4x^2 + 3x - 7$ and $3x^2 + 6x + 5$ to get : 1 ?
- (A) $7x^2 + 9x - 3$
(B) $3 - 9x - 7x^2$
(C) $7x^2 + 9x - 2$
(D) None of these
- Q.13** By what number should $\left(\frac{1}{-15}\right)$ be divided so that the quotient equal to $\left(\frac{1}{-5}\right)$.
- Q.14** Simplify each of the following :
- $\left[\left\{\left(\frac{-1}{5}\right)^{-2}\right\}^2\right]^{-1}$
 - $\left\{\left(\frac{1}{3}\right)^{-2} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-2}$
- Q.15** Simplify :
- $\left(\frac{5}{8}\right)^{-7} \times \left(\frac{8}{5}\right)^{-5}$
 - $\left(\frac{-2}{3}\right)^{-2} \times \left(\frac{4}{5}\right)^{-3}$
 - $\left(\frac{3}{4}\right)^{-4} \div \left(\frac{3}{2}\right)^{-3}$
 - $\left(\frac{3}{7}\right)^{-2} \times \left(\frac{7}{6}\right)^{-3}$
- Q.16** Evaluate : $\frac{8^{-1} \times 5^3}{2^{-4}}$
- Q.17** Simplify:
- $\frac{25 \times a^{-4}}{5^{-3} \times 10 \times a^{-8}}$
 - $\frac{3^{-5} \times 10^{-5} \times 125}{5^{-7} \times 6^{-5}}$
- Q.18** By what number should $(-4)^{-2}$ be multiplied so that the product may be equal to 10^{-2} ?

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Q.19 By what number should $(-12)^{-1}$ be divided so that the quotient may be $\left(\frac{2}{3}\right)^{-1}$?

Q.20 By what number should $\left(\frac{-3}{2}\right)^{-3}$ be divided so that the quotient may be $\left(\frac{4}{27}\right)^{-2}$?

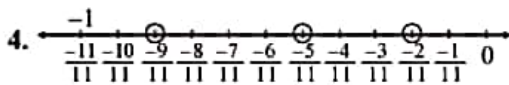
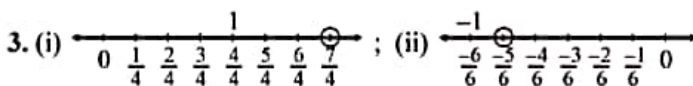
Q.21 Find m so that $\left(\frac{2}{9}\right)^3 \times \left(\frac{2}{9}\right)^{-6} = \left(\frac{2}{9}\right)^{2m-1}$

ANSWER KEY

EXERCISE # 2

1. (a) 0; (b) 1 and (-1) ; (c) 0

2. (a) No; (b) 1, -1 ; (c) $\frac{-1}{5}$; (d) x ; (e) Rational Number; (f) positive



5. Some of these are 1, $\frac{1}{2}$, 0, -1 , $\frac{-1}{2}$

6. $\frac{-7}{20}$, $\frac{-6}{20}$, $\frac{-5}{20}$, $\frac{-4}{20}$, $\frac{-3}{20}$, $\frac{-2}{20}$, $\frac{-1}{20}$, 0, ..., $\frac{1}{20}$, $\frac{2}{20}$ (These can be many more such rational numbers)

7. (i) $\frac{41}{60}$, $\frac{42}{60}$, $\frac{43}{60}$, $\frac{44}{60}$, $\frac{45}{60}$; (ii) $\frac{-8}{6}$, $\frac{-7}{6}$, 0, $\frac{1}{6}$, $\frac{2}{6}$; (iii) $\frac{9}{32}$, $\frac{10}{32}$, $\frac{11}{32}$, $\frac{12}{32}$, $\frac{13}{32}$
(There can be many more such rational numbers)

8. $\frac{-3}{2}$, -1 , $\frac{-1}{2}$, 0, $\frac{1}{2}$ (There can be many more such rational numbers)

9. $\frac{97}{160}$, $\frac{98}{160}$, $\frac{99}{160}$, $\frac{100}{160}$, $\frac{101}{160}$, $\frac{102}{160}$, $\frac{103}{160}$, $\frac{104}{160}$, $\frac{105}{160}$, $\frac{106}{160}$
(There can be many more such rational numbers)

13. $\frac{1}{3}$

14. (i) $\frac{1}{625}$; (ii) $\frac{1}{16}$

15. (i) $\frac{64}{25}$; (ii) $\frac{1125}{256}$; (iii) $\frac{32}{3}$; $\frac{24}{7}$

16. 250

17. (i) $\frac{625}{2}a^4$; (ii) 5^5

18. $\frac{4}{25}$

19. $\frac{-1}{18}$

20. $-2 \times \left(\frac{4}{27}\right)^3$

21. $m = -1$

homework

