EXERCISE # 1

Q.1 Draw a number line to represent the following rational numbers :

(i) $\frac{1}{3}$ (ii) $\frac{2}{3}$

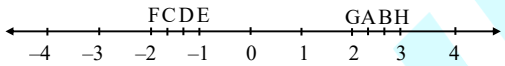
(iii) $\frac{5}{8}$ (iv) $\frac{7}{3}$

Q.2 Draw the number line and represent the following rational numbers on it :

(i) $\frac{7}{5}$ (ii) $\frac{-5}{7}$

(iii) $-3\frac{1}{3}$ (iv) $\frac{12}{-5}$

Q.3 The points A, B, C, D, E, F, G and H on the number line are such that ED = DC = CF and GA = AB = BH. Name the rational numbers represented by A, B, C and D.



Q.4 Give four rational numbers equivalent to

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

(iv) $\frac{-3}{4}$ (v) $\frac{-2}{-3}$

Q.5 List five rational numbers between

(i) –2 and 0 (ii) –3 and –2

(iii) $\frac{-3}{5}$ and $\frac{-2}{3}$ (iv) $\frac{1}{3}$ and $\frac{4}{5}$

Q.6 Write three more rational numbers in each of the following patterns :

(i) $\frac{1}{3}, \frac{2}{6}, \frac{3}{9}, \ldots..$

(ii) $\frac{-1}{6}, \frac{-2}{12}, \frac{-3}{18}, \ldots..$

(iii) $\frac{-3}{5}, \frac{-9}{15}, \frac{-15}{25}, \ldots...$

(iv) $\frac{-2}{5}, \frac{2}{-5}, \frac{-4}{10}, \frac{4}{-10}, \ldots..$

Q.7 Draw the number line and represent the following rational numbers on it :

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

(iii) $\frac{-8}{3}$ (iv) $\frac{9}{2}$

Q.8 Give four rational numbers equivalent to

(i) $\frac{-1}{8}$ (ii) $\frac{6}{-5}$

(iii) $\frac{7}{9}$ (iv) $\frac{4}{7}$

Q.9 Rewrite the following rational numbers in the simplest form :

(i) $\frac{-6}{4}$ (ii) $\frac{35}{40}$

(iii) $\frac{-55}{75}$ (iv) $\frac{14}{-28}$

Q.10 Write the following rational numbers in ascending order :

(i) $\frac{-4}{5}, \frac{-2}{5}, \frac{-3}{5}$ (ii) $\frac{2}{3}, \frac{-2}{9}, \frac{-5}{3}$

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

Q.11 Write the following rational numbers in descending order :

(i) $\frac{7}{9}, \frac{-3}{5}, \frac{-2}{4}$ (ii) $\frac{3}{-5}, \frac{5}{7}, \frac{-2}{5}$

(iii) $\frac{3}{-5}, \frac{-13}{15}, \frac{2}{-5}$

Q.12 Which is greater in each of the following :

(i) 0, $\frac{4}{7}$ (ii) $\frac{-5}{7}$, 0

(iii) $\frac{-2}{3}$, $\frac{-3}{2}$ (iv) $\frac{-1}{2}$, $\frac{-3}{9}$

(v) $\frac{-1}{4}$, $\frac{-4}{1}$ (vi) $\frac{-1}{40}$, $\frac{3}{-80}$

Q.13 The product of two rational numbers is $\frac{-8}{9}$. If one of the numbers is $\frac{-4}{15}$, find the other.

Q.14 By what number should we multiply $\frac{-1}{6}$, so that the product is $\frac{-23}{9}$?

Q.15 By what number should we multiply $\frac{-15}{28}$, so that the product is $\frac{-5}{7}$?

Q.16 Find (x + y) ÷ (x – y) if :

(i) $x = \frac{2}{3}$, $y = \frac{3}{2}$ (ii) $x = \frac{1}{4}$, $y = \frac{3}{2}$

Q.17 Find the sum of the following rational numbers :

(i) $\frac{6}{13}$ and $\frac{-2}{13}$ (ii) $\frac{5}{7}$ and $\frac{-3}{7}$

(iii) $\frac{1}{12}+\frac{-5}{8}+\frac{-2}{4}$ (iv) $\frac{-3}{5}$ and $\frac{5}{3}$

Q.18 Subtract :

(i) $\frac{6}{9}$ from $\frac{6}{9}$ (ii) $\frac{7}{8}$ from $\frac{-2}{8}$

(iii) $\frac{-5}{7}$ from $\frac{-3}{21}$ (iv) $\frac{3}{4}$ from $\frac{19}{12}$

Q.19 Verify the following :

(i) $\frac{-13}{5}+\frac{5}{7}=\frac{5}{7}+\frac{-13}{5}$

(ii) $\frac{+4}{(-9)}+\left(\frac{-6}{13}\right)=\left(\frac{-6}{13}\right)+\frac{4}{(-9)}$

Q.20 Multiply :

(i) $\frac{6}{20}$ and $\frac{30}{18}$

(ii) $\frac{17}{4}$ and $\left(\frac{-4}{9}\right)$

(iii) $\left(\frac{36}{5}\right)$ and $\left(\frac{35}{-12}\right)$

(iv) $\frac{2}{5}\times\frac{6}{4}\times\frac{8}{3}$

(v) $-\frac{5}{2}\times\frac{7}{8}\times\frac{16}{7}$

(vi) $\frac{(-8)}{9}\times\frac{27}{32}\times\frac{(-8)}{35}$

Q.21 Verify :

(i) $\frac{-12}{17}\times\frac{3}{6}=\frac{3}{6}\times\frac{-12}{17}$

(ii) $\frac{4}{-23}\times\frac{-7}{25}=\frac{-7}{25}\times\frac{4}{-23}$

Q.22 Divide :

(i) $\frac{5}{10}$ by $\frac{-20}{35}$

(ii) $\frac{-6}{17}$ by $\frac{-17}{6}$

Q.23 Simplify :

(i) $\frac{14}{18}\div\left(\frac{-4}{6}\right)$

(ii) $\frac{17}{2}\div\left(\frac{40}{-2}\right)$

Q.24 State true or false for each of the following :

(i) Addition of two rational numbers is also a rational number.

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

(iii) $\frac{4}{5} \div \frac{6}{7} = \frac{6}{7} \div \frac{4}{5}$

(iv) $0 \div \frac{6}{5}$ = meaningless

(v) $\frac{-8}{3} \div 0 = 0$

(vi) $\frac{-9}{14} \div \frac{14}{-9} = 1$

(vii) $\left(\frac{9}{4} \times \frac{5}{7}\right) = \left(\frac{5}{7} \times \frac{9}{4}\right)$

ANSWER KEY

3. $A \rightarrow 2\frac{1}{3} = \frac{7}{3}$, $B = 2\frac{2}{3}$, $C = -1\frac{2}{3}$, $D = -1\frac{1}{3}$

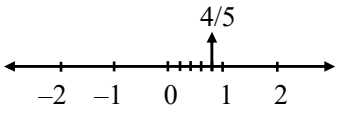
4. (i) $\frac{6}{16}, \frac{9}{24}, \frac{12}{32}, \frac{15}{40}$ (ii) $\frac{14}{-8}, \frac{21}{-12}, \frac{28}{-16}, \frac{35}{-20}$ (iii) $\frac{10}{12}, \frac{15}{18}, \frac{20}{24}, \frac{25}{30}$ (iv) $\frac{-6}{8}, \frac{-9}{12}, \frac{-12}{16}, \frac{-15}{20}$

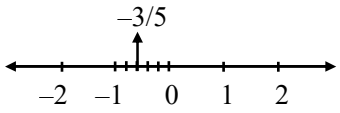
(v) $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}$

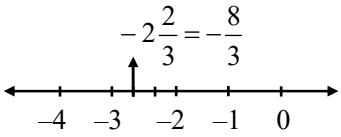
5. (i) $\frac{-19}{10}, \frac{-18}{10}, \frac{-17}{10}, \frac{-10}{10} \ldots \frac{-3}{10}, \frac{-2}{10}, \frac{-1}{10}$ etc. (ii) $\frac{-29}{10}, \frac{-28}{10}, \frac{-27}{10}, \frac{-26}{10}, \frac{-19}{10}$

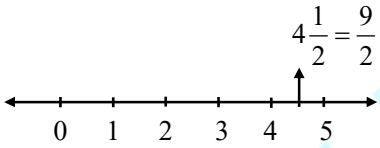
(iii) $\frac{-91}{150}, \frac{-92}{150}, \frac{-93}{150}, \ldots$ (iv) Any 5 rational number between $\frac{51}{150}$ to $\frac{119}{150}$.

6. (i) $\frac{4}{12}, \frac{5}{15}, \frac{6}{18}$ (ii) $\frac{-4}{24}, \frac{-5}{30}, \frac{-6}{36}$ (iii) $\frac{-21}{35}, \frac{-27}{45}, \frac{-33}{55}$ etc. (iv) $\frac{-6}{15}, \frac{6}{-15}, \frac{-8}{20}, \frac{8}{-20}$

7. (i) 

(ii) 

(iii) 

(iv) 

8. (i) $\frac{-2}{16},\frac{-3}{24},\frac{-4}{32},\frac{-5}{40}$ (ii) $\frac{12}{-10},\frac{18}{-15},\frac{24}{-20},\frac{30}{-25}$ etc. (iii) $\frac{14}{18},\frac{21}{27},\frac{28}{36},\frac{35}{45}$ (iv) $\frac{8}{14},\frac{12}{21},\frac{16}{28},\frac{20}{35}$

9. (i) $\frac{-3}{2}$ (ii) $\frac{7}{8}$ (iii) $\frac{-11}{15}$ (iv) $\frac{-1}{2}$

10. (i) $\frac{-4}{5},\frac{-3}{5},\frac{-2}{5}$ (ii) $\frac{-5}{3},\frac{-2}{9},\frac{2}{3}$ (iii) $\frac{-4}{2},\frac{-4}{3},\frac{-4}{7}$

11. (i) $\frac{7}{9},\frac{-2}{4},\frac{-3}{5}$ (ii) $\frac{5}{7},\frac{-2}{5},\frac{-3}{5}$ (iii) $\frac{-2}{5},\frac{-3}{5},\frac{-13}{15}$

12. (i) $\frac{4}{7}>0$ (ii) $0>\frac{-5}{7}$ (iii) $\frac{-2}{3}>\frac{-3}{2}$ (iv) $\frac{-3}{9}>\frac{-1}{2}$ (v) $\frac{-1}{4}>-4$ (vi) $\frac{-1}{40}>\frac{3}{-80}$

13. $\frac{10}{3}$ **14.** $\frac{46}{3}$ **15.** $\frac{4}{3}$

16. (i) $-2\frac{3}{5}$ (ii) $-1\frac{2}{5}$

17. (i) $\frac{4}{13}$ (ii) $\frac{2}{7}$ (iii) $\frac{-25}{24}$ (iv) $\frac{16}{15}$

18. (i) 0 (ii) $\frac{-9}{8}$ (iii) $\frac{-4}{7}$ (iv) $\frac{5}{6}$

20. (i) $\frac{1}{2}$ (ii) $\frac{-17}{9}$ (iii) –21 (iv) $\frac{8}{5}$ (v) –5 (vi) $\frac{6}{35}$

22. (i) $\frac{-7}{8}$ (ii) $\frac{36}{289}$

23. (i) $\frac{-7}{6}$ (ii) $\frac{-17}{40}$

24. (i) T (ii) F (iii) F (iv) F (v) F (vi) F (vii) T

EXERCISE # 2

Q.1 Write True (T) or False (F) for the following statements :

(i) $\frac{-4}{6}$ is a fraction.

(ii) $\frac{26}{53}$ is equivalent to $\frac{2}{4}$.

(iii) $1\frac{1}{3}$ is a mixed number.

(iv) $\frac{170}{1700}$ is equivalent to $\frac{1}{10}$.

(v) Rational number $\frac{1}{7}$ is in the lowest form, but $\frac{7}{1}$ is not in the lowest form.

(vi) Equation 7x + 7 = 0 can be solved in integers.

(vii) Equation $6x + 5 = 0$ can be solved in a fraction.

(viii) $\frac{2}{0}$ is not a rational number.

Q.2 Write 'true' (T) or 'false' (F) for each of the following :

(i) The rational number $\frac{1}{4}$ lies to the left of the rational number $-\frac{1}{4}$.

(ii) Zero is greater than every positive rational number.

(iii) Every positive rational number is greater than every negative rational number.

(iv) Every negative rational number is smaller than zero.

Q.3 Which of the following statements are true (T) or false (F) :

(i) Every integer is a rational number.

(ii) Every rational number is an integer.

(iii) If $\frac{a}{b}$ is a rational number and m is an integer, then $\frac{a}{b} = \frac{a \times m}{b \times m}$.

(iv) If $\frac{a}{b}$ is a rational number and m is the greatest common divisor of a and b, then $\frac{a}{b} = \frac{a \div m}{b \div m}$.

(v) Two rational numbers with different numerators cannot be equal.

(vi) The rational number $\frac{7}{-4}$ lies on the right of '0' on the number line.

(vii) The rational numbers $\frac{1}{2}$ and –1 lie on opposite sides of '0' on the number line.

Q.4 Write True (T) or False (F) for the following statements :

(i) $-3 < \frac{-13}{6} - \frac{11}{7}$.

(ii) $\left(\frac{-3}{4}\right) - \left(\frac{-6}{5}\right) > \frac{1}{5}$.

(iii) The negative of a negative rational number is a positive rational number.

(iv) If x and y are two given rational numbers such that $x > y$, then $(x - y)$ is always a positive rational number.

(v) If x and y are two given rational numbers such that $x < y$, then $(x - y)$ is always a negative rational number.

Q.5 Write the following rational numbers in the lowest form :

(i) $\frac{3}{15}$ (ii) $\frac{-35}{150}$ (iii) $\frac{64}{-256}$

Q.6 Write the rational number whose numerator and denominator are given below :

(i) 1 and 64 (ii) –2 and –17

Q.7 Express the rational number $\frac{-4}{5}$ with numerator :

(i) 8 (ii) –12 (iii) –20

Q.8 Express the rational number $\frac{6}{-7}$ whose denominator is :

(i) 7 (ii) –21

Q.9 Express $\frac{-48}{60}$ as rational number with denominator 5.

Q.10 Fill in the blanks by the correct symbols >, < or = :

(i) $\frac{-7}{9} \square \frac{1}{9}$ (ii) $\frac{-3}{7} \square \frac{-5}{8}$

(iii) $\frac{-6}{-7} \square \frac{18}{21}$ (iv) $-8\frac{1}{3} \square -3\frac{6}{7}$

Q.11 Verify that, x + y = y + x for the following :

(i) $x = \frac{1}{6}$; $y = \frac{2}{3}$ (ii) $x = \frac{-8}{9}$; $y = \frac{5}{7}$

Q.12 Evaluate the following :

(i) $\frac{2}{5} + \frac{8}{3} + \frac{4}{5} + \frac{-2}{3}$

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

Q.13 The sum of two rational numbers is –8. If one of the numbers is $\frac{-10}{7}$, find the other number.

Q.14 What number should be subtracted from $\frac{1}{3}$ so as to get $\frac{-5}{12}$?

Q.15 Subtract $\frac{-8}{9}$ from $\frac{11}{24}$. Also subtract $\frac{11}{24}$ from $\frac{-8}{9}$ and compare both the results.

Q.16 The sum of two numbers is $\frac{-1}{3}$. If one of the numbers is $\frac{-12}{3}$, find the other number.

Q.17 What should be added to $\frac{-7}{9}$ so as to get $\frac{5}{9}$?

ANSWER KEY

1. (i) F (ii) F (iii) T (iv) T (v) F (vi) T (vii) F (viii) T

2. (i) F (ii) F (iii) T (iv) T **3.** (i) T (ii) F (iii) T (iv) T (v) F (vi) F (vii) T

4. (i) F (ii) T (iii) T (iv) T (v) T **5.** (i) $\frac{1}{5}$ (ii) $\frac{-7}{30}$ (iii) $\frac{-1}{4}$

6. (i) $\frac{1}{64}$ (ii) $\frac{-2}{-17}$ **7.**(i) $\frac{8}{-10}$ (ii) $\frac{-12}{15}$ (iii) $\frac{-20}{25}$

8. (i) $\frac{-6}{7}$ (ii) $\frac{18}{-21}$ **9.** $\frac{-4}{5}$

10. (i) $\frac{-7}{9} < \frac{1}{9}$ (ii) $\frac{-3}{7} > \frac{-5}{8}$ (iii) $\frac{-6}{-7} = \frac{18}{21}$ (iv) $-8\frac{1}{3} < -3\frac{6}{7}$

12. (i) $3\frac{1}{5}$ (ii) $\frac{121}{140}$ **13.** $\frac{-46}{7}$ **14.** $\frac{3}{4}$ **15.** $\frac{97}{72} > \frac{-97}{72}$ **16.** $\frac{11}{3}$ **17.** $\frac{4}{3}$