MATHS

BOOKS - MTG IIT JEE FOUNDATION

RATIONAL NUMBERS

Illustration

1. Find two equivalent ration numbers for $\frac{14}{9}$

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2. Write $\frac{87}{-116}$ in standard form.

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3. Compare $\frac{2}{3}$ and $\frac{-5}{3}$.

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4. Compare $\frac{5}{3}$ and $\frac{6}{5}$.

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5. Arrange the following rational numbers in descending order.

$\frac{4}{21}, \frac{-6}{7}, \frac{23}{35}, \frac{9}{-14}$

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6. Represent 3/4 on the number line.

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7. Represent 3/5 and -8/5 on the number line

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8. List three rational numbers between $\frac{-4}{5}$ and $\frac{-2}{3}$.

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9. Find he value of p such that $\frac{-3}{7}$ and $\frac{p}{-28}$ are equivalent rational numbers.

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10. Add $\frac{11}{8}$ and $\frac{-6}{8}$.

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11. Add $\frac{-6}{5}, \frac{-9}{5}$ and $\frac{-3}{5}$.

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12. Add $\frac{12}{8}$ and $\frac{-9}{8}$.

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13. Add $-\frac{2}{9}$ and $\frac{6}{5}$.

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14. Substract the rational numbers 3/4 and 2/4 by using the proper rules.

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15. Subtract the rational numbers $\frac{3}{2}$ and $\frac{8}{6}$.

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16. Multiply the rational numbers, $\frac{2}{4}$ and $\frac{6}{9}$.

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17. Divide $\frac{-1}{2} by \frac{1}{6}$.

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18. The product of two rational numbers is $\frac{-14}{45}$. If one numbers is $\frac{-2}{9}$, find the other number.

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19. A car covers a distance of $100\frac{1}{3}$ km in $1\frac{1}{2}$hours. Find the distance travelled in 1 hour .

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20. The rational number $\frac{-8}{35}$ is divided by a number and the result is $\frac{-4}{5}$ What is the number ?

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21. Divide the sum of $\frac{-13}{5}$ and $\frac{4}{-15}$ by their difference.

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Solved Example

1. Express $\frac{7}{-3}$ as a rational number with denominator :

-15

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2. Express $\frac{7}{-3}$ as a rational number with denominator :

12

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3. Express $\frac{7}{-3}$ as a rational number with denominator :

18

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4. Express $-\frac{5}{8}$ as a rational number with numerator:

-10

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5. Express $-\frac{5}{8}$ as a rational number with numerator:

10

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6. Express $-\frac{5}{8}$ as a rational number with numerator:

15

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7. Find there rational numbrs equivalent to $-\frac{2}{3}$.

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8. Arrange these rational numbers in ascending order $\frac{3}{8}, \frac{4}{12}, \frac{-7}{16}, \frac{-2}{3}$.

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9. Find 3 rational numbers between $\frac{3}{4}$ and $\frac{1}{2}$.

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10. Evaluate: $2 + \frac{8}{-9} + \frac{-2}{3}$

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11. Evaluate: $1 - \left(\frac{5}{-7}\right) - \frac{3}{14}$

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12. What should be subtracted from $-\frac{9}{20}$ to get $-\frac{1}{5}$?

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13. Simplify : $\left(\frac{21}{16} \times \frac{12}{9}\right) \div \left(\frac{-3}{8} \times \left(\frac{-12}{9}\right)\right)$

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14. Verify $x \times (y + z) = (x \times y) + (x \times z)$, if $x = \frac{-3}{2}, y = \frac{4}{3}, z = -1$

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15. Find four rational numbers between 1/9 and 1/3 and represent them on the number line.

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16. Solve the following.

$$\frac{1}{2} + \left(\frac{-7}{5}\right)$$

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17. Simplify the following.

$$\frac{1}{3}+\left(\frac{2}{5}+\left(\frac{-11}{15}\right)\right)$$

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18. Solve the following.

$$\frac{-6}{7}+0$$

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19. Solve the following.

$$\frac{-8}{9}+\frac{8}{9}$$

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20. Simplify the rational number and represent them on the number line.

$$\frac{-4}{9} - \frac{1}{9}$$

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21. Simplify the rational number and represent them on the number line.

$$\frac{-7}{9} \times \frac{3}{2}$$

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22. Arrange the following numbers in ascending order :

$$\frac{9}{15}, \frac{-8}{2}, \frac{-3}{-7}, -8\frac{2}{11}, \frac{1}{5}$$

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23. Arrange the rational numbers $\frac{-3}{7}, \frac{5}{-14}, \frac{-7}{12}$ in ascending order.

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24. How many piece of tape $3\frac{4}{7}$ cm long can be cut from a long tape, which is 1 metre 75 cm ?

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25. Divide the sum of $\frac{-8}{7}$ and $\frac{5}{14}$ by their product.

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26. Simplify:

$$\left(\frac{-91}{63} \times \frac{-35}{26}\right) - \left(-3\frac{4}{17} \times \frac{-85}{33}\right) + \left(\frac{-11}{18} \times \frac{12}{-33} \times \frac{3}{4}\right)$$

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27. Simplify: $\frac{7}{5} - \frac{-9}{19} + \frac{5}{-38}$

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28. Simplify:

$$\left[\frac{5}{23} + \left(-\frac{18}{115}\right) + \left(\frac{-28}{138}\right)\right] \times \left[\left(\frac{23}{14}\right) \div \left(\frac{69}{17}\right)\right]$$

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Ncert Section Exercise 9 1

1. List five rational numbers between:

$-1 \text{ and } 0$

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2. list five rational numbers between -2 and -1.

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3. List five rational numbers between:

$\frac{-4}{5} \text{ and } \frac{-2}{3}$

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4. List five rational numbers between:

$$-\frac{1}{2} \text{ and } \frac{2}{3}$$

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5. Write four more rational number in each of the patterns:

$$\frac{-3}{5}, \frac{-6}{10}, \frac{-9}{15}, \frac{-12}{20}$$

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6. Write four more rational number in each of the patterns:

$$\frac{-1}{4}, \frac{-2}{8}, \frac{-3}{12},$$

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7. Write four more rational number in each of the patterns:

$$\frac{-1}{6}, \frac{2}{-12}, \frac{3}{-18}, \frac{4}{-24}, \cdots$$

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8. Write four more rational number in each of the patterns:

$$\frac{-2}{3}, \frac{2}{-3}, \frac{4}{-6}, \frac{6}{-9}, \cdots$$

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9. Give four rational numbers equivalent to:

$$\frac{-2}{7}$$

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10. Give four rational numbers equivalent to:

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

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11. Give four rational numbers equivalent to:

$$\frac{4}{9}$$

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12. Draw the number line and represent the rational number on it:

$$\frac{3}{4}$$

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13. Draw the number line and represent the rational number on it:

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

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14. Draw the number line and represent the rational number on it:

$$\frac{-7}{4}$$

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15. Draw the number line and represent the rational number on it:

$$\frac{7}{8}$$

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16. The points P, Q, R, S, T, U, A and B on the number line are such that, TR = RS = SU and AP = PQ = QB. Name the rational numbers represented by P, Q, R and S.

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17. Which of the pair represent the same rational number ?

$\frac{-7}{21}$ and $\frac{3}{9}$

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18. Which of the pair represent the same rational number ?

$\frac{-16}{20}$ and $\frac{20}{-25}$

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19. Which of the pair represent the same rational number ?

$\frac{-2}{-3}$ and $\frac{2}{3}$

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20. Which of the pair represent the same rational number ?

$\frac{-3}{5}$ and $\frac{-12}{20}$

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21. Which of the pair represent the same rational number ?

$\frac{8}{-5}$ and $\frac{-24}{15}$

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22. Which of the pair represent the same rational number ?

$\frac{1}{3}$ and $\frac{-1}{9}$

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23. Which of the pair represent the same rational number ?

$\frac{-5}{-9}$ and $\frac{5}{-9}$

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24. Rewrite the rational number is the simplest form :

$\frac{-8}{6}$

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25. Rewrite the rational number is the simplest form :

$$\frac{25}{45}$$

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26. Rewrite the rational number is the simplest form :

$$\frac{-44}{72}$$

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27. Rewrite the rational number is the simplest form :

$$\frac{-8}{10}$$

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28. Fill in the boxes the correct symbol out of $>$, $<$ and $=$.

$$\frac{-5}{7} \square \frac{2}{3}$$

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29. Fill in the boxes the correct symbol out of $>$, $<$ and $=$.

$$\frac{-4}{5} \square \frac{-5}{7}$$

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30. Fill in the boxes the correct symbol out of $>$, $<$ and $=$.

$$\frac{-7}{8} \square \frac{14}{-16}$$

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31. Fill in the boxes the correct symbol out of $>$, $<$ and $=$.

$$\frac{-8}{5} \square \frac{-7}{4}$$

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32. Fill in the boxes the correct symbol out of $>$, $<$ and $=$.

$$\frac{1}{-3} \square \frac{-1}{4}$$

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33. Fill in the boxes the correct symbol out of $>$, $<$ and $=$.

$$\frac{5}{-11} \square \frac{-5}{11}$$

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34. Fill in the boxes the correct symbol out of $>, <$ and $=$.

$0 \square \frac{-7}{6}$

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35. Which is greater in each of the following

$\frac{2}{3}, \frac{5}{2}$

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36. Which is greater in each of the

$\frac{-5}{6}, \frac{-4}{3}$

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37. Which is greater in each of the

$\frac{-3}{4}, \frac{2}{-3}$

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38. Which is greater in each of the

$\frac{-1}{4}, \frac{1}{4}$

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39. Which is greater in each of the

$-3\frac{2}{7}, \ -3\frac{4}{5}$

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40. Write the rational number in ascending order :

$$\frac{-3}{5}, \frac{-2}{5}, \frac{-1}{5}$$

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41. Write the rational number in ascending order :

$$\frac{-1}{3}, \frac{-2}{9}, \frac{-4}{3}$$

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42. Write the rational number in ascending order :

$$\frac{-3}{7}, \frac{-3}{2}, \frac{-3}{4}$$

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Ncert Section Exercise 9 2

1. Find the sum:

$$\frac{5}{4} + \left(\frac{-11}{4}\right)$$

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2. Find the sum:

$$\frac{5}{3} + \frac{3}{5}$$

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3. Find the sum:

$$\frac{-9}{10} + \frac{22}{15}$$

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4. Find the sum:

$$\frac{-3}{-11} + \frac{5}{9}$$

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5. Find the sum:

$$\frac{-8}{19} + \frac{(-2)}{57}$$

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6. Find the sum:

$$\frac{-2}{3} + 0$$

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7. Find the sum:

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

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8. Find

$$\frac{7}{24}-\frac{17}{36}$$

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9. Find

$$\frac{5}{63}-\left(\frac{-6}{21}\right)$$

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10. Find

$$\frac{-6}{13} - \left(\frac{-7}{15}\right)$$

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11. Find

$$\frac{-3}{8} - \frac{7}{11}$$

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12. Find

$$-2\frac{1}{9} - 6$$

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13. Find the product :

$$\frac{9}{2} \times \left(\frac{-7}{4}\right)$$

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14. Find the product :

$$\frac{3}{10} \times (-9)$$

Watch Video Solution

15. Find the product :

$$\frac{-6}{5} \times \frac{9}{11}$$

Watch Video Solution

16. Find the product :

$$\frac{3}{7} \times \left(\frac{-2}{5}\right)$$

Watch Video Solution

17. Find the product :

$$\frac{3}{11} \times \frac{2}{5}$$

Watch Video Solution

18. Find the product :

$$\frac{3}{-5} \times \frac{-5}{3}$$

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19. Find the value of :

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

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20. Find the value of :

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

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21. Find the value of :

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

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22. Find the value of :

$$\frac{-1}{8}+\frac{3}{4}$$

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23. Find the value of :

$$\frac{-2}{13}+\frac{1}{7}$$

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24. Find the value of :

$$\frac{-7}{12}+\left(\frac{-2}{13}\right)$$

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25. Find the value of :

$$\frac{3}{13} \div \left(\frac{-4}{65}\right)$$

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Exercise Multiple Choice Questions Level 1

1. Write down the rational number whose numeratio is $(-2) \times 3$ and denominator is $(17-2) \times (9-6)$.

A. $\frac{-6}{45}$

B. $\frac{6}{40}$

C. $\frac{6}{42}$

D. $\frac{-6}{42}$

Answer: A

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2. Which of the following rational numbers is negative ?

A. $\frac{(-3)}{7}$

B. $\frac{(-5)}{-8}$

C. $\frac{9}{83}$

D. $\frac{(-155)}{-197}$

Answer: A

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3. Which rational number has to be multiplied with 64 to get the product $-49\frac{3}{5}$?

A. $\frac{-35}{43}$

B. $\frac{-31}{40}$

C. $\frac{-33}{40}$

D. $\frac{-37}{43}$

Answer: B

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4. Find the value of the expression $\frac{3}{5} \times \frac{3}{14} \times \frac{15}{2} \times \frac{-7}{9}$.

A. $\frac{-7}{8}$

B. $\frac{-5}{6}$

C. $\frac{-3}{4}$

D. $\frac{-3}{5}$

Answer: C

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5. Evaluate: $\left(-\frac{3}{5}\right) \times (-10)$

A. -6

B. 6

C. 8

D. -8

Answer: B

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6. What is the multiplication of $2\frac{1}{5}$ and $5\frac{1}{2}$?

A. $2\frac{1}{5}$

B. $12\frac{1}{10}$

C. $\frac{5}{11}$

D. $-\frac{5}{11}$

Answer: B

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7. What is the multiplication of $-\frac{6}{9}$ and $\frac{9}{6}$?

A. 3

B. -1

C. $-\frac{6}{9}$

D. $-\frac{9}{6}$

Answer: B

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8. What is the product of $-\frac{1}{5}$ and $5\frac{3}{7}$?

A. $-1\frac{3}{35}$

B. $-1\frac{5}{35}$

C. $-1\frac{1}{4}$

D. $-\frac{11}{5}$

Answer: A

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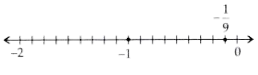
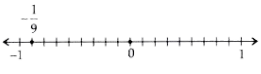
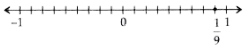
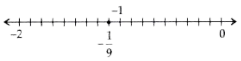
9. Which number line correctly shows the rational number $-\frac{2}{9}+\frac{1}{9}$?

A. 

B. 

C. 

D. 

Answer: A

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10. Sum of two rational numbers is -8 if one number is $\frac{3}{4}$, then find other number.

A. $\frac{-4}{35}$

B. $\frac{-35}{4}$

C. $\frac{35}{4}$

D. $\frac{4}{35}$

Answer: B

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11. Write the rational number whose numerator is $4 \times (-7)$ and denominator is $(3-7) \times (15-11)$.

A. $\frac{16}{28}$

B. $\frac{8}{13}$

C. $\frac{13}{8}$

D. $\frac{-28}{-16}$

Answer: D

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12. From his home, Rahul walks $\frac{6}{7}km$ towards school and then returns $\frac{5}{6}km$ on the same way towards his home to reach a landmark. How far is he now from his home ?

A. $\frac{1}{42}km$

B. $\frac{1}{43}km$

C. $\frac{30}{42}km$

D. $\frac{11}{42}km$

Answer: A

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13. Find the value of the expression

$$\frac{7}{(-18)}+\frac{5}{(-12)}+\frac{(-9)}{(-16)}.$$

A. $\frac{-33}{144}$

B. $\frac{33}{144}$

C. $\frac{35}{144}$

D. $\frac{-35}{144}$

Answer: D

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14. The product of two rational numbers is $\frac{128}{45}$. If one of the numbers is $\frac{-7}{15}$, then find the other rational number.

A. $-128/21$

B. $128/21$

C. $-36/73$

D. $41/70$

Answer: A

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15. Insert three rational numbers between $\frac{1}{3}$ and $\frac{4}{5}$.

A. $\frac{27}{60}, \frac{17}{60}, \frac{41}{60}$

B. $\frac{27}{60}, \frac{17}{30}, \frac{41}{60}$

C. $\frac{41}{30}, \frac{17}{30}, \frac{27}{60}$

D. $\frac{27}{30}, \frac{17}{30}, \frac{41}{60}$

Answer: B

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16. What should be subtracted from $\frac{-7}{8}$ to get $\frac{5}{12}$?

A. $\frac{-31}{24}$

B. $\frac{31}{24}$

C. $\frac{35}{24}$

D. $\frac{-35}{24}$

Answer: A

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17. What should be added to $\left(\frac{3}{4}+\frac{2}{5}\right)$ to get $\frac{-8}{15}$?

A. $\frac{-103}{60}$

B. $\frac{103}{60}$

C. $\frac{-101}{60}$

D. $\frac{101}{60}$

Answer: C

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18. A car is moving at an average speed of $3\frac{1}{9}$ km/h. How much distacne will it cover in $5\frac{1}{7}$ hours ?

A. 16 km

B. 18 km

C. 14 km

D. 20 km

Answer: A

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19. The product of two numbers is $\frac{16}{3}$. If one of the numbers is $\frac{26}{3}$. Find the other number.

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

B. $\frac{8}{13}$

C. $\frac{9}{13}$

D. $\frac{16}{9}$

Answer: B

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20. The product of two rational number is $\frac{-750}{183}$. If one of the numbers is $\frac{7}{12}$, find the other number.

A. $\frac{-3000}{421}$

B. $-\frac{3001}{427}$

C. $-7\frac{11}{427}$

D. $-7\frac{12}{427}$

Answer: C

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21. Which of the following pairs represent equivalent rational numbers ?

A. $\frac{1}{4}$ and $\frac{-4}{-16}$

B. $\frac{-2}{3}$ and $\frac{8}{12}$

C. $\frac{12}{15}$ and $\frac{10}{18}$

D. $\frac{27}{54}$ and $\frac{3}{2}$

Answer: A

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22. Thre efriends Neena, Asha and Mahak divided a packet of rice $87\frac{1}{2}kg$ equally among them. How many kgs of rice did each get ?

A. $29\frac{1}{6}kg$

B. $33\frac{1}{6}kg$

C. $\frac{173}{6}kg$

D. $\frac{177}{6}kg$

Answer: A

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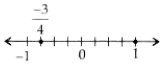
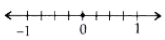
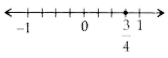
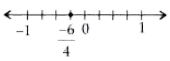
23. Find the sum of $\frac{-3}{4}$ and $\frac{3}{4}$ and represent it on number line.

A. $\frac{-3}{4}$ and 

B. $\frac{0}{4}$ and 

C. $\frac{3}{4}$ and 

D. $\frac{-6}{4}$ and 

Answer: B

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24. Find 3 rational numbers between -3 and -4.

A. $\frac{-13}{4}, \frac{-14}{4}, \frac{-15}{4}$

B. $\frac{-13}{3}, \frac{-14}{3}, \frac{-15}{3}$

C. $\frac{-10}{2}, \frac{-11}{2}, \frac{-12}{2}$

D. $\frac{10}{2}, \frac{11}{2}, \frac{12}{2}$

Answer: A

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25. Two packets of sweets weight $2\frac{7}{8}kg$ and $3\frac{1}{4}kg$ respectively. How much is the total weight of the sweets ?

A. $5\frac{1}{8}kg$

B. $6\frac{1}{8}kg$

C. $\frac{39}{8}kg$

D. $\frac{57}{8}kg$

Answer: B

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26. The sum of three rational numbers is $\frac{-6}{5}$. If two of the numbers are $\frac{3}{10}$ and $\frac{-9}{15}$, then find the third.

A. $\frac{9}{10}$

B. $\frac{-9}{10}$

C. $\frac{-21}{10}$

D. $\frac{21}{10}$

Answer: B

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27. Find the rational number, which is $\frac{-4}{9}$ more than $\frac{6}{7}$.

A. $\frac{-26}{63}$

B. $\frac{-82}{63}$

C. $\frac{26}{63}$

D. $\frac{82}{63}$

Answer: C

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28. The quotient of two numbers is $\frac{-5}{7}$. If the divident is $\frac{-4}{5}$ and remainder is 0, then find the divisor.

A. $\frac{26}{15}$

B. $\frac{28}{25}$

C. $-\frac{28}{25}$

D. $\frac{25}{28}$

Answer: B

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29. Which of the following numbers occur to the left of 7/5 on the number line ?

A. $\frac{7}{4}$

B. $\frac{8}{6}$

C. $\frac{6}{4}$

D. $\frac{5}{3}$

Answer: B

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30. Which of the following are incorrect ?

A. $\frac{-2}{3} < \frac{2}{3}$

B. $\frac{1}{4} = \frac{4}{16}$

C. $\frac{9}{8} > \frac{7}{8}$

D. $\frac{5}{-12} > \frac{-15}{36}$

Answer: D

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31. Divide the sum of $\left(-\frac{2}{5}\right)$ and $\frac{9}{(-10)}$ by the sum of $\frac{3}{7}$ and $\frac{4}{5}$.

A. $\frac{-35}{86}$

B. $\frac{-91}{86}$

C. $\frac{47}{85}$

D. $\frac{-73}{85}$

Answer: B

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32. Find the product of $2\frac{1}{5}$ with the sum of $\frac{6}{7}$ and $1\frac{1}{7}$.

A. $\frac{23}{35}$

B. $\frac{18}{35}$

C. $2\frac{1}{14}$

D. $4\frac{2}{5}$

Answer: D

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33. Find $(x+y)+(x-y)$, where $x=\frac{3}{4}$ and $y=\left(\frac{-7}{4}\right)$.

A. $\frac{-2}{5}$

B. $\frac{2}{5}$

C. $\frac{-3}{5}$

D. $\frac{-3}{4}$

Answer: A

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34. What is the additive inverse of $\frac{-5}{9} + \frac{1}{3}$?

A. $\frac{-2}{9}$

B. $\frac{2}{9}$

C. $\frac{-4}{9}$

D. $\frac{4}{9}$

Answer: B

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35. Additive inverse of $-\frac{18}{5} \times \frac{16}{7}$ is

A. $5\frac{33}{35}$

B. $-5\frac{31}{35}$

C. $5\frac{31}{35}$

D. $1\frac{11}{35}$

Answer: C

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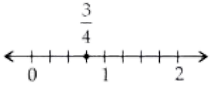
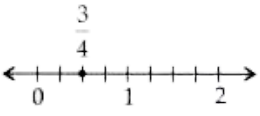
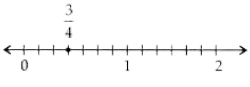
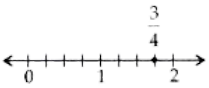
Exercise Multiple Choice Questions Level 2

1. Which number line correctly shows the rational number $\left(\frac{9}{7} \div \frac{24}{14}\right)$?

A. 

B. 

C. 

D. 

Answer: A

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2. Of the 120 people in the room, 3/5 are women. If 2/3 of the people are married, then what is the maximum number of women in the room who could be unmarried ?

A. 40

B. 20

C. 30

D. 60

Answer: A

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3. A bus is moving at an average speed of $4\frac{1}{9}$ km/hr. How much distance will it cover in 8 hours ?

A. $35\frac{8}{9}km$

B. $32\frac{8}{9}km$

C. $\frac{295}{9}km$

D. $\frac{298}{9}km$

Answer: B

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4. Which of the following is/are arranged in descending order ?

A. $\frac{1}{4}, \frac{6}{4}, \frac{16}{9}, \frac{25}{4}$

B. $\frac{-3}{6}, \frac{-4}{3}, \frac{-9}{4}, \frac{-13}{4}$

C. $\frac{-5}{8}, \frac{-3}{8}, \frac{0}{8}, \frac{1}{8}$

D. $\frac{-7}{4}, \frac{-3}{4}, \frac{5}{4}, \frac{8}{3}$

Answer: B

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5. Which of the following is not a rational number between $\frac{3}{4}$ and $\frac{1}{2}$?

A. $\frac{9}{16}$

B. $\frac{13}{16}$

C. $\frac{10}{16}$

D. $\frac{11}{16}$

Answer: B

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6. Find the product of $\frac{3}{7}$ and reciprocal of $\frac{2}{7}+\frac{1}{14}$.

A. $\frac{6}{5}$

B. $\frac{15}{98}$

C. $\frac{-6}{5}$

D. $\frac{5}{14}$

Answer: A

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7. What should be added to $\left(\frac{1}{3}+\frac{1}{4}-\frac{1}{5}\right)$ to get 4 ?

A. $4\frac{23}{60}$

B. $3\frac{37}{60}$

C. $\frac{23}{60}$

D. $-3\frac{37}{60}$

Answer: B

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8. The product of three rational numbes is $\left(-\frac{4}{11}\right)$ If two of the numbers are $\left(-\frac{2}{3}\right)$ and $\left(-\frac{1}{11}\right)$, then find the third number.

A. -6

B. 6

C. 11

D. -11

Answer: A

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9. Find the integer x such that $\frac{3}{8}$ and $\frac{x}{(-24)}$ are equivalent fractions.

A. -19

B. -9

C. 6

D. 9

Answer: B

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10. The sum of $\frac{7}{-3}$ and $\frac{5}{-6}$ is equal to the product of $\frac{-4}{11}$ and a number. Find the number.

A. $5\frac{7}{11}$

B. $8\frac{17}{24}$

C. $-3\frac{1}{6}$

D. $1\frac{5}{33}$

Answer: B

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11. The reciprocal of the sum of the reciprocals of $\frac{-11}{13}$ and $\frac{-2}{3}$ is

A. $-2\frac{15}{22}$

B. $-2\frac{22}{59}$

C. $-1\frac{20}{39}$

D. $-\frac{22}{59}$

Answer: D

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12. $\frac{3}{4} - \frac{4}{5}$ is not equal to

A. $-\frac{4}{5} + \frac{3}{4}$

B. $-\frac{1}{20}$

C. $\frac{4}{5} - \frac{3}{4}$

D. $-\frac{4}{5} - \left(-\frac{3}{4}\right)$

Answer: C

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13. Divide the sum of $\frac{-12}{5}$ and $\frac{-18}{15}$ by their difference.

A. 3

B. -9

C. -7

D. 5

Answer: A

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14. The additive inverse of $\left(\frac{25}{4} \times \frac{2}{5}\right) - \left(\frac{-1}{5} \times \frac{-10}{3}\right)$

A. $1\frac{5}{6}$

B. $\frac{6}{11}$

C. $-1\frac{5}{6}$

D. $\frac{-6}{11}$

Answer: C

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15. Which of the following pairs does not represent the same rational number ?

A. $\frac{3}{7}, \frac{-3}{-7}$

B. $\frac{3}{7}, \frac{-9}{21}$

C. $\frac{-1}{3}, \frac{9}{-27}$

D. $\frac{5}{3}, \frac{-25}{-15}$

Answer: B

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Exercise Matching

1. Match the following :

List-I	List-II
(P) Equivalent rational number of $\frac{-16}{128}$ is	(1) $\frac{1}{2}$
(Q) $\frac{-3}{4}+\frac{5}{6}=$	(2) $-\frac{1}{8}$
(R) $\left(\frac{5}{3}\times\frac{4}{6}\right)+\left(\frac{-2}{3}+\frac{5}{-3}\right)=$	(3) $\frac{1}{12}$
(S) 1/3 is smaller than	(4) $-\frac{11}{9}$

A. $P-1, Q-2, R-3, S-4$

B. $P-3, Q-1, R-4, S-2$

C. $P-2, Q-3, R-4, S-1$

D. $P-4, Q-2, R-1, S-3$

Answer: C

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2. Match the following :

List-I	List-II
(P) Divide the sum of 12/5 and 13/7 by the product of –4/7 and –1/2.	(1) 7/10
(Q) Cheena spent 3/4 of her pocket money. She spent 1/2 of it on a book, 1/6 on a movie and rest for a dress. What part of her pocket money did she spend on the dress?	(2) $3\frac{19}{28}$
(R) If 35 shirts of equal size can be stitched from 49/2 metres of cloth, calculate the length (in m) of cloth required for each shirt.	(3) $14\frac{9}{10}$
(S) Two packets of chocolates weigh 9/4 kg and 10/7 kg respectively. What is the total weight (in kg) of the chocolates?	(4) 1/4

A. $P-3, Q-4, R-1, S-2$

B. $P-2, Q-4, R-1, S-3$

C. $P-1, Q-2, R-3, S-4$

D. $P-4, Q-3, R-2, S-1$

Answer: A

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Exercise Assertion Reason Type

1. Assertion : Multiplication of $\frac{-7}{8}$ and $\frac{2}{3} is \frac{-7}{12}$

Reason : To multiply two reaction numbers, we multiply their numerators and denominators separately, and write the product as

$$\frac{\text{Product of numerators}}{\text{Product of denominators}}$$

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: A

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2. Divide $\frac{-7}{8}$ by $\frac{14}{3}$

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3. Assertion: $\frac{-63}{147}$ and $\frac{-21}{-49}$ are equivalent rational numbers.

Reason : If the numerator and denominator of a rational number are multiplied or divide by a same non-zero integer, we get a rational number which is said to be equivalent to the given rational number.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: D

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4. Assertion : $\frac{-3}{9} \times \frac{1}{0}$ is a rational number.

Reason : A number that can be expressed in the form p/q, where p and q are integers and $q \neq 0,$ is called a rational number.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: D

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5. Assertion : $-1, 0, 3, 14/93$ all are examples of rational numbers.

Reason : All integers and fractions are rational numbers.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: A

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Exercise Comprehension Type

1. supriya reads 1/3 of a stroybook on the first day and 1/4 of the book on the second day.

What part of the book is yet to be read by supriya ?

A. $7/5$

B. $5/12$

C. $7/12$

D. $5/7$

Answer: B

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2. supriya reads 1/3 of a stroybook on the first day and 1/4 of the book on the second day.

Total number of pages she read on the first and second day, if book has 1440 pages, is

A. 840

B. 940

C. 740

D. 1040

Answer: A

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3. supriya reads 1/3 of a stroybook on the first day and 1/4 of the book on the second day.

How many more pages does she read on first day than second day, if book has 1440 pages ?

A. 140

B. 220

C. 120

D. 320

Answer: C

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4. From a starting point A, Rahul walks 3/4 km towards east and then 6/7 km towards west to reach point C.

Where will he be noe from the starting point A ?

A. $9/28$ km towards west

B. $3/28$ km towards west

C. $3/28$ km towards east

D. $9/28$ km towards east

Answer: B

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5. From a starting point A, Rahul walks 3/4 km towards east and then 6/7 km towards west to reach point C.

How much total distance Rahul walks to reach point C ?

A. $\frac{45}{28} km$

B. $\frac{43}{28} km$

C. $\frac{47}{28} km$

D. $\frac{49}{28} km$

Answer: A

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6. From a starting point A, Rahul walks 3/4 km towards east and then 6/7 km towards west to reach point C.

How much more distance he travelled towards west than east ?

A. $\frac{-9}{28}$

B. $\frac{3}{28}$

C. $\frac{9}{28}$

D. $\frac{-3}{28}$

Answer: B

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Exercise Subjective Problems Very Short Answer Type

1. Define rational numbers.

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2. What is the standerd form of $\frac{14}{-35}$?

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3. Give the additive inverse of $\frac{-2}{-5}$.

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4. Can positive rational number have any negative equivalent rational ?

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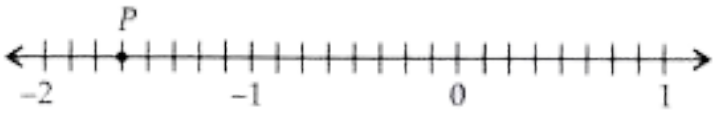
5. Which rational number does the point P represent on this number line ?



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6. Examine if $\frac{4}{-9}$ and $\frac{-20}{45}$ represent the same rational number.

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7. Does the rational number $\frac{-3}{5}$ lie between $\frac{1}{2}$ and $\frac{-1}{2}$?

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8. Give reciprocal of $\frac{-28}{40}$ in standard form .

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9. Divide the sum of $\frac{-8}{15}$ and $\frac{-10}{45}$ by their product.

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10. Simplify : $\frac{7}{39} - \left(\frac{-9}{13}\right) + \frac{5}{(-26)}$.

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Exercise Subjective Problems Short Answer Type

1. List any three rational numbers between $\frac{-2}{7}$ and $\frac{-3}{11}$.

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2. Draw a number line and represent $\frac{-3}{5}$ on it.

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3. Which is smaller out of the two rational numbers $-3\frac{1}{2}, -4\frac{2}{5}$?

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4. Solve:

(Subtract $\frac{-5}{7}$ from $\frac{6}{14}$) $\times$ (Subtract $\frac{-2}{8}$ from $\frac{5}{16}$)

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5. Find the following product:

$$\left(\frac{-7}{12}+8\right)\times\left(\frac{4}{10}+\frac{-5}{12}+\frac{2}{5}\right)$$

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6. Find the reciprocal of value of $\frac{-7}{12}+14.$

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7. Find the reciprocal of

$$\left(\frac{-1}{7}\times\frac{2}{7}\right)+\left(\frac{-5}{-11}+\frac{1}{11}\right)$$

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8. The product of two rational numbers is 1848. If one of the numbers is -12, find the other number .

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9. Solve : $\left(\frac{-5}{13}+\frac{(-2)}{13}\right)+\left(\frac{-3}{8}+\frac{18}{20}\right)$

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10. Arrange in descending order : $\frac{-2}{3}, \frac{-1}{6}, \frac{5}{6}$

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11. Simplify:

$$\left(\frac{15}{28}\times\frac{-119}{9}\right)+\left(\frac{-19}{20}\times\frac{-30}{-57}\right)+\left(\frac{-39}{3}\times\frac{14}{5}\times\frac{-12}{56}\right)$$

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12. Simplify:

(Multiply $\frac{-7}{15}$ by $\frac{5}{-28}$) + (Multiply $\frac{-55}{12}$ by $\frac{-96}{33}$)

Watch Video Solution

13. Simplify :

$$\left[\left(\frac{-3}{2}\times\frac{4}{5}\right)+\left(\frac{9}{5}\times\frac{-10}{3}\right)-\left(\frac{1}{2}\times\frac{3}{4}\right)\right]$$
$$\div\left[\left(\frac{21}{9}\times\frac{3}{7}\right)+\left(\frac{7}{8}\times\frac{16}{14}\right)\right]$$

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14. Simplify :

$$\left(\frac{1}{12}+\left(\frac{-3}{4}\right)+\frac{7}{8}\right)\times\left(3\frac{2}{5}-\frac{7}{10}+\left(\frac{-2}{15}\right)-10\frac{1}{30}\right)$$

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15. The product of two rational numbers is $\frac{-759}{189}$. If one of the numbers is $\frac{7}{13}$, find the other number.

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Exercise Subjective Problems Integer Numerical Value Type

1. Product of digits of numerator of subtraction of $\left(\frac{12}{5} \text{ and } \frac{13}{7}\right)$.

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2. If $2\frac{3}{4} - \frac{5}{8} + \frac{-5}{12} + 1\frac{1}{6} = k$, then find k.

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3. Divide $\frac{3}{5}$ by $\frac{4}{9}$ and multiply the result by $\frac{-2}{9}+\frac{1}{3}$, we get $\frac{k}{20}$. Find k.

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4. The product of $2\frac{3}{4}$ and $-5\frac{6}{7}$ is $\frac{-451}{7k}$. Find k.

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5. $\frac{28}{48}$ and $\frac{-k}{-12}$ are equivalent rational numbers. Find $(k+1)$.

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6. If $\frac{x}{3} = \frac{65}{54}$, then find the denominator of x.

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7. If the reciprocal of $\frac{4}{5} is \frac{k}{l}$, then find l + k .

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8. The reciprocal of $\left(\frac{1}{2} \times 12\right) + \left(\frac{1}{3} + \frac{1}{9}\right)$ is 3k. Find numerator of k.

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9. If $\frac{3}{8}$ can be expressed as the equivalent fraction $\frac{24}{k}$, then find k.

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10. If $\frac{x}{-5} = \frac{28}{7}$, then find denominator of x.

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Olympiad Hots Corner

1. Study the statements carefully.

(i) Every integer is a rational number and every fraction is a rational number.

(ii) A rational number $\frac{p}{q}$ is positive, if p and q are either both positive or both negative.

(iii) A rational number $\frac{p}{q}$ is negative, if one of p and q is positive and other is negative.

(iv) If there are two rational numbers with common

denominator, then the one with the larger numerator is large than the other.

Which of the following options hold ?

A. Both (i) and (iv) are incorrect

B. Both (ii) and (iii) are incorrect

C. Only (i) is inocrrect

D. All are correct

Answer: D

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2. A rational number -2/3_____.

A. lies to the left side of 0 on the number line.

B. lies to the right side of 0 on the number line.

C. lies between -2 and 3.

D. lies between 2 and -3.

Answer: A

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3. Represent the rational number $\frac{9}{7} \div \frac{24}{14}$ on a number line.

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4. Which of the following statements is incorrect ?

A. $\frac{-5}{8}$ lies to the left of 0 oon the number line.

B. On the number line, $\frac{3}{7}$ lies to the right of 0.

C. The rational numbers $\frac{1}{2}$ and $-\frac{1}{2}$ are on opposite sides of 0 on the number line.

D. Sum of rational number $\frac{5}{3}$ and $-\frac{5}{3}$ is not zero.

Answer: D

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5. Which of the following options is correct ?

A. Two rational numbers with different denominators can never be equal.

B. The rational number $-\frac{4}{3}$ lies on the right of 0 on the number line.

C. Difference of two rational numbers is always a rational number.

D. The standard form of $\frac{-18}{-24}$ is $-\frac{3}{4}$.

Answer: C

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6. Consider the following statements:

A. The product of an integer and a rational number can never be a natural number.

B. The quotient of division of an integer by a rational number can never be an integer.

Which of the statements given above is /are correct?

A. Both Statement-I and Statement-II are true.

B. Both Statement-I and Statement-II are false.

C. Statement-I is true but Statement-II is false.

D. Statement-I is false but Statement-II is true.

Answer: B

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7. Which of the following rational numbers satisfies the given property ?

$a + (b + c) = (a + b) + c$

A. $a = -\frac{2}{3}, b = \frac{5}{6}$ and $c = -\frac{3}{4}$

B. $a = \frac{1}{5}, b = \frac{3}{5}$ and $c = -\frac{2}{7}$

C. $a = -\frac{5}{7}, b = -\frac{11}{13}$ and $c = \frac{17}{21}$

D. All of these

Answer: D

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8. Which of the following options shows the numbers arranged in ascending order ?

A. $-\frac{6}{7} < -\frac{8}{7} < \frac{4}{7} < \frac{5}{7}$

B. $-\frac{5}{2} < -\frac{5}{4} < -\frac{5}{7} < -\frac{5}{9}$

C. $-\frac{2}{9} < -\frac{3}{7} < -\frac{4}{5} < -\frac{6}{5}$

D. $-\frac{5}{4} < -\frac{7}{3} < -\frac{2}{9} < -\frac{6}{7}$

Answer: B

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9. Simplify : $\frac{\left(-18\frac{1}{3}\times 2\frac{8}{11}\right)-\left(4\frac{5}{7}\times 2\frac{1}{3}\right)}{\left[\frac{3}{5}+\left(\frac{-9}{10}\right)\right]+\left[-\left(\frac{-3}{5}\right)\right]}$

A. $63\frac{4}{81}$

B. $-23\frac{7}{9}$

C. $-203\frac{1}{3}$

D. $12\frac{6}{17}$

Answer: C

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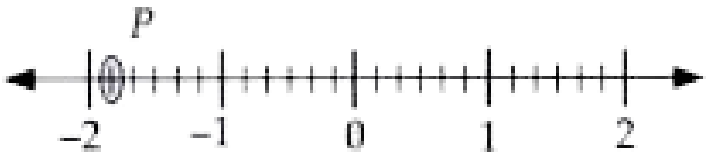
10. Which of the following options represents the value of P shown on the number line ?



A. $\frac{6}{3}+\frac{1}{3}-\frac{1}{9}+\frac{4}{3}$

B. $-\frac{1}{4}-\frac{3}{2}$

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

D. $\frac{2}{3}-\frac{1}{3}+\frac{6}{3}+2$

Answer: C

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11. State 'T' for true of 'F' for false and select the correct option.

(i) Every natural number is a rational number.

(ii) Every rational number is a fraction.

(iii) Zero is not a retional number.

(iv) The reciprocal of 0 is $\frac{1}{0}$.

A. $\begin{matrix}(i) & (ii) & (iii) & (iv) \\ F & T & T & F\end{matrix}$

B. $\begin{matrix}(i) & (ii) & (iii) & (iv) \\ T & T & T & F\end{matrix}$

C. $\begin{matrix}(i) & (ii) & (iii) & (iv) \\ T & F & F & F\end{matrix}$

D. $\begin{matrix}(i) & (ii) & (iii) & (iv) \\ T & T & F & F\end{matrix}$

Answer: C

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12. Represent the solution of the equation on a number line:

$p-(2p+5)-5(1-2p)=2(3+4p)-3(p-4)$?

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13. What rational number should be added to $\left(\frac{-3}{7}\right)$ to get the greatest negative integer ?

A. $\frac{4}{7}$

B. $\frac{3}{7}$

C. $\frac{-4}{7}$

D. $\frac{7}{3}$

Answer: C

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14. One rational number between $\frac{1}{5}$ and $\frac{1}{4}$ is

A. $\frac{18}{100}$

B. $\frac{22}{100}$

C. $\frac{26}{100}$

D. $\frac{27}{100}$

Answer: B

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15. Which number is the additive inverse of the reciprocal of $-\frac{5}{8}$?

A. $8\frac{5}{8}$

B. $1\frac{3}{5}$

C. $2\frac{2}{5}$

D. $\frac{5}{8}$

Answer: B

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16. Simplest form of $\frac{1}{3-\frac{1}{2}}$ is

A. $\frac{5}{2}$

B. $\frac{1}{10}$

C. 10

D. $\frac{2}{5}$

Answer: D

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17. The descending order of $\frac{-5}{7}, \frac{-7}{4}, \frac{-3}{8}$ is

A. $\frac{-5}{7}, \frac{-7}{4}, \frac{-3}{8}$

B. $\frac{-3}{8}, \frac{-5}{7}, \frac{-3}{4}$

C. $\frac{-7}{4}, \frac{-5}{7}, \frac{-3}{8}$

D. $\frac{-5}{7}, \frac{-3}{8}, \frac{-7}{4}$

Answer: B

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18. If $p = \frac{11}{3}$, then p lies between _____ on the number line.

A. -5 and -4

B. -3 and -2

C. 4 and 5

D. 3 and 4

Answer: D

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19. A rational number between -4 and -3 is

A. $\frac{5}{3}$

B. $\frac{-5}{2}$

C. $\frac{7}{-4}$

D. $\frac{-7}{2}$

Answer: D

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20. The reciprocal of $2\frac{1}{7}+\left(\frac{-3}{14}\right)+\left(\frac{-1}{28}\right)+1\frac{1}{4}$ is

A. $\frac{7}{22}$

B. $\frac{22}{7}$

C. $\frac{20}{21}$

D. $\frac{17}{21}$

Answer: A

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