Operations on Rational Numbers

1. **Add the following rational numbers.**

   A. $\frac{-3}{5}$ and $\frac{13}{-16}$

   B. $\frac{33}{18}$ and $\frac{17}{26}$

   C. $\frac{-7}{36}$ and $\frac{5}{63}$

   D. $\frac{-4}{10}$ and $\frac{21}{25}$

2. **Subtract the following rational numbers.**

   A. $\frac{3}{8}$ from $\frac{4}{7}$

   B. $\frac{3}{-7}$ from $\frac{-19}{21}$

   C. $\frac{-5}{6}$ from $\frac{1}{3}$

   D. $\frac{-3}{8}$ - (-5)

3. **Simplify.**

   A. $\frac{-4}{3} + \frac{7}{18} + \frac{4}{21}$

   B. $1 + \frac{-8}{13} + 15$

   C. $\frac{-7}{20} + \frac{14}{-15} + \frac{1}{10}$

   D. $\frac{-13}{6} + \frac{-13}{7} + \frac{-18}{12}$

4. **Find the additive inverse of**

   A. $\frac{4}{5}$

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

5. **The sum of two rational numbers is $\frac{1}{2}$. If one of the numbers is $\frac{-15}{9}$, find the other.**

6. **What number should be added to $\frac{-7}{8}$ so as to get $\frac{3}{4}$?**

7. **Subtract the sum of $\frac{-25}{12}$ and $\frac{18}{8}$ from the sum of $\frac{38}{5}$ and $\frac{-19}{6}$.**

8. **Find the multiplicative inverse of**

   A. $\frac{5}{21}$

   B. $\frac{-27}{19}$

9. **Name the property of multiplication illustrated by the following statement.**

   A. $\frac{-13}{19} \times \frac{19}{-13} = 1$

   B. $\frac{-2}{5} \times \left(\frac{-4}{3} + \frac{5}{8}\right) = \left(\frac{-2}{5} \times \frac{-4}{3}\right) + \left(\frac{-2}{5} \times \frac{5}{8}\right)$

   C. $\frac{-15}{7} \times \frac{8}{9} = \frac{8}{9} \times \frac{-15}{7}$

10. **Verify the following.**

    A. $\left(\frac{9}{11} \times \frac{12}{15}\right) \times \frac{8}{22} = \frac{9}{11} \times \left(\frac{-2}{5} \times \frac{-4}{3}\right)$

    B. $\frac{-13}{4} \times \left[\frac{3}{8} + \frac{-12}{15}\right] = \left[\frac{-13}{4} \times \frac{-3}{8}\right] + \left[\left(\frac{-13}{4} \times \frac{-12}{15}\right)\right]$

11. Simplify: $-4 \times \left(\frac{-11}{8}\right) \times \left(\frac{16}{-11}\right) \times \left(\frac{1}{-7}\right)$

12. Verify whether each of the following is true or false.

A. $\frac{-3}{4} \div \left(\frac{27}{16} \div \frac{9}{-32}\right) = \left(\frac{-3}{4} \div \frac{27}{16}\right) \div \left(\frac{9}{-32}\right)$

B. $\frac{-85}{18} \div \frac{-34}{3} = \frac{-34}{3} \div \frac{-85}{18}$

13. The product of two rational numbers is -15. If one of the numbers is -25, find the other.

14. By what number should we multiply $\frac{-15}{28}$, so that the product is $\frac{-11}{27}$.

15. The cost of $5\frac{1}{2}$ metres of cloth is Rs. $525\frac{1}{2}$. Find the cost of one metre cloth.

16. Divide the sum of $\frac{35}{16}$ and $\frac{8}{21}$ by their difference.

17. Verify that $|x + y| \leq |x| + |y|$, when

A. $x = \frac{-1}{4}$

B. $y = \frac{4}{7}$

18. Find the value of:

A. $|a - b|$ if $a = \frac{-7}{15}$ and $b = \frac{4}{5}$

B. $|a| - |b|$ if $b = \frac{-3}{-5}$ and $a = \frac{2}{5}$