Operation on rational numbers

A. Add the following rational numbers.

i. $\dfrac{-3}{5}$ and $\dfrac{13}{-16}$

ii. $\dfrac{33}{18}$ and $\dfrac{17}{26}$

iii. $\dfrac{-7}{36}$ and $\dfrac{5}{63}$

iv. $\dfrac{-4}{10}$ and $\dfrac{21}{25}$

B. Subtract the following rational numbers.

i. $\dfrac{3}{8}$ from $\dfrac{4}{7}$

ii. $\dfrac{3}{-7}$ from $\dfrac{-19}{21}$

iii. $\dfrac{-5}{6}$ from $\dfrac{1}{3}$

iv. $\dfrac{-3}{8} - (-5)$

C. Simplify.

i. $\dfrac{-4}{3} + \dfrac{7}{18} + \dfrac{4}{21}$

ii. $1 + \dfrac{-8}{13} + 15$

iii. $\dfrac{-7}{20} + \dfrac{14}{-15} + \dfrac{1}{10}$

iv. $\dfrac{-13}{6} + \dfrac{-13}{7} + \dfrac{-18}{12}$

D. Find the additive inverse of

i. $\dfrac{4}{5}$

ii. $\dfrac{-5}{3}$

E. The sum of two rational numbers is $\dfrac{1}{2}$. If one of the numbers is $\dfrac{-15}{3}$, find the other.

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

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

H. Find the multiplicative inverse of

i. $\dfrac{5}{21}$

ii. $\dfrac{-27}{19}$

I. Name the property of multiplication illustrated by the following statement.

i. $\dfrac{-13}{19} \times \dfrac{19}{-13} = 1$

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

iii. $\dfrac{-15}{7} \times \dfrac{8}{9} = \dfrac{8}{9} \times \dfrac{-15}{7}$

J. Verify the following.

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

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

K. Simplify:

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

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

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

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