Rational Numbers

1. Using appropriate properties find:

(a) $\left[-\frac{2}{3} \times \frac{3}{5} + \frac{5}{2} - \frac{3}{5}\right] =$

(b) $\frac{2}{5} \times \left[\frac{-3}{7} + \left(\frac{-1}{6}\right)\right] =$

2. Write the additive inverse of each of the following :

(a) $\frac{2}{8}$ (b) $\frac{-5}{9}$ (c) $\frac{-6}{-5}$ (d) $\frac{2}{-9}$ (e) $\frac{19}{-6}$

3. Verify that $(-x) = x$ for

(a) $x = \frac{11}{15}$ (b) $x = \frac{-13}{17}$

4. Find the multiplicative inverse of the following :

(a) -13 (b) $\frac{-13}{19}$ (c) $\frac{1}{5}$ (d) $\frac{-5}{8} \times \frac{-3}{7}$ (e) $-1 \times \frac{-2}{5}$ (f) -1

5. Name the property under multiplication used in each of the following :

(a) $\frac{-4}{5} \times 1 = 1 \times \frac{-4}{5}$

5. Name the property under multiplication used in each of the following:

(a) $\frac{-4}{5} \times 1 = 1 \times \frac{-4}{5} = \frac{-4}{5}$ (b) $\frac{-13}{17} \times \frac{-2}{7} = \frac{-2}{7} \times \frac{-13}{17}$

(c) $\frac{-19}{29} \times \frac{29}{-19} = 1$

6. Multiply $\frac{6}{13}$ by the reciprocal of $\frac{-7}{16}$

7. Tell what property allows you to compute $\frac{1}{3} \times \left[6 \times \frac{4}{3}\right]$ as $\left[\frac{1}{3} \times 6\right] \times \frac{4}{3}$

8. Is $\frac{8}{9}$ the multiplicative inverse of $-1\left[\frac{1}{8}\right]$? Why or why not?

9. Is 0.3 the multiplicative inverse of $3\left[\frac{1}{3}\right]$ Why or why not?

10. Write:

(a)The rational number that does not have a reciprocal.

(b)The rational numbers those which are equal to their reciprocals.

(c)The rational number that is equal to its negative.

11. Fill in the blanks:

(a)Zero has_____ reciprocal.

(b)The numbers_____ and _____ are their own reciprocals.

(c)The reciprocal of -5 is_____

(d)Reciprocal of $1/x$, where $x \neq 0$ is_____

(e)The product of two rational number is always a_____

(f)The reciprocal of a positive rational number is_____

12. Represent these numbers on a number line:

(a) $\frac{7}{4}$ (b) $\frac{-5}{6}$

13. Represent $\frac{-2}{11}, \frac{-5}{11}, \frac{-9}{11}$ on the number line.

14. Write five rational numbers which are smaller than 2.

15. Find ten rational numbers between $\frac{-2}{5}$ and $\frac{1}{2}$

16. Find five rational numbers between:

(a) $\frac{2}{3}$ and $\frac{4}{5}$ (b) $\frac{-3}{2}$ and $\frac{5}{3}$ (c) $\frac{1}{4}$ and $\frac{1}{2}$

17. Write five rational numbers greater than -2

18. Find ten rational numbers between $\frac{3}{5}$ and $\frac{3}{4}$

19. Find $\frac{3}{7} + \left[\frac{-6}{11}\right] + \left[\frac{-8}{21}\right] + \frac{5}{22}$

20. Find $\frac{-4}{5} \times \frac{3}{7} \times \frac{15}{16} \times \left[\frac{-14}{9}\right]$

21. Write the additive inverse of the following:

(a) $\frac{-7}{19}$ (b) $\frac{21}{112}$

22. Verify that – (-x) is the same as x for:

(a) $x = \frac{13}{7}$ (b) $x = \frac{-21}{31}$

23. Find $\frac{2}{5} - \frac{3}{7} - \frac{1}{14} - \frac{3}{7} \times \frac{3}{5}$

24. Write any three rational numbers between –2 and 0

25. Find any ten rational numbers between $\frac{-5}{6}$ and $\frac{5}{8}$

26. Find a rational number between $\frac{1}{4}$ and $\frac{1}{2}$

27. Find three rational numbers between $\frac{1}{4}$ and $\frac{1}{2}$