

CH-1. RATIONAL NUMBERS. WORK SHEET FOR SUMMER HOLIDAYS

1. Verify that $a+b=b+a$ by taking.

i) $a = \frac{-7}{5}, b = \frac{2}{7}$ ii) $a = \frac{-9}{13}, b = \frac{-8}{5}$ iii) $a = \frac{3}{4}, b = \frac{-2}{5}$ iv) $a = 1, b = \frac{-2}{3}$

2. Verify that $(a+b)+c=a+(b+c)$ by taking

i) $a = +2, b = \frac{+2}{3}, c = \frac{+3}{4}$ ii) $a = \frac{+5}{9}, b = \frac{3}{+5}, c = \frac{+13}{18}$
iii) $a = \frac{+3}{11}, b = \frac{+7}{8}, c = \frac{13}{5}$ iv) $a = +12, b = \frac{+9}{11}, c = \frac{7}{+12}$

3. Add

i) $\frac{2}{3} + \frac{+4}{5} + 1 + \frac{+2}{3} + \frac{-11}{5}$ ii) $\frac{5}{8} + \frac{+8}{9} + 0 + \frac{+13}{3} + \frac{17}{24}$

4. Verify the property $a \times (b \times c) = (a \times b) \times c$ by taking

i) $a = \frac{7}{5}, b = \frac{9}{4}, c = \frac{1}{2}$ ii) $a = 1, b = \frac{-13}{5}, c = \frac{3}{5}$
iii) $a = \frac{3}{4}, b = \frac{-1}{2}, c = \frac{-7}{5}$ iv) $a = \frac{-5}{2}, b = \frac{16}{3}, c = -1$

5. Verify the property $a \times (b+c) = a \times b + a \times c$ by taking

i) $a = \frac{1}{3}, b = 0, c = \frac{-7}{6}$ ii) $a = \frac{-5}{2}, b = -2, c = \frac{11}{3}$ iii) $a = 2, b = \frac{9}{5}, c = \frac{2}{15}$

6. Verify the property $a \times (b-c) = a \times b - a \times c$ by taking $a = \frac{1}{2}, b = \frac{3}{4}, c = \frac{2}{3}$

7. Simplify i) $\frac{11}{5} \times \frac{9}{22} \times \frac{-10}{9} \times \frac{-1}{5}$ ii) $-2 \times \frac{3}{-14} \times \frac{-5}{12} \times \frac{7}{15}$

8. Find the rational number between the following

i) 2 and 3 ii) -1 and 1 iii) $\frac{1}{2}$ and $\frac{1}{4}$ iv) $\frac{-3}{8}, \frac{5}{8}$

9. Represent the following rational numbers on the number line.

i) $\frac{3}{4}$ ii) $\frac{-5}{7}$ iii) $2\frac{1}{5}$ iv) $-3\frac{2}{3}$

10. Find three rational numbers between (-4) and (-2)

11. Find five rational numbers between i) $-\frac{4}{7}$ and $\frac{2}{7}$

ii) $-\frac{1}{2}$ and $\frac{1}{4}$.

12. Is $\frac{8}{9}$ the multiplicative inverse of $-1\frac{1}{8}$? Give reasons to support your answer.

13. A shirt can be stitched using $2\frac{1}{4}$ m of cloth. How many shirts can be stitched using $31\frac{1}{2}$ m of cloth?

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14. Simplify and write the answer in exponential form:

a) $5^3 \times 5^{-4}$ b) $9^{-7} \times 9^3$ c) $\left(\frac{2}{3}\right)^{-5} \times \left(\frac{2}{3}\right)^{-5}$

15. Evaluate:

a) $(x^3)^0$ b) $\left[\left(\frac{-1}{3}\right)^0 + \left(\frac{1}{5}\right)^0\right] \div 6^0$ c) $(1^0 + 2^0 + 3^0) \div (x^0 + y^0)$

16. Simplify the following:

a) $11^7 \div 11^4$ b) $\left(-\frac{1}{6}\right)^3 \div \left(-\frac{1}{6}\right)^4$ c) $\left(-\frac{3}{7}\right)^{-5} \div \left(-\frac{3}{7}\right)^{-3}$

17. Evaluate:

a) $(5^{-2} \times 2^{-2})^{-2}$ b) $(8^6 \div 5^6)^{-3} \div \left(\frac{8}{5}\right)^{-18}$ c) $4^{-4} \times 5^{-4}$ d) $(4^2 \times 5^{-2})(4^2 \div 5^2)$

18. Find x so that:

a) $\left[\left(\frac{3}{5}\right)^{-4} \times \left(\frac{3}{5}\right)^5\right] = \left(\frac{3}{5}\right)^x$ b) $\left[\left(\frac{1}{3}\right)^{-2} \times \left(\frac{1}{3}\right)^{-5}\right] = \left(\frac{1}{3}\right)^{2x+1}$ c) $x^5 \div x^3 = \frac{9}{16}$
d) $\left(\frac{4}{15}\right)^3 \times \left(\frac{4}{15}\right)^{-6} = \left(\frac{4}{15}\right)^{2x+1}$ e) $\left(\frac{4}{5}\right)^3 \div \left(\frac{4}{5}\right)^{-3} = \left(\frac{4}{5}\right)^{3x}$

19. Express each of the following in scientific notation.

i) 64350000 ii) 890078 iii) 80109 iv) 43.0877

20. Expand the following

i) 9.00876×10^{-4} ii) 6.80968×10^7

iii) 2.0007×10^0 iv) 3.1×10^9

21. Express the following in standard form

i) 90877665×10^8 ii) 47.896×10^{-3}

iii) 0.90089×10^{-4} iv) 3400908×10^{-6}