Assignment – 1
Rational Numbers

1. Which of the following pair of rational numbers is greater?

   (a) $\frac{4}{9}$, $\frac{4}{9}$ (b) $\frac{-8}{11}$, 0 (c) $\frac{8}{-11}$, $\frac{-9}{22}$

2. Arrange the following in ascending order

   $\frac{4}{2}$, $\frac{-2}{3}$, $\frac{1}{-2}$, $\frac{-4}{7}$, $\frac{5}{6}$

3. Represent $\frac{-5}{7}$ and $2\frac{3}{4}$ on the same number line?

4. The sum of two rational numbers is -2. If one of the numbers is $\frac{-14}{5}$, find the other

5. Using rearrangement property find the sum of $\frac{4}{3} + \frac{3}{5} + \frac{-2}{3} + \frac{-11}{5}$

6. What number should be added to $\frac{3}{4}$ to get $\frac{-1}{4}$?

7. What number should be subtracted from $\frac{3}{20}$ to get $\frac{3}{4}$?

8. Verify:- $\frac{-15}{4} \times \left(\frac{3}{7} + \frac{-12}{5}\right) = \left(\frac{-15}{4} \times \frac{3}{7}\right) + \left(\frac{-15}{4} \times \frac{-12}{5}\right)$

9. Simplify:- $(-3) \times \left(\frac{2}{-14}\right) \times \left(\frac{-5}{12}\right) \times \left(\frac{7}{15}\right)$

10. By what rational number should we multiply $\frac{11}{5}$ to get $\frac{-33}{25}$

11. What number should we added to $\frac{5}{9}$ to get $\frac{-2}{3}$?

12. Find three rational numbers between $\frac{1}{3}$ and $-\frac{1}{5}$

13. A jet covers 2040 km in an hour. How much distance will it cover in $5\frac{1}{6}$ Hours.

14. The product of two numbers is $\frac{-1}{4}$. If one of them is $-\frac{3}{10}$ then find the other number.

15. A drum full of wheat weighs $80\frac{1}{6}$ Kg. If the empty drum weighs $15\frac{3}{4}$ Kg. Find the weight of wheat in drum?

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Assignment – 2
Exponents

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1. Simplify :- (a) $(ab)^6 \div ab$ (b) $(6^0 + 7^0)^2$

2. Find the value of x : $(2 \times 2)^x = 2^8$

3. Evaluate:-

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

4. Simplify:-

   (a) $(5^{-1} \div 4^{-1})^3$

   (b) $\left[\left(\frac{-8}{16}\right)^{-1} \times \left(\frac{16}{5}\right)^{-1}\right] \div \left(\frac{4}{5}\right)^{-1}$

5. Find x so that $\left[\left(\frac{1}{3}\right)^{-2} \times (3)^5\right] = \left(\frac{1}{3}\right)^{-(-2x-1)}$

6. By what number should $\left(\frac{5}{7}\right)^{-5}$ be multiplied so that the product is 1?

7. Evaluate:-

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

8. Find the value of x for which $x^5 \div \frac{1}{x^{-3}} = \frac{9}{16}$

9. Find the value of P so that $\left(\frac{4}{5}\right)^3 \div \left(\frac{5}{4}\right)^3 = \left(\frac{4}{5}\right)^{3P}$

10. By what number should $\left(\frac{-3}{5}\right)^{-3}$ be divided so that the quotient may be $\left(\frac{9}{25}\right)^{-2}$?

11. Write each of the following numbers in standard form:-

    (i) 345 x 10^5 (ii) 1.679 x 10^9 (iii) 0.0027   (iv) 0.00000165

12. Simplify: $\frac{25 \times t^{-4}}{5^{-3} \times 10 \times t^{-8}}$

13. Express the following rational numbers in exponential notations. Express the answer in lowest terms.

    (a) $\frac{216}{1000}$ (b) $\frac{-1}{10000}$ (d) $\frac{-196}{256}$

14. Find the value of $\left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-3} + \left(\frac{1}{6}\right)^{-2}$

15. By what number should $(-7)^{-1}$ be multiplied so that the product becomes $(-14)^{-1}$?

Assignment No. 3
Square & Square roots / Cube & Cube roots

1   Express 169 as the sum of odd numbers and also find its square root.

2   Find the square of 448 using diagonal method?

3   A welfare association collected. Rs. 52900 as donation from the students. If each paid as many rupees as there were students, find the number of students?

4   The area of a square field is 2025m^2 find the cost of fencing the field at Rs. 15 per m.

5   Find the smallest number which must be added to make 16160 a perfect square?

6   Find the greatest number of five digits which is a perfect square and also find the square root of the number so obtained.

7   A decimal fraction is multiplied by itself. If the product is 308.0025, find the fraction?

8   The area of square play ground is 225.6004m^2. Find the length of one side of the play ground.

9   Evaluate: $\sqrt{17\frac{16}{25}}$

10 Find the square roots of 5 correct up to 3 decimal places?

11 Evaluate:-$\sqrt{72} \times \sqrt{98}$

12 Find the $\sqrt[3]{216 \times 343}$

13 Show that $\sqrt[3]{125 \times 729} = \sqrt[3]{125} \times \sqrt[3]{729}$

14 Evaluate:- $\sqrt[3]{64} + \sqrt[3]{0.027} + \sqrt[3]{0.008}$

1 Simplify using identify

$$\frac{(3.72)^2 - (1.96)^2}{3.72 + 1.96}$$

2 Is $x^2 + 1$ a factor of $x^4 + 2x^3 - x^2 - 2x + 1$.

3 Find the quotient and the remainder when $2x^4 - 3x^3 + x^2 + 1$ is divided by x-2. Verify your answer.

4 Find the products. Verify your answer by taking x=-1 and y=2. $(\frac{2}{3}x - y)(\frac{2}{3}x + y)$

5 Factorise:-

   (i) $6x^2 + 7x - 3$ (ii) $(1 + m)^2 - (1 - m)^2$

   (iii) $15x^2 - 26x + 8$ (iv) $ab(x^2 + y^2) + xy(a^2 + b^2)$

6 Find the value of $6x^2y^2 - 3xy$ when x=2, y=-1.

7 Evaluate $-4abc(6a^2 + 2ab^2)$ when a=1, b=-1, c=5.

8 Multiply $\frac{-5}{3}x^2y$ by $\left(-9x^3y + \frac{1}{25}xy^2\right)$.

9 Subtract the sum of $4x^2 - 3xy + y^2$ and $-2xy + 9x^2 - 5y^2$ from $-8x^2 + 5xy$.

10 Find the continued product:

   (i) $(3x-2y)(3x+2y)(9x^2+4y^2)$

   (ii) $(2p+3)(2p-3)(4p^2+9)$

11 If $x + \frac{1}{x} = 5$, find the values of

   (i) $x^2 + \frac{1}{x^2}$ and (ii) $x^4 + \frac{1}{x^4}$

12 Evaluate the following using identity

   (i) $(47)^2$ (ii) (8.3 x 7.7)

13 Write the quotient and remainder when we divide:

   $(8x^4 + 10x^3 - 5x^2 - 4x + 1)$ by $(2x^2 + x - 1)$

14 The two adjacent sides of a rectangle are $5x^2 - 3y^2$ and $x^2 - 2xy$. Find the perimeter.