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WORK SHEET
FIRST TERM
SUBJECT- Mathematics
CLASS- VIII

Rational Number

1. Is zero a rational number? If yes, give two examples.
2. What are the identity elements for the addition and multiplication of rational numbers?
3 Write the reciprocal of 0.
4. Write four rational numbers which are greater than - 31 and less than 4.
5. Find ten rational numbers between 2 and 3.
6. Between any two rational numbers, there lie :
   a) two rational number
   b) No rational number
   c) infinite rational numbers
   d) infinite fractions

7. Addition is associative for
   a) Natural numbers b) Whole Numbers
   c) Rational Numbers d) All of these
8. Rational numbers are not closed under :
   a) Subtraction b) Division c) Addition d) Multiplication

Squares and Square Roots

1. Find the square root of the following by means of factors i) 529 2. ii) 298116
2. Find the smallest number by which 252 must be multiplied to get a perfect square. Also, find the quare root of the perfect square so obtained.
3. Find the smallest number by which 2925 must be divided to get a perfect square. Also, find the square root of the perfect square so obtained.
4. Find the least square number, exactly divisible by each one of the numbers 6, 9, 15 and 20.
5. Find the least square number exactly divisible by each one of the numbers 8, 12, 15, 20.
6. Find the square root of: (a) 9126441 (b) 63409369
7. Find the least number that must be subtracted from 7581 to obtain a perfect square. Find the perfect square and its square root.
8. Find the least number that must be added to 506900 to make it a perfect square. Find its perfect square and its square root.
9. Find the least number of 4 digits that is a perfect square.
10. Find the square root of (a) 14. 10.0469 (b) 15. 0.00038809

Construction of quadrilaterals

1. Construct a quadrilateral ABCD in which sides AB = 4 cm, BC = 4.5 cm, AD = 5.5 cm and diagonal AC= 7.5 cm. measure diagonal BD.
2. Construct a quadrilateral ABCD in which sides AB = 4.2 cm, BC= 5 cm, CD=5.3 cm, angle B=1200 and angle C = 750.
3. Construct a quadrilateral ABCD in which three sides are 4 cm each and both the diagonals are 6 cm each.
4. Construct a rhombus ABCD in which AB = 4 cm and diagonal AC = 6.5 cm.
5. Construct a quadrilateral ABCD in which all sides are 5 cm and angle A= angle B = 900.
6. Construct a square whose diagonal is 6.4 cm.
7. Construct a square each of whose sides measure 4.6 cm.
8. Construct a quadrilateral PQRS in which sides PQ= 3 cm, QR= 4 cm, RS =3.5 cm , SP = 4 cm and diagonal PR = 5 cm
9. Construct a quadrilateral ABCD in which AB = 4.3 cm, BC =5 cm, angle A=60^0 , angle B = 100^0 and angle C= 125^0
10. Construct a rectangle ABCD in which side BC = 5 cm and diagonal BD= 6.2 cm
11. Construct a quadrilateral ABCD in which sides AB = 5 cm, BC = 4 cm, CD = 5 cm and diagonals BD= AC = 6.5 cm.

Understanding Quadrilaterals

1. One angle of a parallelogram is of measure 80^0.Find the measures of the remaining angles of the parallelogram.
2. Quadrilateral PQRS is a trapezium in which PQ||RS. If Angle P = Angle Q = 50^0, what are the measures of the other two angles.
3. One side of a parallelogram is 3/4th times its adjacent side. If the perimeter of the parallelogram is 70 cm, find the sides of the parallelogram.
4. A pair of the adjacent sides of a rectangle are in the ratio 3:4.If its diagonal is 20 cm, find the length of the sides and hence the perimeter of the rectangle.
5. ABCD is a parallelogram. AP bisects angle A and CQ bisects angle C.P lies on CD and Q lies on AB. Show that
   1) AP I I CQ.
   2) AQCP is a parallelogram.
6. An exterior angle of a parallelogram is 110^0. Find the angles of a parallelogram.
7. The ratio of the two sides of a parallelogram is 3 : 5 and its perimeter is 48 cm. Find the sides of the parallelogram.
8. The diagonals of a rhombus are in the ratio 5 : 12. If its perimeter is 104 cm, find the length of the sides and its diagonals.
9. ABCD is a parallelogram where diagonal interest each other at right angles, if the length of the diagonals is 6 cm and 8 cm find the length of all the sides of the parallelogram.
10. The diagonal of a rectangle ABCD intersect at O. If angle BOC =70^0. Find angle ODA.
11. Two adjacent angles of a parallelogram are in the ratio 1 : 5 find all the angles of the parallelogram.
12. ABCD is a quadrilateral with angle A= 80^0 , angle B= 40^0 , angle C= 140^0 , angle D= 100^0 .
    a) Is ABCD a trapezium?
    b) Is ABCD a parallelogram?

Cubes and Cube Roots

1. Which of the following are perfect cubes.
   a) 3840 b) 12167 c) 1728
2. Find the smallest number by which the following numbers must be multiplied so that the products are perfect cubes.
   a) 5324 b) 1323 c)3125
3. Find the cube root using prime factorization.
   a) 4096 b) 5832 c) 15625
4. Find the smallest number by which the given numbers must be multiplied to get the quotient as a perfect cube.
   a) 1536 b) 9826 c) 8788
5. Find the cube root of each using estimation .
   a) 314432 b) 857375 c) 636056
6. Find the least number to be added to the following to make them perfect cubes. Also find the cube roots of the perfect cubes so obtained.
   a) 340 b) 510 c) 728

Linear Equations In One and Two Variables

1. The perimeter of a rectangular swimming pool is 154 metres. Its length is 2m more than twice its breadth. What are the length and breadth of the pool.
2. Sum of two numbers is 95. If one exceeds the other by 15 find the numbers.
3. Two numbers are in the ration 5:3. If they differ by 18, find these numbers
4. Three consecutive integers add up to 51. What are these integers?
5. The sum of three consecutive multiples of 8 is 888. Find the multiple.
6. Three consecutive integers are as such when they are taken in increasing order and multiplied by 2, 3, and 4 respectively, they add up to 74. Find these numbers.
7. The number of boys and girls in a class is in 7:5 ratio. The number of boys is 8 more than that of girls. Fin their numbers.
8. The ages of Rahul and Haroon are in the ratio of 5:7. Four years from now sum of their ages will be 56 years. Find their present age.
9. In a linear equation, the highest power of the variables :-
   a) One b) two c) Three d) Zero
10. Baichung's father is 26 years younger than Baichung's grandfather and 29 years older than Baichung. The sum of their ages is 135. Find their ages.

11. Fifteen years from now Ravi's age will be 4 times his current age. What is his current age.
12. Lakshmi is a cashier in a bank. She has notes of denominations of Rs. 100, 50 and 10 respectively. The ratio of number of these notes is 2:3:5 respectively. The total cash with Lakshmi is 4,00,000. How many notes of each denomination does she have?
13. I have total Rs 300 in coins of denominations of Rs.1, Rs.2, and Rs. 5.The number of Rs. 2 coins is 3 times the number of Rs. 5 coins. The total number of coins is 160. How many coins of each denomination are with me.
14. The organizers in an essay competition decide that winner will get a prize of Rs. 100 and a participation who doesn't win gets a prize of Rs. 25. The total prize money distributed is Rs. 3,000. Find the number of winners if the total number of participants is 63.
15. If in a rational number denominator is greater than numerator by 8. If you increase the numerator by 17 and decrease the denominator by 1, you get 3/2 as result. Find the number.
16. Amina thinks of a number and subtracts 5/2 from it. She multiplies the result by 8. The final result is 3 times her original number. Find the number
17. A positive number is 5 times another number. If 21 is added to both the numbers then one of the new numbers becomes twice of another new numbers. Find the original numbers.
18. One of the digits of a two digit number is three times the other digit. If you interchange the digits and add the resulting number to original number you get 88 as final result. Find the numbers.
19. There is a narrow rectangular plot. The length and breadth of the plot are in the ratio of 11:4. At the rate of Rs. 100 per metre it will cost village panchayat Rs.75000 to fence the plot. What are the dimensions of the plot.
20. Hasan buys two kinds of cloth materials for school uniform. Shirt material cost him Rs. 50 per metre and trousers material cost him Rs. 90 per metre. For every 2 metres of the trousers material he buys 3 metres of shirt material. He sells them at 12% and 10% profit respectively. His total sale is Rs. 36,660. How much trousers material did he buy? (200m)
21. Half of a herd of deer are grazing in the field and three fourths of the remaining are playing nearby. The rest 9 are drinking water from the pond. Find the total number of deer in the herd.
22. A grandfather is 10 times older than his granddaughter. He is also 54 years older than her. Find their age.
23. A man's age is three times his son's age. Ten years ago his age was five times his son's age. Find their current age.
24. An equation of the form ax + b = c, where a, b and c are numbers, a ÿ 0 and x is the variable; represents a

    a) linear equation
    b) linear equation in one variable
    c) linear equation in two variables
    d) None of these

Comparing Quantities

1. Find x if :

    a. 13.25% of x is 159

    b. $\frac{1}{2}$% of x is 2.4

2.Find the amount and the compound interest on Rs 4000 at 10% p.a. for 2½ years.

3.A man invests Rs 5000 for three years at a certain rate of interest, compounded annually. At the end of one year it amounts to Rs 5600. Calculate (i) the rate of interest per annum, (ii) the interest accrued in the second year, (iii) the amount at the end of the third year.

4. A sum of Rs 9600 is invested for 3 years at 10% per annum at compound interest. (i) What is the sum due at the end of the first year? (ii) What is the sum due at the end of the second year? (iii) Find the compound interest earned in two years. (iv) Find the difference between the answers (ii) and (i) and find the interest on this sum for one year. (v) Hence write down the compound interest for the third year.

5. Find the difference between the S.I. and C.I. on Rs 2500 for 2 years at 4% p.a., compound interest reckoned semi-annually.

6. Calculate the compound interest for the second year on Rs 8000 invested for 3 years at 10% p.a.

7.Find the sum which amounts to Rs 9261 at 10% p.a. compound interest for 18 months, interest payable half-yearly.

8. The simple interest on a certain sum for 3 years is Rs 150 and the compound interest on the same sum at the same rate for 2 years is Rs 110. Find the rate of interest and the principal.

9. The value of a machine depreciates every year at the rate of 10% of its value. The machine was purchased for Rs 40000 when new and it was sold for Rs 29160. Find the number of years that the machine was used.

10. Sonika sells two jewellery boxes for Rs. 1400 each. On one she earns a profit of 10% and on other suffers a loss of 10%. Find her overall profit or loss percent.

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