Brain International School

Vikas Puri, New Delhi

REVISION SHEET

SUBJECT: MATHEMATICS **CLASS-VIII** **TERM 1**

RATIONAL NUMBERS

1. Find the reciprocal of the following rational numbers:
   (a) $\frac{-3}{4}$ (b) 0 (c) $\frac{6}{11}$ (d) $\frac{5}{-9}$
2. Write two such rational numbers whose multiplicative inverse is same as they are.
3. (a)Name the property illustrated by: $\frac{2}{3}+\frac{4}{5}=\frac{4}{5}+\frac{2}{3}$
   (b)If a = $\frac{1}{2}$, b = $\frac{3}{4}$, verify the following:
   (i) a × b = b × a(ii) a + b = b + a
4. Find the reciprocal of the product of $\frac{5}{8}$ and the reciprocal of $\frac{-3}{8}$.
5. Find a rational number between $\frac{1}{2}$ and $\frac{1}{3}$.
6. Calculate the following:
   $(a)\ \frac{-4}{5}\times\frac{3}{7}+\frac{4}{5}\times\frac{3}{7}$ $(b)\ \frac{1}{2}\times\frac{5}{6}+\frac{1}{3}\times\frac{1}{4}$
7. Show that:
   $$\left(\frac{-8}{9}\times\frac{1}{-5}\right)+\left(\frac{-8}{9}\times\frac{-7}{11}\right)=\frac{-8}{9}\times\left(\frac{1}{-5}+\frac{-7}{11}\right)$$
8. If x = $\frac{1}{2}$ y =$\frac{-2}{3}$ and z =$\frac{1}{4}$, verify that x × (y × z) = (x × y) × z.
9. If the cost of $4\frac{1}{2}$ litres of milk is ₹$89\frac{1}{2}$, find the cost of one litre of milk.
10. The product of two rational numbers is $\frac{15}{56}$. If one of the numbers is $\frac{-5}{48}$, find the other.
11. Rajni had a certain amount of money in her purse. She spent ₹ $10\frac{1}{4}$ in the school canteen, bought a gift worth ₹ $25\frac{3}{4}$and gave ₹ $16\frac{1}{2}$ to her friend. How much did she have to begin with?
12. One-third of a group of people are men. If the number of women is 200 more than the men, find the total number of people.
13. The sum of the two rational numbers is$\frac{1}{3}$. If one of the numbers is$\frac{-5}{48}$, then find the other.
14. What number should be subtracted from $\frac{-5}{36}$ to get $\frac{-7}{12}$?

LINEAR EQUATIONS IN ONE VARIABLE

1. Solve:

(a) $11 - 5x + 3x + 4x = 18$

(b) $(x - 2) + (x - 3) + (x - 9) = 0$

(c) $(2x-2) + (3x-3) + (9x-9) = 1$

(d) $\frac{x}{2} - 10 = \frac{1}{2}$

(e) $6x-9-2(1+x) = x-9$

(f) $2(x+2)+5(x+5)=4(x-8)+2(x-2)$

(g) $\frac{3-x}{2x-3} = \frac{-1}{2}$

(h) $\frac{x-7}{3} = \frac{x-1}{5}$

2.Five years ago, Anu was thrice as old as Sonu. After ten years, Anu will be twice as old as Sonu. How old are Anu and Sonu?

3.The perimeter of a rectangular swimming pool is 154 meters. Its length is 2m more than twice its breadth. Find its dimensions. of the two numbers is 95. If one exceeds

4.Three consecutive integers add up to 57. What are these integers?

5. Convert the following statements into equations:

(a) 3 added to a number is 11

(b) 2 subtracted from a number is equal to 15.

(c) 3 times a number decreased by 2 is 4.

(d) 2 times the sum of the number x and 7 is 13.

6. A number is 12 more than the other. Find the numbers if their sum is 48.

7. A sum of ₹2700 is to be given in the form of 63 prizes. If the prize is of either ₹100 or ₹25, find the number of prizes of each type.

8. In an isosceles triangle, the base angles are equal and the vertex angle is 80°. Find the measure of the base angles.

DATA HANDLING

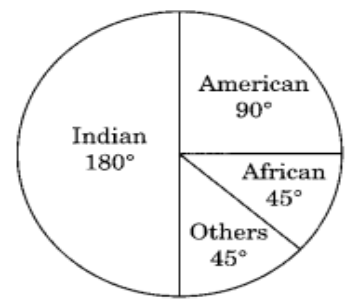
1.A die is thrown once. Find the probability of getting a number lesser than 3.

2. A class consists of 11 boys and 9 girls. A student is to be selected for social work. Find the probability that

(i) a girl is selected

(ii) a boy is selected

3. The following pie chart depicts the percentage of students, nationwide. What is the percentage of (i) Indian students (ii) African students?



4. A bag contains 144 coloured balls represented by the following table. Draw a pie chart to show this information.

Colour	Number of balls
Red	12
Yellow	18
Blue	28
Green	42
White	44

5. Draw a pie-chart for the following data of expenditure on various items in a family.

Item	Food	Clothing	Rent	Education	Miscellaneou
Expenditure (in ₹)	15000	5000	14000	20000	6000

6. Numbers 4 to 20 are written on separate cards such that one number is on one slip. These are mixed well and one slip is chosen from the box without looking into it. What is the probability of

(a) getting a card on which 6 is written?

(b) getting a card having two-digit number on it?

(c) getting a multiple of 5?

(d) getting a number more than 8?

7. A card is drawn from a pack of 52 playing cards..Find the probability of getting

(a) red face cards (b) an ace (c) a black jack.

SQUARE AND SQUARE ROOTS

1. A perfect square number can never have the digits ____ at the units place.

2. $\sqrt{5625}$ = _____.

3. Find the value of $\sqrt{45} \times \sqrt{20}$.

4. Write a Pythagorean triplet whose smaller member is 6.

5. What is the sum of first n odd natural numbers?

6. A number ending in an odd number of zeros is never a _____.

7. If m, n, p are natural numbers such that$(m^2 + n^2) = p^2$, then (m, n, p) are called _____.

8.Express 144 as the sum of odd numbers.

9. Without adding, find the sum.

(1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17)

10. Find the value of $\sqrt{441}$.

11. Write the unit digit of square of 799.

12. Find the square root of 144 by the method of repeated subtraction.

13. Find the smallest number by which 1800 must be multiplied so that it becomes a perfect square. Also find the square root of the perfect square so obtained.

14. The area of a square field is 8281 m^2. Find the length of its side.

15. Simplify:

$$(\sqrt{81} + \sqrt{0.81} + \sqrt{0.0081}) \times \sqrt{10000}$$

16. 1225 plants are to be planted in a garden in such a way that each row contains as many plants as the number of rows. Find the number of rows and the number of plants in each row.

17. Find the smallest number by which 3645 should be divided so as to get a perfect square. Also, find the square root of the number so obtained.

18.What least number must be added to 6072 to make it a perfect square?

19. What is the least number that must be subtracted from 3793 so as to get a perfect square? Also, find the square root of the number so obtained.

CUBE AND CUBE ROOTS

1. Is 392 a perfect cube? If not, find the smallest natural number by which 392 should be multiplied so that the product is a perfect cube.
2. Find the smallest number by which 128 must be divided to obtain a perfect cube.
3. Find the cube root of 8000.
4. Find the cube root of each of the following numbers by prime factorisation method.
   a. 91125
   b. 110592
5. Find the smallest number by which 1323 may be multiplied so that the product is a perfect cube.
6. What is the smallest number by which 2916 should be divided so that the quotient is a perfect cube?
7. If one side of a cube is 13m find the volume of the cube.
8. The volume of a cube is 216 cm^3. What will be the volume of another cube whose sides are double of this cube?
9. Evaluate :

   $\{ \sqrt{(7^2 + 24^2)} \}^3$ (ii) $(\sqrt{8^2 + 6^2})^3$

ALGEBRAIC EXPRESSIONS AND IDENTITIES

1. Find the value of: $x^2 - \frac{1}{5}$ at x= - 1.
2. What is the value of $x^2 + y^2 - 10$ at x = 0 and y = 0?
3. Find the product of 9a, 4ab and -2a.
4. Simplify (a + b + c)(a + b - c).
5. Add: $8x^2 + 7xy - 6y^2$, $4x^2 - 3xy + 2y^2$ and $-4x^2 + xy - y^2$
6. Subtract: $3x^2 - 5x + 7$ from $5x^2 - 7x + 9$
7. Find the area of the rectangle whose length and breadth are $3x^2y$ m and $5xy^2$ m respectively.
8. Simplify the following:
   (a) $a^2 (b^2 - c^2) + b^2 (c^2 - a^2) + c^2 (a^2 - b^2)$
   (b) $x^2(x - 3y^2) - xy(y^2 - 2xy) - x(y^3 - 5x^2)$
9. Multiply $x^2 + 2y$ by $x^3 - 2xy + y^3$ and find the value of the product for x = 1 and y = -1.

FACTORISATION

1. Factorise:

   a. $3a + 9b - 3(a+3b)^2$ b. $x^2 + 14x + 49$ c. $9y^2 - 36zy + 36z^2$

   d. $ab - mn + an - bm$ e. $(12m^2 - 27)$ f. $196 x^2 - 1$

   g. $54m^3n + 81m^4n^2$ h. $4p^2 + 2q^2 + p^2q^2 + 8$ i $25x^2 - 4y^2 + 28yz - 49z^2$

2. Solve :

   a. $(4x^2 - 100) \div 6(x + 5)$

   b. $10x^3y^2z^2 + 10x^2y^3z^2 + 20x^2y^2z^3) \div 10x^2y^2z^2$

   c. $12(y^2 + 7y + 10) \div 3(y + 2)$

   d. $(3b - 6a) \div (30a - 15b)$

   e. $44(p^4 - 5p^3 - 24p^2) \div 11p(p - 8)$

CASE STUDY QUESTIONS

Q1. A village of the North-East India has suffered from flood. A group of students decided to help them with food items, clothes etc. So the students collected some amount of rupees, which is represented by $x^2 - 8x + 15$.
The amount collected was distributed to the sufferers.

Now based on the above, answer the following questions:

(i) What type of algebraic expression is represented by above.

(ii) How many factors it has?

(iii) If amount donated by each student is (x – 3), then find the number of students in terms of x.

(iv) What is the total amount collected if x = 500.

Q2. Mohan has to prepare a physics project in form of a cubical box for a social work campaign but he had a cuboidal box of sides 4 cm, 2 cm, 4 cm. Now he has to change it in the form of a cube so that he can complete his project. For this, he needed more cuboids so that he can make his project in form of a cube.

Now based on the above, answer the following questions:

Q1. What is the volume of the cuboidal box?
Q2. In which form of the group should be the side of cube?
Q3. How many cuboids are more needed?

ASSERTION REASON BASED QUESTIONS

DIRECTION: In the question numbers 1 to 6, a statement of **Assertion(A)** is followed by a statement of **Reason (R).** Choose the correct option.

(a) Both Assertion and Reason are true and Reason is a correct explanation of Assertion.
(b) Both Assertion and Reason are true but Reason is not a correct explanation of Assertion.
(c) Assertion is true and Reason is false
(d) Assertion is false and Reason is true.

Q1. Assertion (A): The one's digit in the cube root of the cube number 1728 is 6.
Reason (R): The cube root of a number is the factor that we multiply by itself three times to get that number

Q2. Assertion (A): The smallest number by which the number 72 must be multiplied to obtain a perfect cube is 3.
Reason (R): The perfect cube is the result of multiplying the same integer three times.

Q3. Assertion (A): The expression $8pq + 5$ is in two variables.
Reason (R): There are two variables p and q.

Q4. Assertion (A): Product of monomial and binomial is binomial.
Reason(R): Distributive law, is used to carry out the multiplication term by term.

Q5. Assertion (A): A pie chart is divided into sectors to represent numerical data of different values.
Reason(R): Pie chart is very effective when we have so many data series.

Q6. Assertion(A): Zero is a rational number.
Reason(R): Each rational number is a quotient of any two integers, while its divisor should not be zero. Thus, a number of the form where and are integers and is a rational number.