RATIONAL NUMBERS
EXPONENTS AND POWERS
SQUARES AND SQUARE ROOTS
CUBES AND CUBE ROOTS
PLAYING WITH NUMBERS

Q1 Evaluate:

$$\frac{2}{7} + \frac{-11}{5} + \frac{-3}{7} + \frac{3}{5}$$

Q2 What should be subtracted from $\frac{-1}{8}$ to get $\frac{11}{72}$?

Q3 Onions are cultivated and used around the world. As a food item, they are usually served raw, as a vegetable or part of a prepared savoury dish, but can also be eaten cooked or used to make pickles or chutneys. They are pungent when chopped and contain certain chemical substances which may irritate the eyes. If $15\frac{1}{3}$ kg onions can be purchased for Rs.$268\frac{1}{3}$, find the cost of 1kg onions.

Q4 Find the least number by which 6125 should be multiplied to get a perfect square number. Also, find the number whose square is the resulting new number.

Q5 A number expressed as a product of an integer by itself is called a perfect square. Since the same number is multiplied twice, the perfect square is also written as the second exponent of an integer. Thus, the squares of all integers are known as perfect squares. Find the least number by which 768 should be divided to get a perfect square number. Also, find the number whose square is the resulting new number.

Q6 Find the smallest square number which is divisible by each of the numbers 9,10,12 and 15.

Q7 Evaluate:
i) 69×71
ii) 402²

Q8 The product of two numbers is 2475 and their quotient is $\frac{11}{9}$. Find the numbers.

Q9 Find the least number must be subtracted from 893304 to get a perfect square? Find the square root of this perfect square.

Q10 Find the greater number with four digits which is a perfect square.

Q11 What is the smallest number by which 1372 may be multiplied so that the product is a perfect cube?

Q12 Three numbers are to one another as 2:3:4. If the sum of their cubes is 50688. Find the numbers.

Q13 Evaluate $\sqrt[3]{50625}$ and hence find the value of $\sqrt[3]{5.0625} + \sqrt[3]{506.25}$.

Q14 If 18x5 is a multiple of 9, where x is a digit, what is the value of x?

Q15 If 21x5 is a multiple of 3, where x is a digit, what might be the values of x?

Q16 A drum full of wheat weighs $31\frac{1}{6}$ kg. If the empty drum weighs $11\frac{3}{4}$ kg, find the weight of wheat in the drum.

Q17 Insert ten rational numbers between $\frac{-3}{5}$ and $\frac{1}{5}$.

Q18 Simplify:

i) $(49 \times p^{-4}) \div (7^{-3} \times 14 \times p^{-8})$

ii) $(3^{-4} \times 10^{-5} \times 25) \div (5^{-7} \times 6^{-4})$

Q19 By what number should $(-7)^{-1}$ be divided so that the quotient is 5^{-1}?

Q20 In a stack there are 5 books each of thickness 20mm and 5 paper sheets each of thickness 0.016mm. What is the total thickness of the stack?