



HOLIDAY HOMEWORK
CLASS 9
WORKSHEET 1
RATIONAL AND IRRATIONAL NUMBERS

- 1) Without actual division find whether $-\frac{23}{80}$ has terminating decimals or recurring decimals.
- 2) Insert four rational numbers between $\frac{4}{5}$ and $\frac{5}{6}$, and arrange in ascending order.
- 3) Prove that $\sqrt[3]{7}$ is an irrational number.
- 4) Prove that $\sqrt{5}$ is an irrational number. Hence show that $3 - \sqrt{5}$ is an irrational number.
- 5) If p, q are rational numbers and $p - \sqrt{6}q = \frac{\sqrt{2} + \sqrt{3}}{3\sqrt{2} - 2\sqrt{3}}$, find the values of p and q .
- 6) If $x = \frac{\sqrt{5} - \sqrt{2}}{\sqrt{5} + \sqrt{2}}$ and $y = \frac{\sqrt{5} + \sqrt{2}}{\sqrt{5} - \sqrt{2}}$, then find the value of $x^2 + xy + y^2$.
- 7) Write the following real numbers in descending order. $\sqrt{2}, 3.5, \sqrt{10}, -\frac{5}{\sqrt{2}}, \frac{5}{2}\sqrt{3}$
- 8) Find a rational number and an irrational number between $\sqrt{3}$ and $\sqrt{5}$.
- 9) Give an example of two different irrational numbers, whose product is an irrational number.
- 10) Locate $\sqrt{13}$ on a number line.
- 11) Express $2.\overline{357}$ as a vulgar fraction.
- 12) Simplify $\sqrt{27} - 3\sqrt{75} + 5\sqrt{48} + 2\sqrt{108}$ and find the value when $\sqrt{3} = 1.732$.
- 13) Rationalise the denominator $\frac{2}{\sqrt{5} + \sqrt{3} + 2}$
- 14) Simplify $(2\sqrt{3} + 3\sqrt{5})^2$
- 15) If $a = 5 + 2\sqrt{6}$, then find the value of $a^2 + \frac{1}{a^2}$

WORKSHEET 2
COMPOUND INTEREST

1. The cost of washing machine depreciates by ₹ 720 during the second year and by ₹ 648 during the third year. Calculate
 - a. The rate of depreciation per annum.
 - b. The original cost of the machine
 - c. The value of the machine at the end of third year.
2. In what time will ₹ 2400 amount to ₹ 2646 at 10% p.a. compounded semiannually?
3. What sum will amount to ₹ 28090 in two years at 6% p.a. compound interest? Also find the compound interest.
4. The value of a car depreciates by 12.5% every year. By what percent will the value of car decrease after 3 years?
5. The value of machine worth ₹ 500000 is depreciating at the rate of 10% every year. In how many years will its value be reduced to ₹ 364500?
6. Find the difference between compound interest on ₹ 8000 for one and half years at 10 % p.a. when compounded annually and semi-annually.
7. In what time will ₹ 15635 amounts to ₹ 17576 at 4% p.a. compound interest?
8. Determine the rate of interest for a sum that becomes $\frac{216}{125}$ times of itself in one and half years , compounded semi-annually .
9. What sum will amount to ₹ 2782.50 in 2 years at compound interest , if the rates are 5% and 6% for the successive years?
10. Sulekha deposits ₹ 8000 in a bank every year in the beginning of the year , at 10% per annum compound interest. Calculate the amount due to her at the end of three years . Also find her gain in three years.
11. A sum of ₹9600 is invested for three years at 10% per annum at compound interest .
 - a. What is the sum due at the end of first year?
 - b. What is the sum due at the end of second year?
 - c. Find the compound interest earned in 2 years.
 - d. Find the difference between the answer in (ii) and (i) and find the interest on this sum for one year.
 - e. Hence write down the compound interest for third year.
12. Find the amount and compound interest on ₹ 2000 at 10% p.a. for two and half yeas, compounded annually.(use simple interest formula)

WORKSHEET 3
SIMULTANEOUS LINEAR EQUATIONS

Question – 1 . Solve the following pair of linear equations by substitution method:

- i) $\frac{3x}{2} - \frac{5y}{3} = -2$, $\frac{x}{3} + \frac{y}{2} = \frac{13}{6}$
 ii) $s - t = 3$, $2s + 3t = 36$
 iii) $5x + 4y - 4 = 0$, $x - 20 = 12y$
 iv) $2x - \frac{3y}{4} = 3$, $5x - 2y - 7 = 0$
 v) $mx - ny = m^2 + n^2$, $x + y = 2m$

Question – 2 . Solve the following pair of linear equations by Elimination method:

- i) $\frac{x}{3} + \frac{y}{4} = 4$, $\frac{5x}{6} - \frac{y}{8} = 4$
 ii) $4x + \frac{6}{y} = 15$, $6x - \frac{8}{y} = 14$
 iii) $4x + \frac{x-y}{8} = 17$, $2y + x - \frac{5y+2}{3} = 2$
 iv) $x - 3y = 3x - 1 = 2x - y$.
 v) $\frac{x}{a} - \frac{y}{b} = 0$, $ax + by = a^2 + b^2$

Question – 3 . Solve the following pair of linear equations by cross Multiplication method:

- i) $2(ax - by) + (a + 4b) = 0$, $2(bx + ay) + (b - 4a) = 0$
 ii) $3x - 7y + 10 = 0$, $y - 2x = 3$.
 iii) $X - y = a + b$, $ax + by = a^2 - b^2$
 iv) $ax + by = a - b$, $bx - ay = a + b$
 v) $97x + 53y = 177$, $53x + 97y = 573$

Question – 4 . Solve the following pair of linear equations :

- i) $\frac{2}{x} + \frac{2}{3y} = \frac{1}{6}$, $\frac{2}{x} - \frac{1}{y} = 1$
 ii) $4x + 9y = 30xy$, $5y - 3x = xy$
 iii) $\frac{20}{x+y} + \frac{3}{x-y} = 7$, $\frac{8}{x-y} - \frac{15}{x+y} = 5$
 iv) $\frac{1}{x+y} - \frac{1}{2x} = \frac{1}{30}$, $\frac{5}{x+y} + \frac{1}{x} = \frac{4}{3}$. Hence, find the value of $2x^2 - y^2$
 v) Can x, y be found to satisfy the following equations simultaneously?
 $\frac{2}{y} + \frac{5}{x} = 19$, $\frac{5}{y} - \frac{3}{x} = 1$, $3x + 8y = 5$. If so, find them .