



6) Solve the following pair of linear Eq<sup>n</sup> :

a)  $\frac{1}{2x} - \frac{1}{y} = -1$ ,  $\frac{1}{x} + \frac{1}{2y} = 8$

b)  $3(2\mu + \vartheta) = 7\mu\vartheta$ ,  $3(\mu + 3\vartheta) = 11\mu\vartheta$

c)  $\frac{6}{x-1} - \frac{3}{y-2} = 1$ ,  $\frac{5}{x-1} + \frac{1}{y-2} = 2$

d)  $\frac{2}{\sqrt{x}} + \frac{3}{\sqrt{y}} = 2$ ,  $\frac{4}{\sqrt{x}} - \frac{9}{\sqrt{y}} = -1$

7) Solve :  $x+y = a+b$ ;  $ax-by = a^2 - b^2$ .

8) Solve :  $a(x+y) + b(x-y) = a^2 - ab + b^2$   
 $a(x+y) - b(x-y) = a^2 + ab + b^2$

9) Find K for which the equations have a unique solution :

i)  $2x - 3y = 1$ ;  $kx + 5y = 7$       ii)  $2x - ky + 3 = 0$ ;  $3x + 2y - 1 = 0$ .

10) Find p and q for which equations have infinite solution:  $2x + 3y = 7$ ;  $(p+q)x + (2p-q)y = 21$ .

11) A man has only 20 paise coins and 25 p coins. If he has 50 coins in all, adding up to Rs 11.25, how many coins of each kind does he have?

12) If three times the larger of the two numbers is divided by the smaller one, we get 4 as quotient and 3 as remainder. Also if seven times the smaller no. is divided by the larger one, we get 5 as quotient and 1 as remainder. Find the numbers.

13) The sum of the numerator and denominator of a fraction is 12. If the denominator is increased by 3, the fraction becomes  $\frac{1}{3}$ . Find the fraction.

14) Two years ago, a father was five times as old as his son. Two years later, his age will be 8 more than three times the age of the son. Find the present ages of father and son.

15) A boat covers 32 km upstream and 36 km downstream in 7 hours. Also, it covers 40km upstream and 48 km downstream in 9 hours. Find the speed of the boat in still water and that of the stream.

16) Students of a class are made to stand in rows. If one student is extra in a row, there would be 2 rows less. If one student is less in a row there would be 3 rows more. Find the no. of students in class.

17) Half the perimeter of a garden, whose length is 4 more than its width, is 36m. Find the dimensions of the garden.

18) 8 men and 12 boys can finish a work in 10 days. While 6 men and 8 boys can finish it in 14 days. Find the time taken by one man alone and that by one boy alone to finish the work.

#### QUADRATIC EQUATIONS

- By increasing the list price of a book by Rs. 10, a person can buy 10 books less for Rs. 1200. Find the original list price of the book.
- A passenger train takes 2 hours less for a journey of 300 km, if its speed is increased by 5 km/hr from its usual speed. Find its usual speed.
- The numerator of a fraction is one less than its denominator. If three is added to each of the numerator and denominator, the fraction is

increased by  $\frac{3}{28}$ . Find the fraction.

4. The difference of squares of two natural numbers is 45. The square of the smaller number is four times the larger number. Find the numbers.

5. Solve for x:

$$\frac{x+1}{x-1} + \frac{x-2}{x+2} = 3; \quad (x \neq 1, -2)$$

6. Using quadratic formula, solve the following for x:

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

7. The sum of the squares of two consecutive odd numbers is 394. Find the numbers.

8. Solve for x:

$$\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}; \quad a \neq 0, b \neq 0, x \neq 0$$

9. Find the roots of the following quadratic equation:

$$\frac{2}{5}x^2 - x - \frac{3}{5} = 0$$

10. Find the roots of the equation:

$$\frac{1}{2x-3} + \frac{1}{x-5} = 1; \quad x \neq \frac{3}{2}, 5$$

11. A natural number when subtracted from 28, becomes equal to 160 times its reciprocal. Find the number.

12. Find two consecutive odd positive integers, sum of whose squares is 290.

13. Find the values of k for which the quadratic equation

$$(k+4)x^2 + (k+1)x + 1 = 0 \text{ has equal roots. Also find these roots.}$$

14. Solve for x:

$$\frac{16}{x} - 1 = \frac{15}{x+1}; \quad x \neq 0, -1.$$

15. Solve for x:

$$\frac{x-2}{x-3} + \frac{x-4}{x-5} = \frac{10}{3}; \quad x \neq 3, 5$$

#### ACTIVITY

**Topic :** System of Linear Equations

**Objective :** To verify the conditions for consistency and inconsistency of a system of linear equations in two variables graphically.

Reference: Students should use all available resources (NCERT BOOKS, INTERNET etc.)

#### Instructions:

- The activity should be hand written.
- The activity should be done in a **stick file**.
- The activity should contain acknowledgement.
- The activity should be done using colored papers.
- It should have pictures and other relevant material.

**Physics: Do the following practice questions from Electricity in your homework notebook.**

- Q1. Two resistances when connected in parallel give resultant value of 2 ohm. when connected in series the value becomes 9 ohm. Calculate the value of each resistance.
- Q2. How can three resistance of resistance 2Ω, 3 Ω, and 6 Ω be connected to give a total resistance of (i) 4 Ω, (ii) 1 Ω?
- Q3. A piece of wire of resistance R is cut into five equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is R', then find the ratio  $\frac{R}{R'}$ .
- Q4. How many 176 Ω resistors (in parallel) are required to carry a current of 5A when a potential difference of 220 V is applied across the combination?
- Q5. A wire of resistance 5 ohms is bent in the form of a closed circle. What is the effective resistance between the two points at ends of any diameter of the circle?
- Q6. An electric iron has a rating of 750 W, 220 V. Calculate:
- the current passing through it, and
  - its resistance, when in use.
- Q7. A geyser is rated 1500 W, 250V. It is connected to 250V mains. Calculate (i) the current drawn, (ii) the energy consumed in 50 hours, and (iii) the cost of energy consumed at Rs 2.20 per kWh.
- Q8. Two resistors of 4Ω and 6 Ω are connected in parallel. The combination is connected across a 6 volt battery of negligible resistance. Calculate (i) the power supplied by the battery, (ii) the power dissipated in each resistor.
- Q9. An electric bulb is rated 220 V and 100W. Calculate the power consumed when it is operated on 110 V.
- Q10. Two conducting wires of the same material and of equal lengths and equal diameters are first connected in series and then parallel in a circuit across the same potential difference. Find the ratio of heat produced in series and parallel combination.
- Q11. Which has a higher resistance: a 50W – 220 V lamp or a 25W – 220 V lamp? Calculate the ratio of the resistances.
- Q12. An electric iron consumes energy at a rate of 840 W when heating it at the maximum rate and 360 W when the heating it at the minimum. The applied voltage is 220 V. What is the value of current and the resistance in each case?
- Q13. Two lamps, one rated at 40W – 220 V and the other at 60W – 220V, are connected in parallel to the electric supply at 220 V.
- Draw a circuit diagram to show the connections.
  - Calculate the current drawn from the electric supply source.
  - Calculate the total energy consumed by the two lamps together when they operate for one hour.
- Q14. Two resistors, with resistances 5 Ω and 10 Ω respectively are to be connected to a battery of emf 6V so as to obtain:
- minimum current
  - maximum current
- Q15. Resistance of a metal wire of length 1 m is 26 Ω at 20°C. If the diameter of the wire is 0.3 mm, what will be the resistivity of the metal at that temperature?
- Q16. In domestic circuit which combination series or parallel is used and why?
- Q17. Explain various applications of Joules law of heating.

**Chemistry :**

- Describe various methods to prevent corrosion of metals commonly used :  
The Project should cover the following aspects :
  - How can we prevent a big slip from corrosion keeping in mind high expenses of painting.
  - Sacrificial protection- (Role of Mg and Zn)
  - Alloying
  - Automobiles protective coating
  - Electrodeposition of Ni and Cr.
- Make a project report on application of chemistry in food industry to avoid spoilage of food stuff.
  - Role of preservative
  - Shelf life enhancement
  - Use of antioxidants / anticorrosive agents.

**Biology:** Make an investigatory project report on "Type 2 Diabetes" emphasizing the following points :

- Type 2 Diabetes
- Signs and Symptoms of Type 2 Diabetes
- Signs and Symptoms of Low Blood Sugar (Hypoglycemia)
- Signs and Symptoms of High Blood Sugar (Hyperglycemia)
- Causes of Type 2 Diabetes
- Difference between Type 1 and Type 2 Diabetes
- Risk Factors of Type 2 Diabetes
- Diagnostic Test for Type 2 Diabetes
- Treatment for Type 2 Diabetes
- Diet Plan for Type 2 Diabetes
- Medications to treat Type 2 Diabetes
- Complications of type 2 Diabetes
- Prevention and Control.
- Prognosis and Life Expectancy for someone with Type 2 Diabetes
- A Case Study.

- Instructions :**
- The project report should be handwritten in A-4 size pages and should be of 15-20 pages.
  - The project report should be presented in the following order-
    - Cover Page showing title of the project, student information, name of school and academic session.
    - Acknowledgements
    - Chapters with relevant headings
    - Summary and Conclusion based on findings
    - Bibliography
  - Credit will be awarded to the original drawings, illustrations and creative use of materials.
  - All photographs and sketches should be labelled and acknowledged.

**Social Science :**

**1) Prepare a project on 'The growth and development in India since Independence' .**

**Guidelines :** i) The project should showcase the contribution of Industries and how it has affected the lives of the people of India and country's economic development.

ii) Contribution – a) Brief outline on the traditions of Industrial production in India. b) types of industries and their locational advantages c) Contribution of each type of industry to the nation's economy.

**Method :** Student can choose any of the following methods to prepare the project :

i) Text based along with illustration (Newspaper Cutting, Pictures, Graphics, Diagram and it should contain pages 10-12)

ii) Audio Visual (only in CD)                      iii) Painting/Pencil Sketches                      iv) Model

Sequence of the project should be: a) Acknowledgement b) Certificate c) Index d) Content e) Conclusion f) Bibliography

**Note : Project Should be handmade.**

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**Disaster Management :** Project on the topic "Role of Government/ Non Government Functionaries In Your Locality In Disaster Management"

**Guidelines :** a) Total length of project report will not more than 10-12 pages or A4 size paper.

b) Project report will be handwritten.

c) Project report will be developed and presented in the following order : i) Cover Page ii) Content iii) Acknowledgment iv) Bibliography

**Note : Map, pictures, graph, poster, chart related to the topic.**

**( Project should be based on any of above )**

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**Computer:** Q1. Define the following in atleast 25 words:

1. DNS 2. Routers 3. WWW 4. ISP 5. Backbone Network 6. Primary Key 7. Reports 8. Form 9. Gateway 10. NewsGroup 11. TELNET  
12. IETF 13. WI-MAX.

Q2. Explain any 10 protocols used in INTERNET. Explain each one of them in 25 words.

Q3. Design a database for "Hotel Management System". Specify the fields.

Mention their data type and field properties. Specify which attribute can be designated as primary key.

Q4. Define features and types of DBMS.

Q5. What is null and default values in DBMS. Explain with an example.

Q6. Explain client server model and draw the diagram.

Q7. Write the steps(each part—web crawler, indexing and search algorithm) to perform search in a search engine.

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Vice-Principal